Tidewater Community College provides its website, catalog, handbooks, and any other printed materials or electronic media for your general guidance. The college does not guarantee that the information contained within them, including, but not limited to, the contents of any page that resides under the DNS registrations of tcc.edu is up-to-date, complete and accurate, and individuals assume any risks associated with relying upon such information without checking other credible sources, such as a student’s academic advisor. In addition, a student’s or prospective student’s reliance upon information contained within these sources, or individual program catalogs or handbooks, when making academic decisions does not constitute, and should not be construed as, a contract with the college. Further, the college reserves the right to make changes to any provision or requirement within these sources, as well as changes to any curriculum or program, whether during a student’s enrollment or otherwise. Links or references to other materials and websites provided in the above-referenced sources are also for information purposes only and do not constitute the college’s endorsement of products or services referenced.

TCC encourages and supports a learning environment where free expression of views and speech, which are essential components of academic freedom, is supported. In this learning environment students may encounter content (language, videos, pictures, and other teaching resources) that offers differing points of view or challenges their beliefs and values. The college encourages students to make informed decisions when selecting courses. Students with questions may contact the faculty member teaching the course.

In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 and Board policy, the College does not discriminate on the basis of disability. Please contact the Office of Educational Accessibility at 757-822-7752 regarding equal access. Tidewater Community College is committed to equal access to its programs and services governed by this policy of non-discrimination. These programs and services include, but are not limited to, all employees, student governments, curricula and other programs sponsored by the college.

Tidewater Community College does not discriminate on the basis of race, sex, color, national origin, religion, sexual orientation, gender identity, age, veteran status, political affiliation, genetics, or disability in its programs or activities. Inquiries related to the college’s nondiscrimination policies may be directed to the Director of Human Resources, Post Office Box 9000, Norfolk, VA 23509-9000, 757-822-1708.
WELCOME TO TIDEWATER COMMUNITY COLLEGE

As a Tidewater Community College student, you are joining a rich culture that is as diverse as the communities we serve—a culture that collectively claims your success as its central tenet.

We are committed to your success and providing you a quality learning experience. Making success a reality for all students requires a significant investment of time and effort by faculty and staff as well as a considerable investment in physical and personnel resources that support a comprehensive and dynamic learning environment. Your success is the return on our investment.

This catalog describes a broad range of programs and services reflective of the faculty's expertise and commitment to preparing you for transfer, to further your career, or for personal interest. I encourage you to take advantage of all that Tidewater Community College has to offer by engaging faculty, staff, and your peers on the path to achieving your academic, career, and personal goals. This is an exciting time to be a Tidewater Community College student. From here, you really can go anywhere!

Sincerely,

Daniel T. DeMarte
Vice President for Academic Affairs and Chief Academic Officer
<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Phone Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidewater Community College</td>
<td>121 College Place, Norfolk, VA 23510</td>
<td>757-822-1122</td>
</tr>
<tr>
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<td>1700 College Crescent, Virginia Beach, VA 23453</td>
<td>757-822-7777</td>
</tr>
<tr>
<td>Center for Workforce Solutions</td>
<td>7000 College Drive, Suffolk, VA 23435</td>
<td>757-822-1234</td>
</tr>
<tr>
<td>Regional Automotive Center</td>
<td>600 Innovation Drive, Chesapeake, VA 23320</td>
<td>757-822-5000</td>
</tr>
<tr>
<td>Chesapeake Campus</td>
<td>1428 Cedar Road, Chesapeake, VA 23322</td>
<td>757-822-5100</td>
</tr>
<tr>
<td>Roper Performing Arts Center</td>
<td>340 Granby Street, Norfolk, VA 23510</td>
<td>757-822-1450</td>
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<td>Norfolk Campus</td>
<td>300 Granby Street, Norfolk, VA 23510</td>
<td>757-822-1110</td>
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<tr>
<td>TCC at Tri-Cities Center</td>
<td>1070 University Boulevard, Portsmouth, VA 23703</td>
<td>757-822-2623</td>
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<td>Portsmouth Campus</td>
<td>120 Campus Drive, Portsmouth, VA 23701</td>
<td>757-822-2124</td>
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<tr>
<td>TCC Information Center</td>
<td>1-800-371-0898</td>
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<td>Virginia Beach Campus</td>
<td>1700 College Crescent, Virginia Beach, VA 23453</td>
<td>757-822-7100</td>
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<td>Visual Arts Center</td>
<td>340 High Street, Portsmouth, VA 23704</td>
<td>757-822-1888</td>
</tr>
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<td>Advanced Technology Center</td>
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Tidewater Community College, founded in 1968, is one of 23 two-year colleges that make up the Virginia Community College System (VCCS). Serving the cities of Chesapeake, Norfolk, Portsmouth, Virginia Beach, and portions of Suffolk, the college offers a comprehensive range of programs designed to meet the educational and training needs of the people it serves. Programs of study lead to associate degrees or certificates; they include the first two years of university-parallel instruction and over 140 career and technical programs. The college also offers both credit and non-credit continuing education and special workforce training programs. TCC is the largest provider of higher education and workforce development services in Hampton Roads, enrolling about 37,000 students annually – the second largest undergraduate student body in the Commonwealth of Virginia.

TCC has grown from a single location to four campuses, as well as district administrative offices, a regional visual arts center, a regional automotive center, a historical theater, a regional health professions center, an advanced technology center, and a regional workforce development center. Classes are also offered at other off-campus locations such as military installations.

TCC’s central offices are located in the Joseph N. Green, Jr. District Administration Building at 121 College Place, Norfolk. The facility houses the Office of the President, Academic Affairs, Student Affairs, Institutional Effectiveness, Information Systems, Facilities, Human Resources, Finance, Institutional Advancement and the TCC Education Foundation. Within those offices are the college’s central administrative staff in the functional areas of accounting and payroll, educational technology, emergency preparedness, grants and sponsored programs, instructional resources, purchasing, safety and security, and student records.

TCC’s Center for Workforce Solutions, located in northern Suffolk, provides training, education, assessments, and services for area businesses to enhance their success. Workforce Solutions delivers relevant industry training through customized and open enrollment formats with emphasis on industry standards leading to credential and certification attainment. Additionally, the Workforce Solutions courses are delivered online, face-to-face, on-site and in combination of the aforementioned. Workforce Solutions has developed and maintains partnerships with all major industries in the Hampton Roads area in an effort to assure quality workforce programs that prepare and sustain a pipeline of well qualified workers to meet the needs of regional employers.

TCC campuses feature student centers, which provide offices and meeting space for student groups and clubs, cafes, fitness equipment and recreation. Licensed child care is offered on all campuses in partnership with the YWCA of South Hampton Roads.

TCC HISTORY

The college’s original location, formerly the site of Frederick College, was donated to the Commonwealth of Virginia by Fred W. Beazley and the Beazley Foundation. It opened in the fall of 1968 and became the site of the Portsmouth Campus. Overlooking Hampton Roads harbor, the campus was located in what eventually became northern Suffolk. The Fred W. Beazley Portsmouth Campus moved to the Victory Village section of the city in 2010.

Portsmouth Campus: A statewide bond referendum in 2002 provided initial funding to relocate the Portsmouth Campus from northern Suffolk into the city of Portsmouth to better serve the educational needs of the city and the region while maintaining the comprehensive programmatic offerings of the campus. The Fred W. Beazley Portsmouth Campus consists of three academic and administrative buildings with state-of-the-art technology, instructional labs, and equipment designed to provide a learning-centered environment. It is also the home of the Beazley School of Nursing. Its student center opened in 2013.

The TCC Visual Arts Center, part of TCC’s Portsmouth Campus, is located in historic Olde Towne Portsmouth. It is Virginia’s first community college center dedicated solely to arts and art education. The state-of-the-art facility offers degrees in Graphic Design and Studio Arts, and includes a rooftop glassblowing studio, classroom studios, MAC laboratories, a Books and Images Library, the Belle B. Goodman and Michael F. LaBowé Galleries, and the Anne S. Iott Permanent Art Collection.

Virginia Beach Campus: In 1971, TCC established the Virginia Beach Campus in temporary quarters on Camp Pendleton, a state military installation. After the City of Virginia Beach donated land to TCC, a permanent campus opened in 1974 at the city’s geographical center. Seven academic buildings, each named for a borough of Virginia Beach, house academic programs, administrative offices, and student services. Recent additions to the campus include the Advanced Technology Center, the Science Building, the Regional Health Professions Center, and the Center for Military and Veterans Education. The Joint-Use Library, a partnership with the City of Virginia Beach, and a student center opened in 2013.

Chesapeake Campus: The Chesapeake Campus was established in 1973, when the City of Chesapeake purchased and donated the former Chesapeake College site to TCC. The campus is located between the communities of Great Bridge and Deep Creek. The George B. Pass Building houses academic programs, administrative offices, laboratories, student services, and a library. The Marian P. Whitehurst Technology Center houses academic programs, administrative offices, laboratories, and a conference center. A new Academic Building opened in 2013, and the student center opened in 2014.

A state-of-the-art Regional Automotive Center, located in the Oakbrooke Business and Technology Center, is part of the Chesapeake Campus. It opened for classes in 2008. As the only high tech educational facility for the Roads, the center includes classrooms, instructional laboratory bays, and an automotive “showroom” area.

Norfolk Campus: The Norfolk Campus opened in January 1997 as a part of the city’s downtown revitalization. The Martin Building, donated by the heirs of Alvah H. Martin, houses a library, classrooms, and faculty and administrative offices. The Mason C. Andrews Science Building houses the Ada R. Michaels Student Services Area, laboratories, classrooms, and faculty offices. The Stanley C. Walker Technologies Building houses computer laboratories, classrooms, and faculty offices. The TCC Jeanne and George Roper Performing Arts Center houses classrooms, computer laboratories and a restored 1926 theater that seats over 800. The award-winning student center opened in 2011.

TIDEWATER COMMUNITY COLLEGE MISSION STATEMENT

Tidewater Community College provides collegiate education and training to adults of all ages and backgrounds, helping them achieve their individual goals and contribute as citizens and workers to the vitality of an increasingly global community.

Commitments that inform the mission:

- Open access to high-quality, affordable education to prepare students for transfer to a four-year baccalaureate institution, as well as for entry or advancement in the workforce.
- Cultural diversity as a critically important strength for students to meet the changing needs of a pluralistic, democratic society.
- Lifelong learning to heighten the awareness of students to multiple paths for achievement, while helping them pursue the choices most conducive to their individual needs.
- Partnerships and proactive responsiveness to develop cutting-edge programs that meet the changing needs of students and industry, while contributing to the economic, civic and cultural vitality of the region, the Commonwealth, the nation, and the international community.
- A comprehensive range of programs and services recognized for excellence by leaders of business, industry, and government, and by educators in K-12 education and four-year colleges and universities.

ACCREDITATION AND GOVERNING BOARD

Tidewater Community College is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award the associate degree. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of Tidewater Community College.
The State Board for Community Colleges governs TCC, a member institution of the Virginia Community College System. The State Board approves the college's associate degrees and certificates. The Tidewater Community College Board approves the college's career studies certificates.

Certain curricula of the college are accredited or certified by specialized accrediting or certifying organizations. They include the following:

**The Automotive Technology program:** certified by the National Automotive Technicians Education Foundation (NATEF) under the Automotive Technician Training Accreditation Program at the Master Automobile Service Technician (MAST) level (general automotive, Mopar CAP, Honda PACT, Toyota T-TEN).

**The Diesel Technology program:** certified by the National Automotive Technicians Education Foundation (NATEF) under the Medium/Heavy Truck Technician Training Accreditation Program.

**The Culinary Arts program:** accredited by the American Culinary Federation Education Foundation Accrediting Commission.

**The Funeral Service Program:** accredited by the Committee on Accreditation for the American Board of Funeral Service Education.

**The Health Science programs:** accredited by the Accreditation Council for Occupational Therapy Education, the Commission on Accreditation for Health Informatics and Information Management Education, the Commission on Accreditation in Physical Therapy Education, the Joint Review Committee on Education in Diagnostic Medical Sonography, the Joint Review Committee on Education in Radiologic Technology, the Commission on Accreditation for Respiratory Care, the Accreditation Commission for Education in Nursing, the Virginia Board of Nursing, the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions, and the National Accrediting Agency for Clinical Laboratory Sciences.

**The Veterinary Assistant program:** approved by the National Association of Veterinarian Technicians in America.

### COLLEGE GOVERNANCE

The collegial governance of Tidewater Community College is founded on the belief that the internal constituencies of the institution—administration, faculty, classified employees, and students—are to be genuinely represented and have a meaningful voice in the decisions affecting the operation, policy development, and strategic planning of the college. The purpose of the TCC governance structure is to define the roles that board members, administrators, faculty, classified staff, and students should play in shared responsibility and cooperative action. The design of the governance system adheres to two basic operating principles—that people's time is a precious commodity that should not be wasted, and that people do their best work when there is a high expectation that their work will matter.

Mutual trust, good faith, support, and commitment to the institution and its students are essential to the success of shared governance. Because shared governance is intended to serve the entire college, it is incumbent upon all constituent groups, committees, and task forces to ensure that representation from all areas of the college is fair, timely, and inclusive.

For further information on college governance, visit the college website at [web.tcc.edu/welcome/collegeadmin/oie/ge/gainfulemployment.htm](http://web.tcc.edu/welcome/collegeadmin/oie/ge/gainfulemployment.htm).

### COMMITMENT TO DIVERSITY AND INCLUSION

Tidewater Community College is dedicated to cultivating and sustaining a diverse and inclusive environment that embraces all identities, perspectives, expression of ideas, and backgrounds. The entire college community benefits from experiences that foster mutual respect, celebrate differences, and value commonalities.

**TIDWATER COMMUNITY COLLEGE EDUCATIONAL FOUNDATION, INC.**

Established in 1981, the Tidewater Community College Educational Foundation is a non-profit organization that helps eliminate financial barriers to attending TCC. Donations to the Educational Foundation provide and enhance educational opportunities for thousands of students at TCC. To learn more about the TCC Educational Foundation please visit [advancement.tcc.edu](http://advancement.tcc.edu).

### TIDWATER COMMUNITY COLLEGE ALUMNI COUNCIL

The TCC Alumni Council provides a lifelong connection to the College for graduates and former students who advanced their education and careers at TCC. TCC Alumni Council members enhance the student experience by contributing their time, talent and treasure to TCC. To learn more about the TCC Alumni Council please visit [tccalumni.org](http://tccalumni.org).

### VIRGINIA TIDEWATER CONSORTIUM

Tidewater Community College is a member of the Virginia Tidewater Consortium for Higher Education. For further information, contact Enrollment Services or visit [vtcc.edu](http://vtcc.edu).

### PROGRAMS

As a comprehensive institution of higher education, Tidewater Community College offers transfer and career/technical programs generally extending no longer than two years beyond the high school level.

### CAREER AND TECHNICAL EDUCATION DEGREES AND CERTIFICATES

Career and technical education degree, certificate, and career studies certificate programs prepare students for employment. These programs are designed to meet regional demand for technicians, paraprofessionals, skilled craft workers, and specialized office workers in industry, business, government, and other professional fields. These programs normally require two years or less of training beyond high school to prepare students for success in meeting the demands in agriculture, business, engineering, health and medicine, industry, service, and other technical and occupational fields. Students may access gainful employment consumer information for each certificate and career studies certificate program offered by the college at [web.tcc.edu/welcome/collegeadmin/oie/ge/gainfulemployment.htm](http://web.tcc.edu/welcome/collegeadmin/oie/ge/gainfulemployment.htm).

Associate of Applied Arts degrees (A.A.A.) and Associate of Applied Science degrees (A.A.S.) are awarded to students majoring in one of the curricula with an emphasis on career and technical coursework. Students pursuing these degrees may plan to seek full-time employment immediately upon graduation from college.

Certificates are awarded to students who complete career and technical education curricula consisting of a minimum of 30 semester credit hours in occupational areas.

Career Studies Certificates are awarded to students who complete career and technical education curricula consisting of 9-29 semester credit hours in occupational areas.

### COLLEGE TRANSFER DEGREES

The college transfer degrees include first-year and second-year courses in arts and sciences and pre-professional programs designed to meet standards acceptable for transfer to baccalaureate (four-year) degree programs. TCC transfer courses are designed to be equivalent to those offered at four-year institutions to ensure maximum transferability.

Associate of Arts degrees (A.A.) are awarded to students majoring in liberal arts who may plan to transfer to a four-year college or university after completing their community college program.

Associate of Science degrees (A.S.) are awarded to students majoring in specialized pre-professional programs or programs with a heavy emphasis on general education coursework who may plan to transfer to a four-year college or university after completing their community college program.

Associate of Fine Arts degrees (A.F.A.) are awarded to students majoring in fine or performing arts programs. A.F.A. degrees are designed for students planning to transfer to a four-year college or university. However, fine and performing arts courses may be reviewed on a case-by-case basis, and students may need additional courses to fulfill lower-level general education requirements at a four-year college or university.

The Certificate in General Education program offers students an opportunity to combine courses to meet a subset of lower-level general education requirements needed at a four-year college or university.
This program is not intended to meet all lower-level general education requirements and federal financial aid cannot be used for this program.

STATE POLICY ON TRANSFER
In 1991, the State Council of Higher Education for Virginia (Schev) and the Virginia Community College System (VCCS) adopted the State Policy on Transfer to ensure transferability of the Associate of Arts, the Associate of Science, and the Associate of Fine Arts degrees from community colleges. Graduates of TCC’s A.A. and A.S. degrees who are accepted into baccalaureate degree programs can expect to be classified as juniors and to have met lower-level general education requirements at public four-year colleges and universities in Virginia. Details on the state transfer policy are available at schev.edu.

GUARANTEED ADMISSION AND ARTICULATION AGREEMENTS
Tidewater Community College works with baccalaureate degree granting institutions to develop articulation agreements to assist TCC students in their transfer. The VCCS also negotiates guaranteed admission agreements (GAA) with four-year institutions. These agreements guarantee admission to qualified students enrolled in any community college in the VCCS.

GAA and articulation agreements apply only to graduates of the degrees designated in the agreements. Students interested in transferring to a four-year institution prior to completing associate degrees must apply through the transfer institution’s competitive admissions process, and transferability of course work will be evaluated on a course-by-course basis.

To review these agreements, visit TCC’s website at tcc.edu, search keywords: articulation agreement. Additionally, students are advised to consult frequently with advisors or counselors for the most accurate information on transfer and articulation.

TWO-YEAR COLLEGE TRANSFER GRANT
The Two-Year College Transfer Grant Program (CTG) was enacted into law in Virginia in 2007. Under this program, qualified students who complete their associate degrees at Virginia two-year public colleges and then transfer to participating Virginia four-year colleges or universities may receive the CTG award.

For more information, go to schev.edu (click on Financial Aid) or the Financial Aid office at your intended four-year transfer institution.

INTERNATIONAL STUDY ABROAD
The International Programs Office coordinates a number of activities that both enhance curriculum and prepare students for a culturally diverse, technologically engaged, and interdependent world. In addition, students have a variety of opportunities during the summer or semester break to study abroad. Additional information is available at tcc.edu, search keywords: study abroad.

DEVELOPMENTAL STUDIES
Developmental courses prepare students for admission to the college’s various programs by helping them develop the basic skills and understanding necessary to succeed in college-level courses. Placement testing determines whether students are required to enroll in developmental courses.

ENGLISH AS A SECOND LANGUAGE (ESL)
TCC offers remedial ESL courses to prepare students for college-level courses. ESL consists of four levels: Intermediate I and II, Advanced, and Bridge.

CONTINUING EDUCATION
Continuing Education programs make lifelong learning possible for residents of the college’s service area. These programs include credit and non-credit courses and are offered during day, evening, and weekend hours. For additional information, go to workforce.tcc.edu.

WORKFORCE SOLUTIONS
Tidewater Community College offers training programs and courses for business, industry, and government clients to ensure their employees have the right knowledge and skills for optimum job performance. TCC’s workforce development programs assist businesses in retaining valuable associates by offering courses at the college’s or client’s on-site location. In addition, the college’s business, industry and government training centers offer customized training, as well as traditional credit courses, certification programs, collaboration services, teleconferencing, and other business-essential services. Call (757) 822-1234 for additional information.

REGISTERED APPRENTICESHIP PROGRAMS THROUGH TCC
TCC is a provider of Apprenticeship Related Instruction (ARI) for students participating in employer-sponsored registered apprenticeship programs. Sponsored programs can range in length from three to five years. In addition to TCC’s long-standing program with the Norfolk Naval Shipyard, TCC’s Apprenticeship Coordinator works with more than 50 sponsors to develop current programs and monitor course offerings and student progress. After completing ARI course work through TCC and on-the-job training provided by the registered employer/sponsor, the apprentice is awarded the journeyman certificate by the Virginia Department of Labor and Industry. For additional information about specific application periods and the programs and types of courses offered through TCC, call (757) 822-1122 or contact the apprenticeship office at (757) 822-1172.

ADMISSION TO THE COLLEGE

GENERAL ADMISSION
Individuals are eligible for admission to Tidewater Community College if they are high school graduates or the equivalent, or if they are 18 years of age or older and are able to benefit academically from study at the college, as demonstrated by assessment in reading, writing, and mathematics. Applicants 18 years of age or older who have not earned a high school diploma or GED, or who received a “Special Diploma,” “Certificate of Program Completion,” or Applied Studies Diploma (formerly “Special Diploma”) from a Virginia public high school, may be admitted if they meet minimum assessment scores in reading, writing, and mathematics. Minimum scores are accessible from the college’s website at schev.edu. Individuals may submit applications in person, by mail, or online at tcc.edu. TCC advises all prospective students to consult with counselors or academic advisors to discuss their educational interests and the requirements for admission to specific curricula. Applicants may be admitted as curricular or non-curricular students.

By submitting an application to the college, an applicant makes a voluntary decision to participate in a collegiate experience and abide by the policies, rules, and regulations of TCC and the State Board for Community Colleges. In granting admission to an applicant, the college extends the privilege of joining the college community. Students may remain a part of that community as long as the required academic and behavior standards of the college and the VCCS are met.

Tidewater Community College does not discriminate on the basis of race, sex, color, national origin, religion, sexual orientation, gender identity, age, veteran status, political affiliation, genetics, or disability in its programs or activities. Inquiries related to the college’s nondiscrimination policies may be directed to the Director of Human Resources, Post Office Box 9000, Norfolk, VA 23509-9000, 757-822-1708.
CURRICULAR ADMISSION
Students accepted for general admission who have been admitted to one of the college’s academic programs are considered curricular students. Curricular students may be either full-time or part-time students.

Upon admission, all curricular students:
- must take placement tests and meet with counselors or academic advisors for interpretation of the test results. Curricular students who score below college level must enroll in appropriate developmental courses and may enroll only in those college credit courses for which they meet developmental prerequisites. Note: Students may submit SAT, ACT or GED results, or a high school transcript, to determine if their score or performance meets the minimum determined as acceptable to waive placement testing. Minimum scores and performance standards that may qualify a student for exemption are at tcc.edu, search keywords: placement testing.

AND
- must submit official transcripts from all colleges and universities attended. Graduates who complete secondary school in a home school setting must provide a graduation date and may be required to provide documentation of coursework. (Note: The VCCS Student Information System academic records are sufficient for students transferring coursework within the VCCS.)

AND
- may be required to submit additional information with the application to determine admission eligibility or admission to specific curricula.

ADMISSION TO SPECIFIC CURRICULA
Some curricula may specify admission requirements in addition to the college’s general admission requirements. Students who do not meet all program admission requirements may be able to make up deficiencies by successfully completing prescribed developmental courses or other course prerequisites. TCC advises all students to consult with counselors or academic advisors to discuss their educational interests and the requirements for admission to specific curricula.

Admission to the college does not guarantee admission to credit programs with restricted enrollments or competitive admissions requirements. Information on restricted admissions programs is available elsewhere in this catalog, from campus division offices, and at tcc.edu/policies.

ADMISSION PRIORITIES
When enrollments must be limited for any curriculum, priority shall be given to all qualified applicants who are residents of the political subdivisions supporting the college and to Virginia residents not having access to the curriculum at their local community college, provided such students meet required prerequisites and apply for admission to the program prior to registration or by a deadline established by the college. In addition, residents of localities with which the college has clinical-site or other agreements may receive equal consideration for admission.

CURRICULUM CHANGES
To change curricula, students should consult with counselors or academic advisors to discuss academic requirements and to make sure that all prerequisites for admission to the new curricula have been met (if applicable). Students must complete Curricula Change Forms, available from Advising and Counseling, on any campus or online using the e-advising service. Students certified for veteran’s benefits must notify the Veterans Affairs Office of the change at their campus of record. Students receiving financial aid should consult with a financial aid staff member to discuss curricula changes and the impacts on aid eligibility.

NON-CURRICULAR ADMISSION
Non-curricular students are those who have not requested formal admission to curricula or who do not meet requirements for curricular status. Non-curricular applicants may be required to complete placement testing. There are numerous reasons to apply for non-curricular status, including the following:
- upgrade skills for a current job;
- develop skills for a new job;
- explore a new career;
- take classes at TCC while maintaining primary enrollment at another college or university;
- take classes at TCC to transfer to another college or university without completing graduation requirements for a TCC degree;
- take college-level classes at a high school student;
- enroll with special approval (usually for one semester) to meet general or specific admission requirements as stated in the TCC catalog; and
- enroll in classes while waiting for admission to a program with restricted enrollment or competitive admissions and procedures.

NON-IMMIGRANT ALIENS
TCC is authorized under Federal Law to enroll non-immigrant alien students.

APPLICANTS WITH DISABILITIES
Applicants with disabilities are not required to identify themselves. However, students wishing to request special assistance or academic accommodations because of disabilities or chronic health problems should contact Educational Accessibility at their campus of record 30 days prior to the first day of classes. Students seeking accommodations or program modifications must provide completed documentation of the disability in the form of a report or a letter from a doctor containing detailed information about the disability.

INTERNATIONAL STUDENTS
In addition to the general admission requirements of the college, all international applicants pursuant to F-1 status must meet the admission requirements established by the International Student Services (ISS) office before enrolling at the college. Applicants who have already acquired F-1 status and who are enrolled full-time at other SEVIS approved institutions may be eligible for admission to TCC as transfer students. Contact the ISS office at the Virginia Beach Campus at (757) 822-7342 or visit the ISS website at tcc.edu/student-services/personal-support/international-students for specific application deadlines and admission procedures to the college pursuant to F-1 status. Applicants in non-immigrant classes other than F-1 are required to meet with the international student advisor to determine admission eligibility and/or limitations.

TRANSFER APPLICANTS
Transfer students who are eligible for re-entrance at the last college of attendance are also eligible for admission to the community college. Transfer students who are ineligible to return to a particular curriculum in a previous college generally may not be allowed to enroll in the same curriculum in TCC until one semester elapses or until an approved preparatory program at the college is completed. The college shall decide on each case and can impose special conditions for the admittance of such students.

SENIOR CITIZENS HIGHER EDUCATION ACT
Any person 60 years or older who has been domiciled in Virginia for a minimum of one year and whose Virginia taxable income is not more than $23,850 qualifies for free tuition benefits for credit classes on a space available basis. Anyone 60 years or older, regardless of income level, who has been domiciled in Virginia for a minimum of one year qualifies for free tuition to audit credit classes or non-credit classes on a space available basis. For further information, contact Enrollment Services on any campus about credit classes, and contact Workforce Development for non-credit classes.

ADMISSION FOR HIGH SCHOOL AND HOME SCHOOL STUDENTS
High school juniors and seniors and home school students studying at the high school junior or senior levels who meet requirements for participation in the college’s dual enrollment programs may be admitted
according to the Virginia Plan for Dual Enrollment and Virginia Community College System policy. Although high school and home school students are not normally qualified for general admission, the college may offer admission to those students who meet additional criteria and demonstrate readiness for college. Home school students must provide a copy of a home school agreement approved by the school district or a letter from the local school board, or a copy of the letter filed by the parent/legal guardian declaring home school status. Documentation of parental permission is required for all dual enrollment students.

Because admitting high school freshmen and sophomores is considered exceptional, the college-ready status of each prospective freshman and sophomore student will be treated on a case-by-case basis and formal approval by the college president is required for admission.

All students admitted under this section must demonstrate readiness for college, as determined by placement testing or acceptable scores on standardized examinations recognized by the college. Eligibility for continued enrollment will be reviewed each term.

Family Educational Rights and Privacy Act (FERPA) regulations may be discussed with applicants and parents to clarify disclosure regulations concerning personally identifiable information.

For additional information regarding admission of high school or home school students, visit tcc.edu/students/admissions/adm_special.htm.

ADMISSION REFUSAL OR REVOCATION
The college reserves the right to evaluate and document special cases and to refuse or revoke admission if the college determines that applicants or students pose threats, are potential dangers, are significantly disruptive to the college community, or if such refusals or revocations are considered to be in the best interest of the college. The college also reserves the right to refuse admission to applicants who have been expelled or suspended from, or determined to be threats, potential dangers, or significantly disruptive by other colleges.

REAPPLICATION
Students who have interrupted their enrollment at the college for more than three years must reapply by submitting updated Applications for Admission online or to campus Enrollment Services.

CLASSIFICATION OF STUDENTS

CURRICULAR
Curricular students are either full-time or part-time students working toward completion of certificates or associate degrees at the college.

NON-CURRICULAR
Non-curricular students have not requested admission to certificate or associate degree programs or do not meet requirements for curricular status.

FULL-TIME
Full-time students enroll in 12 or more credit hours of coursework in a semester or summer session.

PART-TIME
Part-time students enroll in fewer than 12 credit hours during a semester or summer session.

ACADEMIC LOAD
The minimum full-time academic load is 12 credit hours. The maximum load, without special permission, is 18 credit hours.

STUDENT LEVEL
Students are classified as freshmen until they have completed 30 credits of coursework. Students are classified as sophomores after completing 30 credits of coursework.

CAMPUS OF RECORD
Applicants must select a campus of record—Chesapeake, Norfolk, Portsmouth, or Virginia Beach—when applying for admission. Students may take classes and perform many administrative functions at any of TCC’s four campuses, but students’ records will be maintained at the designated campus of record. Except for students accepted into special admission programs (i.e., Federal Work Study, Health Professions, Trucking, and Veterans Affairs) or in situations deemed necessary by the campus Dean of Student Services, students shall not change their campus of record.

PLACEMENT TESTING
Placement Tests are given to evaluate students’ reading, writing, and mathematics skills. Test results are used to assist students in identifying academic strengths and recognizing specific skills that need further development.

The following students are typically required to take the Placement Test:
- New students entering associate degree or certificate programs
- New students planning to take English, math, or courses with English or math requisites
- Students who do not meet the General Admission requirements

Select students are not required to take the Placement Test. Visit the college website at tcc.edu, search keywords: Placement Test.

ENGLISH AS A SECOND LANGUAGE PLACEMENT TESTING
Most non-native English speaking students are required to take the English as a Second Language (ESL) Placement Test which includes assessment in reading, listening, and writing. Enrollment in ESL courses indicated by Placement Test scores is required prior to enrolling in college courses. Students must successfully complete all of the required ESL courses before enrolling in other English courses and most other courses. Students who do not meet minimum scores may not enroll at TCC. These students shall be referred to ESL programs within the community. Upon successful completion, these students can retest for TCC enrollment.

Select non-native English speakers are not required to take the ESL Placement Test and, instead, may take the placement test for native speakers. For more information on ESL Placement Test exemption requirements, visit the college website at tcc.edu, search keywords: ESL Placement Test.

REQUIRED ENROLLMENT IN DEVELOPMENTAL COURSES
Admitted students who score below college level on the English Placement Test must enroll in developmental courses and complete them successfully before enrolling in other English or history courses, or courses that require competency in college-level English.

Admitted students who score below college level on the mathematics Placement Test must enroll in developmental courses and complete them successfully before enrolling in other mathematics courses.

Admitted students whose ESL Placement Test results indicate the need for ESL instruction must successfully complete the prescribed ESL courses before enrolling in non-ESL courses.

The college reserves the right to withdraw students from classes for which students did not complete the appropriate prerequisites.

ABILITY TO BENEFIT
New students who first enrolled in a curriculum on or after July 1, 2012, and who do not have a high school diploma, GED, or who have not completed a secondary school education in a home-school setting, no longer have the option to demonstrate ability to benefit through placement testing to be eligible for Federal Student Aid. These students are not eligible to receive financial aid from Federal Student Aid programs including the Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Federal Work Study, Federal Direct Loans, and other programs classified as Title IV.

ORIENTATION
Orientation supports student success by facilitating the transition of new students into the college. All new students should attend an orientation session after taking the Placement Test. For more information and to make orientation reservations, visit TCC’s website at tcc.edu, search keyword: orientation.
GENERAL INFORMATION

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GENERAL EDUCATION GOALS AND STUDENT LEARNING OUTCOMES

General education is that portion of the collegiate experience that addresses the knowledge, skills, attitudes, and values characteristic of educated persons. It is unbound by disciplines and honors the connections among bodies of knowledge. TCC degree graduates will demonstrate competency in the following general education areas:

COMMUNICATION

A competent communicator can interact with others using all forms of communication, resulting in understanding and being understood. Degree graduates will demonstrate the ability to:

- understand and interpret complex materials;
- assimilate, organize, develop, and present an idea formally and informally;
- use Standard English;
- use appropriate verbal and non-verbal responses in interpersonal relations and group discussions;
- use listening skills; and
- recognize the role of culture in communication.

CRITICAL THINKING

A competent critical thinker evaluates evidence carefully and applies reasoning to decide what to believe and how to act. Degree graduates will demonstrate the ability to:

- discriminate among degrees of credibility, accuracy, and reliability of inferences drawn from given data;
- recognize parallels, assumptions, or presuppositions in any given source of information;
- evaluate the strengths and relevance of arguments on a particular question or issue;
- weigh evidence and decide if generalizations or conclusions based on the given data are warranted;
- determine whether certain conclusions or consequences are supported by the information provided; and
- use problem solving skills.

CULTURAL AND SOCIAL UNDERSTANDING

A culturally and socially competent person possesses an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities. Degree graduates will demonstrate the ability to:

- assess the impact that social institutions have on individuals and culture—past, present, and future;
- describe their own as well as others’ personal ethical systems and values within social institutions;
- recognize the impact that arts and humanities have upon individuals and cultures;
- recognize the role of language in social and cultural contexts; and
- recognize the interdependence of distinctive world-wide social, economic, geopolitical, and cultural systems.

INFORMATION LITERACY

A person who is competent in information literacy recognizes when information is needed and has the ability to locate, evaluate, and use it effectively. Degree graduates will demonstrate the ability to:

- determine the nature and extent of the information needed;
- access needed information effectively and efficiently;
- evaluate information and its sources critically and incorporate selected information into his or her knowledge base;
- use information effectively, individually, or as a member of a group to accomplish a specific purpose; and
- understand many of the economic, legal, and social issues surrounding the use of information and access and use information ethically and legally.

PERSONAL DEVELOPMENT

An individual engaged in personal development strives for physical and/or emotional well-being. Degree graduates will demonstrate the ability to:

- develop and/or refine personal wellness goals; and
- develop and/or enhance the knowledge, skills, and understanding to make informed academic, social, personal, career, and interpersonal decisions.

QUANTITATIVE REASONING

A person who is competent in quantitative reasoning possesses the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with common problems and issues. A person who is quantitatively literate can use numerical, geometric, and measurement data and concepts, mathematical skills, and principles of mathematical reasoning to draw logical conclusions and to make well-reasoned decisions. Degree graduates will demonstrate the ability to:

- use logical and mathematical reasoning within the context of various disciplines;
- interpret and use mathematical formulas;
- interpret mathematical models such as graphs, tables and schematics, and draw inferences from them;
- use graphical, symbolic, and numerical methods to analyze, organize, and interpret data;
- estimate and consider answers to mathematical problems in order to determine reasonableness; and
- represent mathematical information numerically, symbolically, and visually, using graphs and charts.

SCIENTIFIC REASONING

A person who is competent in scientific reasoning adheres to a self-correcting system of inquiry (the scientific method) and relies on empirical evidence to describe, understand, predict, and control natural phenomena. Degree graduates will demonstrate the ability to:

- generate an empirically evidenced and logical argument;
- distinguish a scientific argument from a non-scientific argument;
- reason by deduction, induction, and analogy;
- distinguish between causal and correlational relationships; and
- recognize methods of inquiry that lead to scientific knowledge.

CREDIT FOR OTHER EDUCATION AND EXPERIENCE

TRANSMITTING FROM OTHER COLLEGES

Normally, transfer students who are eligible for re-entrance at the last college they attended are also eligible for admission to Tidewater Community College. Students who are not eligible to return to a previous college may not be permitted to enroll at TCC.

Currently enrolled curricular students may request a transcript evaluation for the purpose of receiving transfer credit for course work completed elsewhere. Credit is awarded based on students’ curricula and enrollment status. Grades and grade point averages do not transfer to TCC, and students must earn a C or higher in courses for possible transfer. Students requesting an evaluation of previous coursework for credit must have official transcripts, with appropriate college seals and authentication, sent directly from each institution attended to:

TCC Office of the College Registrar
P. O. Box 9000
Norfolk, VA 23509-9000

Students must also submit an online Request for Evaluation of Educational Experience form at tcc.edu, search keywords: evaluation request. For more information, contact the Office of the College Registrar or visit TCC’s website at tcc.edu, search keywords: transfer credit.

Credit awarded for one curriculum may not apply to a new curriculum, and a re-evaluation of transfer credits may be necessary. Students seeking a re-evaluation of credits after officially changing their curricula may do so by completing a new online Request for Evaluation form.
TRANSCRIPTS FROM INSTITUTIONS OUTSIDE THE U.S.
Transfer credit may be awarded for course work completed at international colleges and universities that are accredited or approved by the appropriate Ministry of Education or other governmental agency. Course work must be evaluated by one of the professional organizations or agencies approved by the Virginia Department of Education and listed as a member of the National Association of Credential Evaluators.

For additional information, visit TCC’s website at tcc.edu, search keywords: foreign transcript.

TRANSFER CREDIT APPEALS PROCEDURE
The Office of the College Registrar notifies students via their VCCS student email accounts when the evaluation of transfer credits is completed. Students may appeal decisions regarding the transferability of specific courses or the applicability of specific courses to requirements in the curriculum. To initiate appeals, students should direct a letter along with supporting documentation to the dean or director whose division offers the course within 15 business days of official notification of transcript evaluation results. Specific information on the transferability of credit and procedures for appealing transfer credit decisions is available from Advising and Counseling or on the TCC website at tcc.edu, search keywords: transfer appeal.

ADVANCED STANDING CREDIT
TCC awards credit for many standardized examinations, training provided by non-collegiate institutions, such as armed forces and service schools, professional certifications, and experiential learning. Advanced Standing credit is awarded as determined by qualified faculty members at the college and according to procedures and standards approved by those qualified faculty ensuring that assessment procedures are appropriate for the credit awarded. Credit is awarded only as required by a student’s curriculum.

Advanced Standing credit may only be awarded to matriculated students who are in “active attendance” at the college. A student in “active attendance” is defined as one who has completed or is enrolled in one or more credit hours at the college after the current semester’s regular deadline for dropping a course with a tuition refund. Advanced standing credit shall not be awarded for a previously enrolled course.

TCC awards Advanced Standing credit applicable to a student’s program of study. Regardless of the credit hours earned through Advanced Standing, the student must meet the residency requirements for the selected program of study, which means that a minimum of 25% of the total number of credits for any degree or certificate must be earned at TCC.

When credit is awarded for Advanced Standing, student records shall reflect Advanced Standing credit and the applicable source. When credit is awarded for Advanced Standing, no letter grade is assigned on the student’s transcript; and hours earned from credit are not used in computing the grade point average.

Credits earned through Advanced Standing are not counted as part of the student’s academic load when full-time or part-time status is reported to the Financial Aid office or to an external party such as the Social Security Administration, an employer, health insurance carrier, the Immigration and Naturalization Service, or the Department of Veterans Affairs. The college awards credit applicable to a student’s program of study. Credits shall not be awarded for a previously enrolled course.

Credit by local examinations is a means of achieving academic credit for coursework through satisfactorily demonstrating subject-matter competency through an examination developed, administered, and evaluated by college faculty. Credit shall not be awarded for a course previously enrolled in, and examinations can only be attempted once. Local examinations are not appropriate for all courses and are developed by faculty with approval from an academic dean. Students must earn a “C” (70%) or better on the examination and obtain approval from the evaluating faculty member and academic dean to earn academic credit for the course.

CREDIT THROUGH TRAINING BY NON-COLLEGIATE INSTITUTIONS
The college awards credit for applicable armed service school experiences, non-collegiate institutions, and earned professional certifications and licensures. Where applicable, credit shall be awarded in accordance with The American Council on Education’s College Credit Recommendation Service (CREDIT), the ACE Guide to the Evaluation of Educational Experiences in the Armed Services, the National College Credit Recommendation Service (NCCRS), or other approved organizations.

Requests by students can be made to the discipline dean/director after consulting with a faculty member or program head. For more information, see TCC’s website at tcc.edu, search keyword: registrar.

CREDIT THROUGH EXPERIENTIAL LEARNING
Experiential Learning Credit is a means of achieving Advanced Standing credit through occupational experience determined by the college to be equivalent to the course(s) to be exempted. Students may obtain learning through work, volunteer activities, and participation in civic assignments; travel; independent study; and similar life experiences that are demonstrated through the submission of a portfolio that documents achievement of course learning outcomes.

A student seeking Experiential Learning Credit should consult a TCC academic dean to determine if portfolio credit is an appropriate option given curriculum and academic and professional goals.

Contact the appropriate campus dean or an academic advisor or counselor for more information or visit the college website at tcc.edu, search keywords: registrar.

SUBSTITUTION OR WAIVER OF CURRICULUM REQUIREMENTS
Students who want to substitute previously completed credit courses or to use documented knowledge and skills to waive courses required in their curricula may initiate the process by completing Petition for Course Substitution or Waiver forms, gathering documented evidence or justification in support of the requests, and consulting with counselors or academic advisors. Students seeking financial assistance for a TCC course substitution must have the substitution approved and processed prior to registering for the substitute course.

Substituted courses must cover the same content or otherwise meet the spirit of the courses being replaced. Course substitutions granted are curriculum specific and may not apply to other curricula. Waivers do not result in the awarding of credit, and students may be required to take additional credits to make up the credits. For additional information, visit TCC’s website at tcc.edu, search keyword: course substitution.

SERVICEMEMBERS OPPORTUNITY COLLEGES
Tidewater Community College is an institutional member of Servicemembers Opportunity Colleges Degree Network System (SOC DNS) and the SOC Career and Technical Education (CTE) certificate.
programs initiative. TCC is one of a small group of colleges and universities selected to provide education opportunities to Service Members around the world. The program establishes a student’s home college and academic program and helps assure the ease of transfer of course credits from other member institutions to apply toward degree completion, no matter where the Service Member may be assigned.

SOC Student Agreements for Army, Navy, Coast Guard, National Guard and Reservists can be issued once a student is enrolled in TCC classes and has completed the SOC application.

For more information or to request an official SOC evaluation, contact the Center for Military and Veterans Education (CMVE). eLearning students may contact CMVE advisors through dedicated toll free lines at 888-227-6289; or for international calls at 855-399-7480. Local students may contact the CMVE at the Virginia Beach Campus at 757-827-7777 or 757-627-6289. The CMVE SOC Coordinator may also be contacted directly via email at vbsoc@tcc.edu or, if Navy, at navy@tcc.edu.

REGISTRATION INFORMATION

ACADEMIC CALENDAR

The college produces an academic calendar that includes registration dates, class start dates, add/drop deadlines, tuition deadlines, and more. The academic calendar is maintained on the college’s website at tcc.edu. search keywords: academic calendar.

ENROLLMENT

To take courses at TCC, students may register in a variety of ways:

» Online, using the Student Information System (sis.tcc.edu/sis).
» On person at any campus or off-campus enrollment site, or
» By mail or fax, sending materials according to the instructions and deadlines listed on TCC’s website.

Currently enrolled students in good academic and financial standing at the college should consult counselors or academic advisors prior to the enrollment period to determine which classes to take.

Students with academic blocks on their records due to academic suspension or dismissal may not register until granted readmission.

Students with administrative blocks on their records—holds resulting from unpaid library charges, financial aid overpayments, or other student debts to the college—may not register until their balances are paid and their records are cleared.

Students are encouraged to enroll prior to the first day of classes. Students who add classes or register after the first day of classes are counted absent from class meetings missed as a result of late registration.

Complete enrollment procedures are outlined on the TCC’s website, and assistance is available on each campus in the Enrollment Services Office. For additional information, visit TCC’s website at tcc.edu. search keyword: enrollment.

COURSE REQUIREMENTS

Prerequisites are courses or other requirements that must be successfully completed prior to enrollment in other courses. Co-requisites are courses or other requirements that must be taken simultaneously with other courses, unless the co-requisites were completed previously.

Requirements are listed in the course description section of this catalog and the college’s curriculum portal (tcc.edu/curriculum). and may include developmental courses identified through placement testing. The college’s Student Information System (sis) block students from registering for courses if the prerequisites have not been met. Students who believe they have satisfied prerequisites, but are blocked from registering should consult counselors or academic advisors for assistance. The college reserves the right to withdraw students from courses in which they have enrolled without successfully completing the appropriate prerequisites.

ACADEMIC LOAD

The full-time course load is 12 to 18 credit hours. Students should consult counselors or academic advisors to plan academic loads that will be compatible with their work schedules, family responsibilities, health, and other obligations. As a rule, one credit hour of coursework requires at least two hours of study outside of class each week.

Students who wish to take more than 18 credit hours of course work in a session must obtain the approval of the campus dean of student services or designee.

Students who are on academic warning or academic probation should meet with counselors or academic advisors and may be required to take reduced course loads for the next semester.

MINIMUM ENROLLMENT REQUIREMENT

Each course is offered on the condition of adequate enrollment. The college reserves the right to cancel or discontinue any course offered, either because of inadequate enrollment or for any other reason deemed appropriate by the college.

AUDITING COURSES

To audit courses (attend classes without taking examinations or receiving credits), students must obtain permission from the appropriate academic deans or designees on the campuses where the courses are taught. Students must then register and pay full tuition.

To change the status of courses from audit to credit, or from credit to audit, students must complete the changes by the deadline to add courses during the term’s regular session (i.e. 16-week sessions in the fall and spring semesters and 10-week session during the summer term).

Audited courses do not carry credits and are not counted as part of the academic load when full-time or part-time status is reported to the Financial Aid Office or to external parties such as the Social Security Administration, an employer, health insurance carrier, the Immigration and Naturalization Service, or the Department of Veterans Affairs. Advanced standing credit will not be awarded for audited courses.

CHANGE OF REGISTRATION

Students must follow established procedures for making any changes to their course schedules or curricula. Changes are not official until students complete all required procedures online, in person, or by providing written permission to a representative authorized to act on their behalves. To prevent problems with permanent college records, financial aid status, or veterans’ benefits, students are encouraged to consult counselors or academic advisors before making changes to their enrollment.

TYPES OF CHANGES

The deadlines for adding and dropping courses and withdrawing without academic penalty from regular session courses are published every semester in the college’s academic calendar. Adding means enrolling in new courses during the published add/ drop period. Students may need special permission from provosts or designees to add courses after the first class meetings.

Dropping means officially cancelling registration for courses on or before the last drop date and allows for tuition refunds. Enrollment in dropped courses will not appear on academic records, and students will not receive grades for the dropped courses.

Contact Enrollment Services for the last date to withdraw from dynamic courses (courses which are shorter than the 16-week session during fall and spring or the 10-week session in the summer).

COURSE WITHDRAWAL

Withdrawing from courses means students officially leave courses after the refund period. Students may withdraw from courses without academic penalty after the last day to drop for tuition refunds and during the first 60 percent of a session and receive grades of W (withdrawal). This grade will be reflected on students’ permanent records. The last day to withdraw without academic penalty is published in TCC’s academic calendar. Dynamic session classes have unique withdrawal dates. Contact Enrollment Services for the last day to withdraw. After the last day to withdraw without academic penalty, students will receive failing grades of F or U if they withdraw or are administratively withdrawn from courses. The college reserves the right to withdraw students for just cause.
Exceptions to this policy may be made if all of the following conditions are met:

- Instructors initiate withdrawals approved by academic deans.
- Students are able to document mitigating circumstances.
- Students were making satisfactory progress in the courses.

Students should not stop attending college without officially withdrawing from all classes. Failure to properly withdraw from the college may result in the assignment of F or U grades to the permanent records. Students should meet with counselors or academic advisors to consider options before withdrawing from courses.

**EFFECTIVE DATE OF OFFICIAL COLLEGE AND COURSE WITHDRAWAL**

When students withdraw from classes or from the college, the official withdrawal date is the date on which the request is processed by the college, not the date of the last class attended or last date of participation for online courses, unless the two dates are the same. If students are administratively withdrawn from courses, the official withdrawal date is the last day the students attended or participated in class, as reported by the instructors.

**TUITION AND FEES**

Tuition and fee rates may be viewed on the college website at tcc.edu, search keyword: tuition.

*ACADEMIC REGULATIONS*

**COURSE CREDITS**

The semester hour credit for each course is listed in the course description of this catalog.

Each semester hour of credit given for a course is based on one academic hour (50 minutes) of formalized, structured instructional time per week for 15 weeks. This totals 750 minutes of instruction. In addition, each course requires an examination/evaluation period. Courses may consist of lectures, out-of-class study, online study, laboratory and/or shop study, or combinations thereof, with credit awarded as follows:

- **Lecture:** One academic hour of lecture (including lecture, seminar, discussion or other similar activities) per week for 15 weeks, plus the examination/evaluation period equals one collegiate semester-hour credit.
- **Laboratory:** Two to five academic hours (depending on the discipline) of laboratory, clinical training, supervised work experience, coordinated internship, or other similar activities per week for 15 weeks, plus the examination/evaluation period equals one collegiate semester-hour credit.
- **Asyncynchronous eLearning Courses:** Traditional contact hours combined with learning activities in which students and faculty are separated by time and place; content is equivalent to that of traditional lecture/laboratory classes.

**COURSE NUMBERING**

Courses numbered less than 100 are not applicable toward associate degree programs. Some developmental courses, with the approval of the Vice President for Academic Affairs and Chief Academic Officer (or designee), may provide credit applicable to certificate programs. These courses may not qualify for federal financial aid.

Courses numbered 100 through 299 are freshman and sophomore courses typically applicable toward associate degree and certificate programs.

**GRADING SYSTEM**

The quality of performance in any academic course is reported by a letter grade, which the instructor is responsible for assigning.

The grades of A, B, C, D, P and S are passing grades. Grades of F and U are failing grades. R and I are interim grades. Grades of W and X are final grades carrying no credit.

- **P – PASS**
  No grade point credit. This grade applies only to non-developmental specialized courses and seminars approved by the appropriate academic dean. A maximum of seven semester credit hours with a P grade may be applied toward a degree or certificate.

- **S – SATISFACTORY**
  No grade point credit. The grade of S indicates satisfactory completion of course objectives in developmental studies and ESL courses.

- **U – UNSATISFACTORY**
  No grade point credit. The grade of U is assigned when the student has not made satisfactory progress in developmental studies, ESL courses, or courses taken on a Pass/Unsatisfactory basis.

- **R - RE-ENROLL**
  No grade point credit. The R grade may be used as a grade option, in developmental and ESL courses only, when the student has made satisfactory progress but has not completed all of the instructional objectives for developmental studies or ESL courses. Students must re-enroll in the course and pay the specified tuition to complete the course objectives.

- **W - WITHDRAWAL**
  No grade point credit. A grade of W is awarded to students who withdraw or are withdrawn from a course after the add/drop period but prior to the completion of 60 percent of the session. After that time, the student will receive a grade of F except under mitigating circumstances, which must be approved by the course instructor and the appropriate academic dean. A copy of the withdrawal form and supporting documentation will be placed in the student’s academic file.

- **X - AUDIT**
  No credit. Permission from the appropriate academic dean or designee is required to audit a course. Students must register through the usual registration process and pay the normal tuition. Audited courses do not count as part of a student’s course load. Students desiring to change status in a course from audit to credit or from credit to audit must do so within the add/drop period for the course. Students who desire to earn credit for a previously audited course must re-enroll in the course for credit and pay normal tuition to earn a grade other than X. Advanced standing credit shall not be awarded for a previously audited course.

- **I – INCOMPLETE**
  No credit. The grade of I is used only for verifiable unavoidable reasons that a student is unable to complete a course within the normal course time. To be eligible to receive an I grade, the student must (1) have satisfactorily completed more than 60% of the course requirements and attendance and (2) must request the faculty member to assign the I grade and indicate why it is warranted. The faculty member has the discretion to decide whether the I grade will be awarded. Since the “incomplete” extends the enrollment in the course, requirements for satisfactory completion shall be established through student/faculty consultation. In assigning the I grade, the faculty member must complete documentation that (1) states the reason for assigning the grade; (2) specifies the work to be completed and indicates its percentage in relation to the total work of the course; (3) specifies the date by which the work must be completed; and (4) identifies the default grade (B, C, D, F, P, R, or U) based upon course work already completed. Completion dates may not be set beyond the last day of the subsequent semester (to include summer session) without written approval of the campus provost. The student will be provided a copy of the documentation.

The instructor must submit a Grade Change form to change the I grade to the grade earned after course work is completed. If the work is not completed on time, another grade (B, C, D, F, P, R, or U) must be assigned based on the course work already completed. An I grade will be changed to a W only under documented mitigating circumstances, which must be approved by the campus provost. A copy of the withdrawal form and supporting documentation will be placed in the student’s academic file.
COMPUTING THE GRADE POINT AVERAGE (GPA)
To determine the GPA, multiply the number of credits for each class by the number of points awarded for the grade received and divide the total number of grade points earned by the number of credits attempted. Credits that do not generate grade points, such as credits for developmental courses, are not included in the calculation of credits attempted. Grades of P (pass), R (re-enroll), S (satisfactory), U (unsatisfactory), and W (withdrawal), I (incomplete), or X (audit) do not receive grade points.

SEMESTER GPA
To determine a semester GPA, divide the total number of grade points earned in all courses taken in a given semester by the total number of credits attempted for the semester.

CURRICULUM GPA
To determine a curriculum GPA, divide the total number of grade points earned in all courses applicable to the student’s curriculum by the total number of credits attempted in courses applicable to that curriculum.

CUMULATIVE GPA
To determine a cumulative grade point average, divide the total number of grade points earned in all courses by the total number of credits attempted.

See Repeated Course Policy below for information on calculating GPA for non-developmental courses taken more than once.

REPEATED COURSE POLICY
Beginning with the fall semester 1996, only the most recent attempt of a repeated course is used to calculate the cumulative GPA, and only credits earned in the most recent attempt are counted toward meeting curriculum requirements. Grades earned during previous attempts remain on the permanent records of students. Note: This policy applies only to courses first attempted in the summer 1988 or later, and does not affect GPA adjustments made for courses completed and repeated under the previous repeat policy (summer 1994 - summer 1996).

Some courses are exempt from consideration as repeats and an adjustment to GPA is not made. Exempted courses are those numbered in the 90s, 93s, 95s, 96s, 97s, 98s, and 99s; courses identified by the phrase “may be repeated for credit”; and selected other courses. Periodically, the VCCS will rename or renumber courses, but they remain equivalent to the courses as previously named or numbered. In such cases, completion of a renumbered/renamed course may be determined to be a repeat of a course completed previously under a different department and/or course number. These determinations are made on a college-wide basis, and exceptions cannot be made for individual students.

Implementation of this policy does not affect GPA calculations for prior terms or academic, financial, or administrative events that have occurred in the past. Direct any questions to the coordinator of Enrollment Services.

LIMIT ON REPEATING A COURSE
Students are limited to two attempts in the same credit or developmental course for the purpose of improving their grades. (Grades of A, B, C, D, F, I, P, R, S, U, X and W count as attempts.) The appropriate academic dean must approve exceptions to this policy. This limitation does not apply to certain courses identified as repeatable for credit.

The process for appealing final course grades is outlined in the Student Handbook.

EXAMINATIONS
Students are expected to take examinations as scheduled by their instructors. No exceptions will be made without permission of instructors and academic deans.

COURSE ATTENDANCE
Students should be present and on time for all scheduled class and laboratory meetings. Instructors do not have to admit students who arrive late. If students add classes or register after the first day of classes, the students are counted absent from all class meetings missed.

If students are absent more than 15 percent of scheduled instructional time, attendance may be defined as unsatisfactory. This calculation includes absences occurring during the add/drop period.

Instructors may establish more stringent attendance policies, and students are responsible for understanding the attendance requirements for each course in which they are enrolled.

When instructors determine student absences constitute unsatisfactory attendance, students may be withdrawn from courses. Students will receive W grades during the first 60 percent of courses. If students are withdrawn after 60 percent of courses, grades of F (or U in the case of developmental courses) will be assigned unless students can document mitigating circumstances. Students who are withdrawn from courses because of unsatisfactory attendance are not eligible for refunds of tuition and fees.

ACADEMIC STANDING
Students are considered to be “in good academic standing” if they maintain semester minimum GPAs of 2.00, are eligible to re-enroll at the college and are not on academic suspension or dismissal status.

ACADEMIC WARNING
Students who fail to attain minimum GPAs of 2.00 for any semester shall be placed on academic warning. Students on academic warning should consult with counselors or academic advisors and take advantage of academic support services provided by the college.

ACADEMIC PROBATION
Students who fail to maintain cumulative GPAs of 1.50 after attempting 12 or more semester credits shall be on academic probation until their cumulative averages are 1.75 or better.

The statement “Academic Probation” will appear on the students’ permanent records. Students on academic probation are ineligible for appointment or elective offices in student organizations unless special permission is granted by the campus Dean of Student Services. Students must consult counselors or academic advisors before registering and usually are required to carry reduced course loads the next semester.

Note: Although cumulative GPAs between 1.5 and 1.99 may not result in formal academic probation, students must earn a minimum of 2.0 in their curricula to receive associate degrees or certificates.

ACADEMIC SUSPENSION
Students on academic probation who fail to earn minimum semester GPAs of 1.50 shall be placed on suspension only after they have attempted 24 or more semester credits.

The statement “Academic Suspension” will appear on the students’ permanent records. Academic suspension shall be for one semester. Suspended students may appeal and be reinstated at the conclusion of the suspension period by submitting Applications for Readmission available online or from campus Enrollment Services. Readmission applications should be submitted to Advising and Counseling for review.

Following reinstatement after academic suspension, students must earn minimum 2.0 GPAs for the semester in which they return, and minimum GPAs of 1.75 in all subsequent semesters for which they are enrolled.

The statement “Subject to Dismissal” shall be placed on students’ permanent records. Students who have been reinstated from academic suspension will remain subject to dismissal until their cumulative GPAs are raised to a minimum of 1.75. Reinstated students may be required to carry reduced course loads the following semester and are required to consult with counselors or academic advisors.

ACADEMIC DISMISSAL
Students who do not attain at least 2.00 GPAs for the semester of reinstatement following academic suspension shall be academically dismissed. Students who achieve at least 2.00 GPAs for the semester of their reinstatement following academic suspension must earn at least 1.75 GPAs in all subsequent semesters of enrollment. Failure to attain 1.75 GPAs in each subsequent semester until the cumulative GPAs reach 1.75 shall result in academic dismissal.
The statement “Academic Dismissal” will appear on the permanent records of students. Academic dismissal is normally permanent. In exceptional circumstances, students may appeal and be reinstated by submitting Applications for Re-admission available online or from campus Enrollment Services. Readmission applications should be submitted to Advising and Counseling for review. Students who have been reinstated after academic dismissal will remain subject to dismissal until their cumulative GPAs are raised to a minimum of 1.75. Reinstated students may be required to carry reduced course loads the following semester and are required to consult with counselors or academic advisors.

» ACADEMIC RENEWAL POLICY

Students who return to the college after a separation of five years or more (i.e., 60 months or greater) may petition for academic renewal by submitting Academic Renewal Petition Forms to Enrollment Services.

If students meet eligibility requirements for academic renewal, D and F grades earned prior to re-enrollment are not calculated into the cumulative and curricular GPAs, subject to the following conditions:

Prior to petitioning for academic renewal, students must demonstrate renewed academic interest and effort by earning at least 2.5 GPAs in the first 12 semester hours completed after re-enrollment.

All grades received at the college will remain a part of the students’ permanent records.

- Students will receive degree credits only for courses in which grades of C or better were earned prior to academic renewal, providing that such courses meet current curricula requirements.
- Total hours for graduation will be based on all course work taken at the college after readmission, as well as former course work for which grades of C or better were earned and credits transferred from other colleges or universities.
- Students may use the academic renewal policy only once, and it cannot be revoked once approved. The notice “Academic Renewal has been granted” and the effective dates will appear on official transcripts.

» HONORS

PRESIDENT’S HONOR ROLL
Students who have earned a minimum of 20 hours of credit at the college will be included on the president’s honor roll for each semester that their cumulative grade point averages are 3.5 or higher.

DEAN’S LIST
Students who carry a minimum of 12 credit hours per semester will be included on the dean’s list for each semester in which they earn grade point averages of 3.2 or higher.

GRADUATION HONORS
Students who have fulfilled the requirements for AA, AS, AAA, AAS, and one-year certificate programs are eligible for graduation honors, based on the minimum cumulative grade point averages listed below. Honors are not awarded for career studies certificates.

- 3.2 Cum laude (with honor)
- 3.5 Magna cum laude (with high honor)
- 3.8 Summa cum laude (with highest honor)

GRADUATION REQUIREMENTS

Students are responsible for fulfilling all graduation requirements and meeting all conditions listed below:

- Fulfill all of the course and credit hour curricula requirements with a minimum of 25 percent of the credit hours earned in coursework taken at TCC;
- Earn GPAs of at least 2.0 in all studies that are applicable toward graduation in the curricula;
- Submit Applications for Graduation by the college’s published deadline. Applications are available online at tcc.edu, search keyword: graduation;
- Resolve all financial obligations to the college and return all learning resources and other college materials; and
- Be certified by appropriate college officials for graduation.

CATALOG DETERMINATION AND DEGREE DESIGNATION

The catalog year used to determine graduation requirements is the one in effect at the time students are admitted to the curricula from which they plan to graduate, provided the catalog is not more than six years old (including the year in which students plan to graduate). Students may choose to graduate under the requirements listed in any subsequent catalog as long as it is not more than six years old (including the year in which they plan to graduate).

Only degree titles appear on diplomas when awards are conferred. Degree majors and specializations, if any, appear on the students’ permanent records (transcripts). Multiple specializations within a degree appear on transcripts, provided students meet the additional requirements and apply to receive multiple specializations.

In awarding students additional degrees, certificates or career studies certificates, the college may grant credit for all completed, applicable courses which are requirements of the additional degrees, certificates, or career studies certificates. However, the awards must differ from one another by at least 25% of the credits.

STUDENT OUTCOMES ASSESSMENT REQUIREMENT

As a part of the college’s efforts to improve institutional effectiveness, students may be required to take tests or complete surveys designed to measure student learning in general education or selected majors prior to graduation. Work products submitted by students to fulfill course requirements may also be collected and evaluated. These assessment activities evaluate the college’s academic programs and general education requirements. Test results are confidential and aggregated across curricula. No minimum score or level of achievement is required for graduation.

COMMENCEMENT

The college holds commencement ceremonies for students who meet graduation requirements for degree and certificate programs. Attendance at a commencement ceremony is strongly encouraged.

» COLLEGE RECORDS POLICIES

STUDENT ADDRESS OF RECORD

The college sends official communications to the addresses students provide to campus Enrollment Services, or to student VCCS/TCC e-mail accounts. To make address changes, students must complete and submit Student Data Change forms to a campus Enrollment Services Office or may make the change through the college’s Student Information System (SiS).

FINAL GRADE REPORTS

Final grades for each semester or term become a part of students’ permanent records and are recorded on official transcripts. Grade reports are available to students via the college’s website (tcc.edu) through the Student Information System (SiS).

TRANSCRIPTS AND CERTIFICATIONS

Transcripts are copies of students’ permanent academic records. To receive personal copies of their transcripts or to send official copies of their transcripts elsewhere, students must submit requests online. Transcripts sent to educational institutions or agencies must be official and bear the college seal. Generally, transcripts given or mailed directly to students are not considered official. Students must settle all financial obligations with the college before transcripts will be released. Visit tcc.edu, search keyword: transcripts, for options for requesting official
transcripts or for instructions on printing an unofficial transcript from the Student Information System (SIS).

Certifications are letters or forms verifying student enrollment status for health and auto insurance companies, military IDs, scholarships, job applications, promotion packages, etc. These requests normally take seven to fourteen working days or longer to process during heavy registration periods or grade processing times. Students must settle all financial obligations with the college before certifications will be released. Contact the campus Enrollment Services Office to request certifications.

Students must present picture IDs to pick up transcripts or certifications. Third parties may pick up transcripts or certifications, but only if students have provided the college written permission, dated and signed by the students, to release documents to specific individuals. The specified individuals must present their picture IDs.

Contact campus Enrollment Services for information and assistance with transcripts and certifications.

**HOLD ON RECORDS**

Students whose records are put on hold will not be permitted to register, nor will the college issue transcripts, certificates, or degrees to students until all their financial obligations to the college have been settled.

**FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)**

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. TCC's policy governing student rights to access, challenge the accuracy of, or request release of the education record and grades is provided within the Student Handbook and on TCC's website at tcc.edu, search keyword: FERPA.

**STUDENT RECORDS RETENTION POLICY**

Transcripts are official documents of student academic history and are used for record reconciliation. All other student documents are subject to disposal by the college in accordance with state policy.

**WEAPONS AND FIREARMS**

Possession or carrying of any weapon by any person, except a lawenforcement officer, is prohibited on college property in academic buildings, administrative office buildings, student centers, child care centers, dining facilities, and places of like kind where people congregate, or while attending any sporting, entertainment or educational events.

Any individual in violation of this prohibition shall be directed to remove the weapon immediately. Failure to comply may result in a student conduct referral, an employee disciplinary action, or arrest.

These prohibitions shall not apply to current sworn and certified local, state and federal law-enforcement officers with proper identification. Additionally, the college has authorized the armed guards of the armored transport company that services the college’s business offices to carry their weapons while performing their contracted responsibilities.

The college’s Policy 1101 (Weapons) is available online at web.tcc.edu/policies/1000/1101Weapons.pdf.

> CURRICULAR REQUIREMENTS

**A.A./A.S./A.F.A. DEGREES**

In selecting courses, students are expected to follow curricula guides for their intended majors and specializations. Students who plan to transfer to four-year colleges or universities are urged to acquaint themselves with the requirements of the institutions and major departments to which they intend to transfer. With careful planning, students may be able to meet both general education requirements and prerequisites for majors with the same courses, allowing greater flexibility in selecting electives. Students should consult counselors or academic advisors to select courses most appropriate for their curricula. Many TCC courses are transferable as general electives even if they do not fulfill core requirements.

**A.A.A./A.A.S. DEGREES AND CERTIFICATES**

In selecting courses, students are expected to follow the curricula guides for their intended majors and specializations. Where appropriate, students may select courses from lists of approved courses provided by their division office to meet requirements in the degrees or certificates. While general education courses other than those designed specifically for transfer may be used to meet portions of the general education requirements, principles published by the Southern Association of Colleges and Schools Commission on Colleges require that general education courses be general in nature and not “...narrowly focused on those skills, techniques, and procedures peculiar to a particular occupation or profession.” A.A.S./A.A.A. degrees generally are not designed for transfer, but students can increase the transferability of selected applied degrees by substituting transfer courses where appropriate to meet program requirements.

**GENERAL EDUCATION CORE REQUIREMENTS**

All Tidewater Community College students earning a degree or certificate must complete general education core requirements. Curriculum guides designate specific courses that must be taken to satisfy these requirements. When general education elective courses are required as specified in curriculum guides, students may select from the courses in the following lists. Students may not use the same course to satisfy more than one curriculum requirement.

Students who plan to transfer are advised to consult a TCC transfer counselor, appropriate transfer guides, and prospective transfer colleges/universities to ensure electives meet transfer requirements.

**COMMUNICATION ELECTIVE:**

- ENG 111 College Composition I
- ENG 112 College Composition II
- CST 100 Principles of Public Speaking
- CST 110 Introduction to Communication

**MATHS ELECTIVE:**

- MTH 152 Mathematics for the Liberal Arts II
- MTH 157 Elementary Statistics
- MTH 158 College Algebra
- MTH 163 Precalculus I
- MTH 164 Precalculus II
- MTH 166 Precalculus with Trigonometry
- MTH 173 Calculus with Analytic Geometry I
- MTH 174 Calculus with Analytic Geometry II
- MTH 270 Applied Calculus
- MTH 277 Vector Calculus
- MTH 279 Ordinary Differential Equations
- MTH 285 Linear Algebra

**SCIENCE WITH LAB ELECTIVE (NATURAL SCIENCES):**

- BIO 101 General Biology I
- BIO 102 General Biology II
- BIO 141 Human Anatomy and Physiology I
- BIO 142 Human Anatomy and Physiology II
- CHM 111 General Chemistry I
- CHM 112 General Chemistry II
- ENV 121 General Environmental Science I
- ENV 122 General Environmental Science II
- GOL 105 Physical Geology
- GOL 106 Historical Geology
- GOL 110 Earth Science
- GOL 111 Oceanography I
- GOL 112 Oceanography II
- NAS 125 Meteorology
- NAS 130 Elements of Astronomy
- NAS 131 Astronomy I
- NAS 132 Astronomy II
- PHY 100 Elements of Physics
- PHY 201 General College Physics I
- PHY 202 General College Physics II
- PHY 241 University Physics I
- PHY 242 University Physics II
HUMANITIES ELECTIVE:
- ART 101 History and Appreciation of Art I
- ART 102 History and Appreciation of Art II
- ART 201 History of Art I
- ART 202 History of Art II
- ASL 125 History & Culture of the Deaf Community I
- CST 130 Introduction to the Theatre
- CST 141 Theatre Appreciation I
- CST 151 Film Appreciation I
- CST 152 Film Appreciation II
- CST 229 Intercultural Communication
- ENG 125 Introduction to Literature
- ENG 211 Creative Writing I
- ENG 212 Creative Writing II
- ENG 241 Survey of American Literature I
- ENG 242 Survey of American Literature II
- ENG 243 Survey of English Literature I
- ENG 244 Survey of English Literature II
- ENG 251 Survey of World Literature I
- ENG 252 Survey of World Literature II
- ENG 253 Survey of African-American Literature I
- ENG 254 Survey of African-American Literature II
- HUM 201 Survey of Western Culture I
- HUM 202 Survey of Western Culture II
- HUM 241 Interdisciplinary Principles of the Humanities I
- HUM 246 Creative Thinking
- HUM 256 Mythology in Literature and the Arts
- HUM 259 Greek Mythology
- HUM 260 Survey of Twentieth-Century Culture
- MUS 121 Music Appreciation I
- MUS 122 Music Appreciation II
- MUS 221 History of Music I
- MUS 222 History of Music II
- PHI 101 Introduction to Philosophy I
- PHI 102 Introduction to Philosophy II
- PHI 111 Logic I
- PHI 115 Practical Reasoning
- PHI 220 Ethics
- PHI 226 Social Ethics
- REL 200 Survey of the Old Testament
- REL 210 Survey of the New Testament
- REL 230 Religions of the World

SOCIAL SCIENCE ELECTIVE:
- ECO 120 Survey of Economics
- ECO 201 Principles of Macroeconomics
- ECO 202 Principles of Microeconomics
- GEO 210 People and the Land: Introduction to Cultural Geography
- GEO 220 World Regional Geography
- GEO 221 Regions of the World I
- HIS 101 History of Western Civilization I
- HIS 102 History of Western Civilization II
- HIS 111 History of World Civilization I
- HIS 112 History of World Civilization II
- HIS 121 United States History I
- HIS 122 United States History II
- PLS 130 Basics of American Politics
- PLS 211 U.S. Government I
- PLS 212 U.S. Government II
- PLS 241 International Relations I
- PLS 242 International Relations II
- PSY 116 Psychology of Death and Dying
- PSY 200 Principles of Psychology
- PSY 201 Introduction to Psychology I
- PSY 202 Introduction to Psychology II
- PSY 215 Abnormal Psychology
- PSY 230 Developmental Psychology
- PSY 231 Life Span Human Development I
- PSY 232 Life Span Human Development II
- PSY 235 Child Psychology
- SOC 200 Principles of Sociology
- SOC 201 Introduction to Sociology I
- SOC 202 Introduction to Sociology II
- SOC 211 Principles of Anthropology I
- SOC 215 Sociology of the Family
- SOC 268 Social Problems
- SSC 210 Introduction to Women’s Studies

APPROVED ELECTIVES
In addition to required courses and general education electives, curricula may require approved electives. To view the list of courses which satisfy approved elective requirements, students should review their advising transcripts in the Student Information System and consult counselors or academic advisors. Transfer students are advised to consult transfer guides to determine transferability of elective courses.
### ASSOCIATE OF ARTS DEGREE
- Liberal Arts
- Business Administration
- Engineering
- General Studies
- General Studies (Specialization: Professional Communication)
- Science
- Science (Specialization: Computer Science)
- Social Sciences

### ASSOCIATE OF FINE ARTS DEGREE
- Music

### CERTIFICATE
- General Education

The Associate of Arts (A.A.), the Associate of Science (A.S.), and the Associate of Fine Arts (A.F.A.) degree programs are designed for students who plan to transfer to four-year colleges or universities. Courses in these programs typically parallel those required during the freshman and sophomore years of four-year Bachelor of Arts (B.A.), Bachelor of Science (B.S.), and Bachelor of Fine Arts (B.F.A.) curricula. Students planning to transfer should meet with a transfer counselor to plan their program of study and investigate the requirements of transfer institutions before choosing courses.

### LIBERAL ARTS
The Associate of Arts (A.A.) degree program is designed for students who plan to transfer to a four-year college or university to pursue a Bachelor of Arts (B.A.) degree program in the liberal arts. Four-year liberal arts programs prepare graduates for a wide variety of jobs in business, the arts, education, medical and legal professions, and in social and public service occupations. Liberal Arts studies emphasize fine arts, language, literature, philosophy, mathematics, science, social science and analytical and critical thinking skills, all of which prepare students for lifelong learning and social, cultural, and technological change.

Courses required for the Liberal Arts degree are available on all four campuses.

### ASSOCIATE OF ARTS DEGREE: LIBERAL ARTS
(PLAN CODE: 648)

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**ENGINEERING**

The Associate of Science (A.S.) degree program in Engineering is designed for students who plan to transfer to a four-year college or university to pursue a Bachelor of Science (B.S.) degree in engineering in one of several fields. The Engineering degree program includes general education and engineering courses, which cover theoretical concepts and practical applications. Graduates with the baccalaureate degree find careers in aerospace, computer, environmental, civil, electrical/electronics, mechanical, mining/metallurgical, and nuclear engineering.

Admission to the Engineering program requires satisfactory completion of the following high school units or their equivalents: four units of English; four units of mathematics (two units of algebra, one unit of plane geometry, one unit of advanced mathematics or trigonometry and solid geometry); one unit of laboratory science; and one unit of social studies.

Students desiring to enter the A.S. in Engineering program must provide proof of having a strong foundation in math and science and place into Demonstration of having a strong foundation in math and science and place into ENG 111. Additional information is available online at [tcc.edu](http://tcc.edu) (search keyword “Engineering”).

Engineering courses required for the Engineering degree are available at the Chesapeake and Virginia Beach campuses and at the Tri-Cities Center.

ASSOCIATE OF SCIENCE DEGREE: ENGINEERING

(PLAN CODE: 831)

### SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
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<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>CHM 111</td>
<td>General Chemistry I</td>
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<tr>
<td>EGR 110</td>
<td>Engineering Graphics</td>
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<tr>
<td>EGR 120</td>
<td>Introduction to Engineering</td>
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<td>ENG 111</td>
<td>College Composition III</td>
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<tr>
<td>MTH 173</td>
<td>Calculus with Analytic Geometry I</td>
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<td>Orientation to Engineering and Technologies</td>
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### SEMESTER 2

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<td>EGR 125</td>
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<td>ENG 112</td>
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### SEMESTER 3

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<td>PHY 241</td>
<td>University Physics I</td>
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<td>EGR 218</td>
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### SEMESTER 4

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<tbody>
<tr>
<td>MTH 277</td>
<td>Vector Calculus</td>
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<td>PHY 242</td>
<td>University Physics II</td>
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1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Consult transfer institution to ensure that the elective is appropriate for the intended transfer program.
3. Students may select any of the following courses to meet this requirement: HIS 101, 102, 111, 112, 121, or 122.
4. Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).
5. Students may select any of the following courses to meet this requirement: HST 102, 111, 112, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

**GENERAL STUDIES**

The Associate of Science (A.S.) degree in General Studies is a flexible degree that allows students to design a curriculum that meets particular transfer objectives that are not fulfilled by existing TCC transfer programs. The program consists of a minimum of 38 credits of general education with 21 additional hours that may be selected in consultation with an advisor or counselor to ensure they will be accepted for the preferred program at the four-year institution they plan to attend.

Courses required for the General Studies degree are available on all four campuses.
ASSOCIATE OF SCIENCE DEGREE: GENERAL STUDIES
(PLAN CODE: 699)

SEMMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>SDV 100</td>
<td>College Success Skills</td>
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<td>Health/Physical Education Elective</td>
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<tr>
<td>History Elective</td>
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<td>History Elective</td>
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SEMMESTER 3

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SEMMESTER 4

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Total Minimum Credits 61

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s). Mathematics courses numbered less than MTH 152 cannot be used to fulfill the mathematics requirement.
2 Students may substitute CST 100 for CST 110. Consult transfer institution to ensure that the substitution is appropriate for intended transfer program.
3 The “Approved Electives” may be satisfied with any mathematics, natural science, social science, humanities, or foreign language electives listed on page 14 in the 2017-2018 catalog. Additional course options are provided on the advising transcript in the Student Information System and/or through consultation with a counselor or academic advisor.
4 Students may select any of the following courses to meet this requirement: HIS 101, 102, 111, 112, 121, or 122.
5 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 235; PED (any activity course).
6 SDV 101 (Orientation to Health Professions) may be taken by students seeking entry into a TCC health professions program. Consult with your academic advisor before registering for this course.
7 Students may select any 100-level or 200-level course to meet this requirement.

ASSOCIATE OF SCIENCE DEGREE: GENERAL STUDIES

SPECIALIZATION: PROFESSIONAL COMMUNICATION

(PLAN CODE: 699.53)

The Associate of Science (A.S.) degree in General Studies with a Specialization in Professional Communication is designed for students who plan to transfer to a four-year college or university and seek a baccalaureate degree in Communication Studies or a related area. This program is intended to provide students with a general course of study that parallels the freshman and sophomore years at many colleges and universities. Students should consult with an advisor or counselor to select general electives to ensure they will be accepted for the preferred program at the four-year institution they plan to attend.

Courses required for the A.S. degree are available on all four campuses.
### ASSOCIATE OF SCIENCE DEGREE: SCIENCE

(PLAN CODE: 880)

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<td>Precalculus II</td>
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<td>Science with Lab Elective¹</td>
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<tbody>
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<th>COURSE NO.</th>
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### ASSOCIATE OF SCIENCE DEGREE: SCIENCE

(PLAN CODE: 880.01)

The Associate of Science (A.S.) degree in Science with a Specialization in Computer Science is designed for students who plan to transfer to a four-year college or university to pursue a baccalaureate degree in computer science. This degree program also meets the needs of students seeking teacher certification in secondary mathematics or computer science.

Students desiring to enter the Computer Science program must have a strong foundation in mathematics. Additional information is available online at tcc.edu (search keywords “Computer Science”).

Computer Science courses required for the Computer Science specialization are offered at the Virginia Beach and Chesapeake campuses.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
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<td>CSC 110</td>
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<tr>
<td>MTH 173</td>
<td>Calculus with Analytic Geometry I</td>
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<td>CSC 210</td>
<td>Programming with C++</td>
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</table>

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s). Sequenced lab courses are required in natural and physical sciences, and ENG 121-122 is not an acceptable sequence.

2 Students may substitute CST 110 for CST 100. Consult transfer institution to ensure that the substitution is appropriate for intended transfer program.

3 Students may select any of the following courses to meet this requirement: HIS 101, 102, 111, 112, 121, or 122.

4 The “Approved Electives” may be satisfied with any mathematics, natural science, social science, humanities, or foreign language electives listed on page 14 in the 2017-2018 catalog. Additional course options are provided on the advising transcript in the Student Information System and/or through consultation with a counselor or academic advisor.

5 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

» Health Science Majors (Dental Hygiene, Nursing, Nuclear Medicine, and Medical Technology): Students should complete MTH 163 and 157 for most baccalaureate health science majors. Students should check college catalogs and transfer guides to determine appropriate mathematics and laboratory science requirements. A waiver/substitution must be approved by the appropriate academic dean in order to substitute MTH 157 for MTH 164.

» Preparation for Engineering: Students should take SDV 101 (Orientation to Engineering and Technologies), Mathematics (MTH 163, 164, and 173), Chemistry (CHM 111 and 112), and Physics (PHY 141 and 142). Students having completed prerequisites for ENG 111 and MTH 173 should contact a counselor, faculty advisor, or the Engineering Division Office for admission to the Engineering Program.

» Preparation for Computer Science: Upon completing the prerequisite courses for ENG 111 and MTH 173, students should contact a counselor, faculty advisor, or the IT and Business Division Office for admission into TCC’s Computer Science specialization.

6 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

7 Preparation for Medical, Dental, and Veterinary Studies: Students should take MTH 163-164 and at least one semester of calculus (MTH 173). Biology (BIO 101-102), Chemistry (CHM 111-112), Organic Chemistry (CHM 241-242), and Physics (PHY 201-203) are the introductory level laboratory sciences generally completed at the freshman/sophomore level.
### SOCIAL SCIENCES

The Associate of Science (A.S.) degree in Social Sciences is designed for students who plan to transfer to a four-year college or university to pursue a baccalaureate degree in one of the social or behavioral sciences. Social Sciences include academic disciplines such as anthropology, economics, geography, history, political science, sociology, and psychology. The A.S. in Social Sciences also prepares students for some teacher certification programs.

Courses required for the Social Sciences degree are available on all four campuses.

#### ASSOCIATE OF SCIENCE DEGREE: SOCIAL SCIENCES

(PLAN CODE: 882)

**SEMESTER 1 (BASED ON A FALL SEMESTER START)**

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**SEMESTER 2**

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<td>MTH 157</td>
<td>Elementary Statistics (or MTH 164)</td>
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**SEMESTER 4**

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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 111</td>
<td>Music Theory I</td>
<td>4</td>
</tr>
<tr>
<td>MUS 141</td>
<td>Class Piano I</td>
<td>2</td>
</tr>
<tr>
<td>MUS 1XX</td>
<td>Applied Instruction on Major Instrument</td>
<td>2</td>
</tr>
<tr>
<td>SDV 100</td>
<td>College Success Skills</td>
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</tr>
<tr>
<td><strong>Semester Total</strong></td>
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</tbody>
</table>

### MUSIC

The Associate of Fine Arts (A.F.A.) degree with a major in Music is designed to provide students with the foundational knowledge and skills to make them competitive for admission and transfer to a four-year college or university to pursue a baccalaureate degree in Music. As part of the curriculum, students will study and receive training in performance on a major instrument or voice, and take courses that cover topics such as musicianship skills and analysis, music composition and improvisation, and music history and repertory.

Entering students should possess a basic understanding of reading sheet music notation, as determined in Music Theory I through a content review examination. Students who do not pass will be advised to enroll in MUS 8 – Fundamentals of Music, for one semester, before enrolling in MUS 111 – Music Theory I.

Students who pursue the Music major must successfully complete a number of performances to meet program learning objectives. During the second semester of the first year, students will perform two musical selections of contrasting style (applied instruction jury). In the second year as students near graduation, they must successfully perform in a recital (capstone recital). Applied Music courses will require additional fees/studio charges. Additional information about the program is available online at tcc.edu (search keyword “Music”).

Courses required for the Music major are available on the Norfolk Campus.

#### ASSOCIATE OF FINE ARTS DEGREE: MUSIC

(PLAN CODE: XXX) (PENDING APPROVAL)

**SEMESTER 1 (BASED ON A FALL SEMESTER START)**

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<tr>
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<td>MUS 111</td>
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<td>MUS 141</td>
<td>Class Piano I</td>
<td>2</td>
</tr>
<tr>
<td>MUS 1XX</td>
<td>Applied Instruction on Major Instrument</td>
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<tr>
<td>SDV 100</td>
<td>College Success Skills</td>
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**SEMESTER 2**

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<td>MUS 112</td>
<td>Music Theory II</td>
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<td>MUS 142</td>
<td>Class Piano II</td>
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<td>MUS 1XX</td>
<td>Applied Instruction on Major Instrument</td>
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<tr>
<td>SDV 100</td>
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<td>SEMESTER 3</td>
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<td>COURSE TITLE</td>
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<tr>
<td>MUS 211</td>
<td>Advanced Music Theory I</td>
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<tr>
<td>MUS 221</td>
<td>History of Music I</td>
<td>3</td>
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<tr>
<td>MUS 241</td>
<td>Advanced Class Piano I</td>
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</tr>
<tr>
<td>MUS 2XX</td>
<td>Advanced Applied Instruction on Major Instrument</td>
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<tr>
<td>MUS 2XX</td>
<td>Advanced Ensemble</td>
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<tr>
<td>MUS 222</td>
<td>History of Music II</td>
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<td>MUS 242</td>
<td>Advanced Class Piano II</td>
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<td>MUS 2XX</td>
<td>Advanced Applied Instruction on Major Instrument</td>
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<td>MUS 2XX</td>
<td>Advanced Ensemble</td>
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<td>MUS 298</td>
<td>Seminar and Project: Capstone Recital</td>
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<td>English Literature Elective</td>
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</table>

Total Minimum Credits 63

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2 Music Theory students are expected to have a basic understanding of reading sheet music notation. Students will take a content review exam during the first week of classes in Music 111. Contact the Music Department for details.

3 Approved Music Ensemble must be taken from the following:
   - MUS 135 - Jazz Ensemble
   - MUS 137 - Chorus Ensemble
   - MUS 148 - Orchestra Ensemble
   - MUS 237 - Chorus Ensemble
   - MUS 239 - Advanced Jazz Ensemble
   - MUS 248 - Orchestra

4 Applied Music Electives must be taken from the following:
   - MUS 136 - Applied Music - Voice
   - MUS 145 - Applied Music - Keyboard
   - MUS 155 - Applied Music - Woodwinds
   - MUS 165 - Applied Music - Strings
   - MUS 175 - Applied Music - Brass
   - MUS 185 - Applied Music - Percussion
   - MUS 236 - Advanced Applied Music - Voice
   - MUS 245 - Advanced Applied Music - Keyboard
   - MUS 255 - Advanced Applied Music - Woodwinds
   - MUS 265 - Advanced Applied Music - Strings
   - MUS 275 - Advanced Applied Music - Brass
   - MUS 285 - Advanced Applied Music - Percussion

**GENERAL EDUCATION**

The Certificate in General Education program consists of 33 credits that may be selected in consultation with an academic advisor or counselor to ensure they are appropriate to meet the student’s transfer and educational goals. It is a flexible program that offers the student an opportunity to combine courses to meet a subset of lower level general education requirements at a four-year college or university. The Certificate is not intended to represent a comprehensive general education core or to insure the same ease of transferability as the transfer degrees.

Under current guidelines, Federal financial aid cannot be used to enroll in the General Education Certificate program. Students intending to use financial aid should enroll in one of the college’s A.A., A.S., or A.F.A. transfer degree programs.
### Fine Arts/Humanities - 6 Credits (Select Two Courses)

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<thead>
<tr>
<th>Course No.</th>
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<td>ART 201</td>
<td>History of Art I</td>
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<tr>
<td>ART 202</td>
<td>History of Art II</td>
<td>3</td>
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<tr>
<td>CST 130</td>
<td>Introduction to the Theatre</td>
<td>3</td>
</tr>
<tr>
<td>CST 141</td>
<td>Theatre Appreciation I</td>
<td>3</td>
</tr>
<tr>
<td>ENG 125</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENG 241</td>
<td>Survey of American Literature I</td>
<td>3</td>
</tr>
<tr>
<td>ENG 242</td>
<td>Survey of American Literature II</td>
<td>3</td>
</tr>
<tr>
<td>ENG 243</td>
<td>Survey of English Literature I</td>
<td>3</td>
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<tr>
<td>ENG 244</td>
<td>Survey of English Literature II</td>
<td>3</td>
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<tr>
<td>HUM 201</td>
<td>Survey of Western Culture I</td>
<td>3</td>
</tr>
<tr>
<td>HUM 202</td>
<td>Survey of Western Culture II</td>
<td>3</td>
</tr>
<tr>
<td>HUM 260</td>
<td>Survey of Twentieth-Century Culture</td>
<td>3</td>
</tr>
<tr>
<td>MUS 121</td>
<td>Music Appreciation I</td>
<td>3</td>
</tr>
<tr>
<td>MUS 122</td>
<td>Music Appreciation II</td>
<td>3</td>
</tr>
<tr>
<td>PHI 101</td>
<td>Introduction to Philosophy I</td>
<td>3</td>
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<tr>
<td>PHI 102</td>
<td>Introduction to Philosophy II</td>
<td>3</td>
</tr>
<tr>
<td>PHI 111</td>
<td>Logic I</td>
<td>3</td>
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<tr>
<td>PHI 220</td>
<td>Ethics</td>
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<td>REL 230</td>
<td>Religions of the World</td>
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### Student Development - 1 Credit (Select One Course)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>SDV 100</td>
<td>College Success Skills (or SDV 101 or SDV 108)</td>
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</table>

Total 33

Note: Students should consult a faculty advisor or counselor to choose courses appropriate to their educational goals or intended major and transfer institution.
ASSOCIATE OF APPLIED SCIENCE DEGREE: ACCOUNTING

CAREER STUDIES CERTIFICATE: ACCOUNTING TECHNICIAN

The Accounting programs prepare students for careers in the accounting field or assist students in updating their skills if they are working in the accounting field. Graduates may seek employment as a bookkeeper or as an accounting or auditing clerk.

Students with a baccalaureate degree who wish to pursue the Certified Public Accountant (CPA) examination may use specific course work toward fulfillment of accounting educational requirements. Some course work also meets federal government guidelines for those interested in qualifying for positions or promotions in the federal government. Students should consult an accounting instructor to determine the courses that meet the educational requirements.

The Associate of Applied Science (A.A.S.) degree provides students with a strong foundation in accounting and business, along with general education requirements, enabling students to seek entry-level employment in accounting. In addition, the course work prepares students for certification exams.

The certificate programs provide course work that gives students the skills to sit for one or more certification exams administered by the Accreditation Council for Accountancy and Taxation (ACAT).

ASSOCIATE OF APPLIED SCIENCE DEGREE: ACCOUNTING

(PLAN CODE: 203)

**SEMESTER 1** (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>ACC 211</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
</tr>
<tr>
<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
<td>4</td>
</tr>
<tr>
<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
<td>3</td>
</tr>
<tr>
<td>SDV 100</td>
<td>College Success Skills</td>
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**SEMESTER 2**

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<tbody>
<tr>
<td>ACC 212</td>
<td>Principles of Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 215</td>
<td>Computerized Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 125</td>
<td>Applied Business Mathematics</td>
<td>3</td>
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<tr>
<td>BUS 200</td>
<td>Principles of Management</td>
<td>3</td>
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<tr>
<td>ECO 120</td>
<td>Survey of Economics (or ECO 201 or ECO 202)</td>
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<tr>
<td>ENG 112</td>
<td>College Composition II</td>
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**SEMESTER 3**

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<td>BUS 241</td>
<td>Business Law I</td>
<td>3</td>
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<tr>
<td>ACC 221</td>
<td>Intermediate Accounting I</td>
<td>4</td>
</tr>
<tr>
<td>ACC 231</td>
<td>Cost Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 261</td>
<td>Principles of Federal Taxation I</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester Total</strong></td>
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**SEMESTER 4**

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<tr>
<td>ACC 222</td>
<td>Intermediate Accounting II</td>
<td>4</td>
</tr>
<tr>
<td>ACC 241</td>
<td>Auditing I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 297</td>
<td>Cooperative Education in Accounting (or Business Elective 1)</td>
<td>3</td>
</tr>
<tr>
<td>BUS 220</td>
<td>Introduction to Business Statistics</td>
<td>3</td>
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<td>Humanities Elective 1</td>
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<tr>
<td><strong>Total Minimum Credits</strong></td>
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</table>

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Business electives include courses that have the following prefix: ACC, ACQ, AST, BUS, ECO, FIN, GIS, HRL, IBD, ITE, IIN, IIP, LGL, and REA.
3. Students planning to sit for the Fundamental Payroll Certification exam should take ACC 124 - Payroll Accounting and ACC 293 - Advanced Payroll Accounting as their two Business Electives.

CERTIFICATE: ACCOUNTING SPECIALIST

(PLAN CODE: 202)

The Certificate in Accounting Specialist prepares students for entry-level employment in accounting and enables students to combine accounting course work with some general education course work. In addition, the course work prepares students for certification exams.

<table>
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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>ACC 211</td>
<td>Principles of Accounting I</td>
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<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
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<td>Business Law I (or ACC 215)</td>
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<td>ACC 222</td>
<td>Intermediate Accounting II</td>
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<td>ACC 231</td>
<td>Cost Accounting I</td>
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**SEMESTER 4**

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<td>ACC 241</td>
<td>Auditing I</td>
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<tr>
<td>ACC 297</td>
<td>Cooperative Education in Accounting (or Business Elective 1)</td>
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</tr>
<tr>
<td>BUS 220</td>
<td>Introduction to Business Statistics</td>
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<td>Humanities Elective 1</td>
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<tr>
<td><strong>Semester Total</strong></td>
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<td><strong>16</strong></td>
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</tbody>
</table>

**Total Minimum Credits**

**67**

1. Students with a baccalaureate degree who wish to complete requirements to sit for the Certified Public Accountant (CPA) examination must take BUS 241. Those who are employed in government positions who require college credit in accounting for promotion or those seeking government employment and other students should take ACC 215.

CAREER STUDIES: ACCOUNTING TECHNICIAN

(PLAN CODE: 221.203.03)

The Career Studies Certificate in Accounting Technician prepares students who already hold a degree for entry-level employment in the accounting field, for career advancement, or for certification exams.

<table>
<thead>
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<th>COURSE NO.</th>
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<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>ACC 211</td>
<td>Principles of Accounting I</td>
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</tr>
<tr>
<td>ACC 221</td>
<td>Principles of Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>Bus 241</td>
<td>Business Law I (or ACC 215)</td>
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<tbody>
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<td>Intermediate Accounting I</td>
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<td>ACC 222</td>
<td>Intermediate Accounting II</td>
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</tr>
<tr>
<td>ACC 231</td>
<td>Cost Accounting I</td>
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<tr>
<td><strong>Semester Total</strong></td>
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**SEMESTER 2**

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<th>COURSE TITLE</th>
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<td>ACC 221</td>
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<tr>
<td>ACC 222</td>
<td>Intermediate Accounting II</td>
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<td>ACC 231</td>
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<td><strong>Semester Total</strong></td>
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**Total Minimum Credits**

**34**

The Accounting programs prepare students for careers in the accounting field or assist students in updating their skills if they are working in the accounting field. Graduates may seek employment as a bookkeeper or as an accounting or auditing clerk.

Students with a baccalaureate degree who wish to pursue the Certified Public Accountant (CPA) examination may use specific course work toward fulfillment of accounting educational requirements. Some course work also meets federal government guidelines for those interested in qualifying for positions or promotions in the federal government. Students should consult an accounting instructor to determine the courses that meet the educational requirements.

The Associate of Applied Science (A.A.S.) degree provides students with a strong foundation in accounting and business, along with general education requirements, enabling students to seek entry-level employment in accounting. In addition, the course work prepares students for certification exams.

The certificate programs provide course work that gives students the skills to sit for one or more certification exams administered by the Accreditation Council for Accountancy and Taxation (ACAT).
### CAREER AND TECHNICAL EDUCATION

#### CAREER STUDIES CERTIFICATE:

**ASSOCIATE OF APPLIED SCIENCE DEGREE: CAREER AND PROCUREMENT**

- **ACQ 231** Cost Accounting I 3
- **ACQ 241** Auditing I 3

**Semester Total 14**

**Total Minimum Credits 26**

1. Students with a baccalaureate degree who wish to complete requirements to sit for the Certified Public Accountant (CPA) examination must take BUS 241. Those who are employed in government positions who require college credit in accounting for promotion or those seeking government employment and other students should take ACC 221.

#### CAREER STUDIES: ACQUISITION AND PROCUREMENT

**PLAN CODE: 221.248.05**

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<tr>
<td>ACQ 211</td>
<td>Introduction to Acquisition and Procurement Fundamentals I</td>
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<td>ACQ 215</td>
<td>Contract Law</td>
<td>3</td>
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<tr>
<td>ACQ 231</td>
<td>Principles of Contract Pricing and Negotiations I</td>
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**Semester Total 9**

**SEMESTER 2**

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<tr>
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<td>Introduction to Acquisition and Procurement Fundamentals II</td>
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<td>ACQ 221</td>
<td>Advanced Acquisition and Procurement Management I</td>
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<td>Principles of Contract Pricing and Negotiations II</td>
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**Semester Total 9**

**Total Minimum Credits 18**

#### ADMINISTRATIVE SUPPORT TECHNOLOGY

**ASSOCIATE OF APPLIED SCIENCE DEGREE: ADMINISTRATIVE SUPPORT TECHNOLOGY**

**PLAN CODE: 221.298.07**

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<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
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<tr>
<td>BUS 125</td>
<td>Applied Business Mathematics</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
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<td>SDV 100</td>
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**Semester Total 16**

**SEMESTER 2**

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<tr>
<td>AST 102</td>
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<tr>
<td>AST 141</td>
<td>Word Processing (Microsoft Office Word)</td>
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<tr>
<td>AST 205</td>
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**Semester Total 17**

**SEMESTER 3**

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<td>Keyboarding III</td>
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<td>AST 234</td>
<td>Records and Database Management</td>
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<tr>
<td>AST 243</td>
<td>Office Administration I</td>
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<tr>
<td>ITE 215</td>
<td>Advanced Computer Applications and Integration</td>
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<td>Accounting for Small Business (or ACC 211)</td>
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<td>AST 244</td>
<td>Office Administration II</td>
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<td>AST 297</td>
<td>Cooperative Education (or Approved Elective)</td>
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<td>ITE 130</td>
<td>Introduction to Internet Services</td>
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<tr>
<td>Humanities Elective</td>
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**Semester Total 16**

**Total Minimum Credits 66**

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2. Approved Electives: Additional courses may be selected in consultation with an academic advisor.
   - ASL 101 - American Sign Language I
   - BUS 117 - Leadership Development
   - BUS 200 - Principles of Management
   - BUS 201 - Organizational Behavior
   - BUS 205 - Human Resource Management
   - BUS 241 - Business Law I
   - BUS 265 - Ethical Issues in Management
   - BUS 280 - Introduction to International Business
   - MRT 260 - Customer Service Management

#### CAREER STUDIES: ADMINISTRATIVE ASSISTANT

**PLAN CODE: 221.298.07**

The Career Studies Certificate in Administrative Assistant prepares students for entry-level positions such as file clerk and office assistant at an array of businesses.

<table>
<thead>
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<td>ENG 111</td>
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**Semester Total 9**
## CAREER AND TECHNICAL EDUCATION

### MEDICAL ADMINISTRATIVE ASSISTANT

The Associate of Applied Science (A.A.S.) degree in Administrative Support Technology with a Specialization in Medical Administrative Assistant is aimed specifically at those interested in positions working as administrative assistants, executive assistants, or office managers in the medical field. Students may choose a cooperative education option in which they earn academic credit while gaining work experiences at local health care sites.

### ASSOCIATE OF APPLIED SCIENCE DEGREE: ADMINISTRATIVE SUPPORT TECHNOLOGY

**Specialization: Medical Administrative Assistant**

*Plan Code: 298.11*

### SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<thead>
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<td>Medical Terminology I</td>
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**Semester Total:** 16

### SEMESTER 2

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<td>AST 245</td>
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**Semester Total:** 16

### SEMESTER 3

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<td>AST 234</td>
<td>Records and Database Management</td>
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<td>AST 242</td>
<td>Medical Insurance and Coding</td>
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<tr>
<td>AST 271</td>
<td>Medical Office Procedures I</td>
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**Semester Total:** 6

**Total Minimum Credits:** 28

---

### MEDICAL ADMINISTRATIVE ASSISTANT

The Career Studies Certificate in Medical Administrative Assistant prepares students for entry-level positions such as file clerk and office assistant in the health care field.

### ASSOCIATE OF APPLIED SCIENCE DEGREE: ADMINISTRATIVE SUPPORT TECHNOLOGY

**Specialization: Medical Administrative Assistant**

*Plan Code: 221.285.06*

### SEMESTER 1

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**Semester Total:** 9

### SEMESTER 2

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<td>AST 236</td>
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**Semester Total:** 10

### SEMESTER 3

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<td>Medical Insurance and Coding</td>
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<td>Medical Machine Transcription</td>
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<td>AST 271</td>
<td>Medical Office Procedures I</td>
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</table>

**Semester Total:** 9

**Total Minimum Credits:** 28

---

### AMERICAN SIGN LANGUAGE

### ASSOCIATE OF APPLIED SCIENCE DEGREE:

**ASL-English Interpretation**

### CAREER STUDIES CERTIFICATE:

**American Sign Language**

The Associate of Applied Science (A.A.S.) degree in American Sign Language-English Interpretation program is designed to provide the foundational knowledge and skills for entry-level employment or for continued interpreter education within the field of ASL-English Interpretation. Students will learn American Sign Language and sharpen their English skills, and learn how to translate between the two languages.

The American Sign Language-English Interpretation program is an intensive two-year full-time program that prepares students for employment interpreting between Deaf and hearing people within the community, or for continued interpreter training and education at four-year interpreter training programs. Students who complete the ASL-English Interpretation program are eligible to sit for the medieval National Registry of Interpreters for the Deaf (NRID) examination.
CAREER STUDIES: AMERICAN SIGN LANGUAGE

The Career Studies Certificate in American Sign Language is an intensive one-year program that teaches basic and intermediate American Sign Language and the history, culture and literature of the American Deaf Community. The program provides a foundation for students interested in pursuing further education for careers working with Deaf adults in fields such as ASL-English Interpreting, social work, vocational rehabilitation, Deaf education, and various other employment settings. The Career Studies Certificate may also benefit family, friends and colleagues desiring to strengthen their understanding of the Deaf community and the language, and help strengthen their communication skills with individuals using ASL.

ASSOCIATE OF APPLIED SCIENCE DEGREE:
ASL—ENGLISH INTERPRETATION

(PLAN CODE: 640)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<tr>
<td>INT 105</td>
<td>Interpreting Foundations I</td>
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SEMESTER 2

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<td>History and Culture of the Deaf Community I</td>
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<td>ASL 201</td>
<td>American Sign Language III</td>
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<td>Interpreting: An Introduction to the Profession</td>
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SEMESTER 4

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<td>Comparative Linguistics: ASL and English</td>
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<td>ASL 225</td>
<td>Literature of the U.S. Deaf Community</td>
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Total Minimum Credits 28

AUTOMOTIVE TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE DEGREE:
Automotive Technology

CAREER STUDIES CERTIFICATES:

Automotive Chassis Systems
Automotive Electronics
Automotive Engine Performance
Automotive Powertrains

The Automotive Technology programs are designed to prepare students for employment as automotive technicians, based on standards set by the National Institute for Automotive Service Excellence (ASE) and the National Automotive Technicians Education Foundation (NATEF). The Associate of Applied Science (A.A.S.) degree in Automotive Technology is designed for those who wish to work as a service technician, diagnostician, or manufacturing representative in the automotive repair industry. The Career Studies Certificates provide the background required for those interested in entry-level positions related to automotive maintenance and repair.

Students seeking additional credentials may pursue the National Institute for Automotive Excellence (ASE) Automotive Technician Certification examinations, A/C Refrigerant Recovery License, and Virginia state inspection license.

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2 MTH 152 or higher may be taken and is recommended for students planning to transfer.
The Career Studies Certificate in Automotive Chassis Systems prepares students to specialize in brakes, steering, and suspension diagnosis, service, and repair. The training includes preparation for the ASE certification exams in Steering and Suspension (A4) and Brakes (A5). Additionally, the training includes preparation for the VA Safety Inspection exam.

A valid driver’s license is required for admission into any Automotive Technology program. Students must visit the Regional Automotive Center prior to registration. Students are advised to consult with the program director prior to admission into the program.

CAREER STUDIES: AUTOMOTIVE CHASSIS SYSTEMS

(PLAN CODE: 221.909.02)

The Career Studies Certificate in Automotive Chassis Systems prepares students to specialize in brakes, steering, and suspension diagnosis, service, and repair. The training includes preparation for the ASE certification exams in Steering and Suspension (A4) and Brakes (A5). Additionally, the training includes preparation for the VA Safety Inspection exam.

A valid driver’s license is required for admission into any Automotive Technology program. Students must visit the Regional Automotive Center prior to registration. Students are advised to consult with the program director prior to admission into the program.

CAREER STUDIES: AUTOMOTIVE ENGINE PERFORMANCE

(PLAN CODE: 221.909.01)

The Career Studies Certificate in Automotive Engine Performance prepares students to specialize in the service, diagnosis, and repair of basic and advanced electrical systems as well as heating and air conditioning systems. Basic engine performance concepts are also covered. The training includes preparation for the ASE certification exams in Electrical/Electronic Systems (A6) and Heating and Air Conditioning (A7). Additionally, the training provides preparation for the Refrigerant Recovery License exam.

A valid driver’s license is required for admission into any Automotive Technology program. Students must visit the Regional Automotive Center prior to registration. Students are advised to consult with the program director prior to admission into the program.
### CAREER STUDIES: AUTOMOTIVE POWERTRAINS

(PLAN CODE: 221.909.06)

The Career Studies Certificate in Automotive Powertrains prepares students to specialize in the service, diagnosis, and repair of automatic and manual transmissions, transaxles, and engines. The training includes preparation for the ASE certification exams in Engine Repair (A1), Automatic Transmissions (A2), and Manual Drive Transmissions (A3).

A valid driver’s license is required for admission into any Automotive Technology program. Students must visit the Regional Automotive Center prior to registration. Students are advised to consult with the program director prior to admission into the program.

#### SEMESTER 1
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<td>Introduction to Automotive Systems</td>
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<td>AUT 149</td>
<td>Basic Automotive Electrical Diagnostics</td>
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<td>AUT 155</td>
<td>Basic Automotive Engine Performance Diagnostics</td>
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<td>AUT 255</td>
<td>Advanced Automotive Engine Performance Diagnostics</td>
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**Total Minimum Credits: 25**

### CAREER AND TECHNICAL EDUCATION

**ASSOCIATE OF APPLIED SCIENCE DEGREE: CIVIL ENGINEERING TECHNOLOGY**

(PLAN CODE: 915)

The Career Studies Certificate in Construction Project Management is designed to address all aspects of managing construction sites, including areas such as job-site administration, estimating and bidding, construction bidding, construction systems, construction safety, and construction surveying applications.

#### SEMESTER 1 (BASED ON A FALL SEMESTER START)
<table>
<thead>
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<td>CIV 115</td>
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<td>CIV 225</td>
<td>Soil Mechanics</td>
<td>3</td>
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<tr>
<td>CIV 226</td>
<td>Soil Mechanics Laboratory</td>
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<tr>
<td>CIV 239</td>
<td>Fluid Mechanics and Hydraulics Laboratory</td>
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<td>CIV 240</td>
<td>Fluid Mechanics and Hydraulics</td>
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<tr>
<td>MEC 132</td>
<td>Mechanics II—Strength of Materials for Engineering Technology</td>
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<td>MEC 135</td>
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**Total Minimum Credits: 63-64**

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2. Eligible courses for Approved Technical Elective include CAD 151, CAD 201, CHM 111, GIS 200, GIS 201, MTH 173, PHY 201, PHY 202 and any course with a CIV prefix or BLD prefix not required for the degree.

### CIVIL ENGINEERING TECHNOLOGY

**ASSOCIATE OF APPLIED SCIENCE DEGREE: CIVIL ENGINEERING TECHNOLOGY**

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2. Eligible courses for Approved Technical Elective include CAD 151, CAD 201, CHM 111, GIS 200, GIS 201, MTH 173, PHY 201, PHY 202 and any course with a CIV prefix or BLD prefix not required for the degree.

### CAREER STUDIES: CONSTRUCTION PROJECT MANAGEMENT

(PLAN CODE: 221.917.01)

The Career Studies Certificate in Construction Project Management is designed to address all aspects of managing construction sites, including areas such as job-site administration, estimating and bidding, construction bidding, construction systems, construction safety, and construction surveying applications.

#### SEMESTER 1
<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>BLD 111</td>
<td>Blue Print Reading and the Building Code</td>
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<td>CIV 135</td>
<td>Construction Management and Estimating</td>
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<td>CIV 230</td>
<td>Civil Construction Materials</td>
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</table>
### CAREER AND TECHNICAL EDUCATION

#### CAREER STUDIES: LAND SURVEYING

(PLAN CODE: 221.915.01)

The Career Studies Certificate in Land Surveying emphasizes land and field surveying practices and office techniques, utilizing a variety of instruments, including levels, total stations, and GPS units. Graduates of this program will prepare for an entry-level position in the surveying field and to take the Fundamentals of Surveying (FS) exam.

#### CAREER STUDIES: COLLISION REPAIR TECHNOLOGY

(PLAN CODE: 221.909.11)

The Career Studies Certificate in Collision Repair Technology: Non-Structural prepares students for an entry-level position at a collision repair facility performing non-structural vehicle repairs. These repairs include panel replacement and alignment, glass replacement, dent repair, and plastic/composite repair. Students completing this program will obtain their Inter-Industry Conference on Auto Collision Repair (I-CAR) certifications for ProLevel 1 and 2 in Non-Structural Repair.

A valid driver’s license is required for admission into the Collision Repair Technology program. Students are advised to consult with the program director prior to admission into the program. Students must visit the Regional Automotive Center prior to registration.

#### CAREER STUDIES: COLLISION REPAIR TECHNOLOGY: REFINISHING

(PLAN CODE: 221.909.12)

The Career Studies Certificate in Collision Repair Technology: Refinishing prepares students for an entry-level position at a collision repair facility performing refinishing techniques and paint defect diagnosis. Topics in this program include vehicle preparation, paints and thinners, painting techniques, and paint defect diagnosis. Students completing this program will obtain their Inter-Industry Conference on Auto Collision Repair (I-CAR) certifications for ProLevel 1 and 2 in Refinishing.

A valid driver’s license is required for admission into the Collision Repair Technology program. Students are advised to consult with the program director prior to admission into the program. Students must visit the Regional Automotive Center prior to registration.

#### COMPUTER-AIDED DRAFTING AND DESIGN TECHNOLOGY

- **Associate of Applied Science Degree:**
  - Computer-Aided Drafting and Design Technology

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:

- **Computer-Aided Drafting and Design Technology**
  - Specialization: Architectural Drafting and Design Technology

#### CERTIFICATE:

- **Computer-Aided Drafting and Design Technology**

The Computer-Aided Drafting and Design (CADD) Technology program has three different options for students seeking to obtain a degree or choosing to develop or update their technical skills. Those working toward the degree program have a choice between two degree options. The Architectural Drafting and Design Technology specialization prepares students for work in architectural, engineering, and design firms. The Associate of Applied Science (A.A.S.) degree concentrates on mechanical drafting and design and prepares students for employment in the fields of mechanical and machine design, structural, manufacturing, civil engineering, marine design, and construction. The third option, for those seeking only to acquire or hone their technical skills, is the 33-credit Certificate in Computer-Aided Drafting and Design Technology which primarily consists of technical courses. Students who already have a degree frequently see this Certificate as an excellent choice.
The Associate of Applied Science degree is offered at the Portsmouth and Virginia Beach campuses and focuses on preparing students to work successfully in computer-aided design and related computer-aided manufacturing operations (CAD/CAM). Graduates typically find employment in the fields of mechanical and machine design, structural design, manufacturing, civil engineering, marine design, construction, and related areas. Using Autodesk software, students learn to prepare working drawings reflecting national and international standards, practices, and procedures. Additionally, students learn to prepare engineering drawings supporting mechanical engineering and design utilizing welding details, industrial piping, geometric dimensioning and tolerancing, electrical schematics, sheet metal developments, and solid modeling.

Under formal articulation agreements, students may transfer course work to a baccalaureate degree program in an engineering technology area. Students planning on pursuing a baccalaureate degree should meet with the program head in his/her academic plan and consult the receiving institution’s catalog and transfer guide.

In addition to preparing students to move directly into business and industry and providing for college transfer opportunities upon graduation, the CADD program is designed to work in partnership with local business and industry to meet their educational and training needs.

ASSOCIATE OF APPLIED SCIENCE DEGREE: COMPUTER-AIDED DRAFTING AND DESIGN TECHNOLOGY

(PLAN CODE: 729)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>MEC 111</td>
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<td>MTH 164</td>
<td>Precalculus II</td>
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<td>Advanced Technical Drafting I</td>
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<td>CAD 241</td>
<td>Parametric Solid Modeling I</td>
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<td>Mechanics I — Statics for Engineering Technology</td>
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<td>PHY 201</td>
<td>General College Physics I ¹ (or Approved Technical Elective ²)</td>
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SEMESTER 4

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<td>CAD 280</td>
<td>Design Capstone Project</td>
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<td>MEC 132</td>
<td>Mechanics II — Strength of Materials for Engineering Technology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(or Approved Technical Elective ²)</td>
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<tr>
<td>PHY 202</td>
<td>General College Physics I ² (or Approved Technical Elective ²)</td>
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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2 Consult with the program head or counselor. Eligible courses for Approved Technical Elective include any ARC, CAD or MEC courses not required in the program.
3 Students planning on transferring to a four-year program should consult articulation agreements regarding physics requirement.
4 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 115, 121, 130, 150, 141, 150, 160, 200, 204, 215; PED (any activity course).

ASSOCIATE OF APPLIED SCIENCE DEGREE:

COMPUTER-AIDED DRAFTING AND DESIGN TECHNOLOGY

SPECIALIZATION: ARCHITECTURAL DRAFTING AND DESIGN TECHNOLOGY

(PLAN CODE: 729.01)

The Architectural Drafting and Design Technology specialization is offered at the Virginia Beach Campus and prepares students for employment as advanced CADD drafters or designers in an architectural firm. Graduates have the knowledge and skills to pursue a wide variety of employment opportunities in the design and construction industry. Under formal articulation agreements, students may transfer course work toward a baccalaureate degree program in an engineering technology field or to some schools of architecture. Students planning on pursuing a baccalaureate degree should meet with the program head early in their academic plan and consult the receiving institution’s catalog and transfer guide.

The faculty are experienced educators and professionals such as practicing architects and engineers. They bring in current practices and knowledge of the latest building materials, construction methods and computer technology. The program is highly regarded in the Virginia architectural community for its ability to challenge its students and teach essential technical skills for which employers are looking. Students in the program have the opportunity to sample a variety of interest areas within the discipline, including building and site planning, architectural graphic techniques, computer-aided drafting, rendering and animation, materials and construction technology, architectural history, international study, building codes, office practices, structures and more. Students may begin fall, spring, or summer semester.

The Specialization in Architectural Drafting and Design Technology prepares students for employment in these businesses and industries:

- Architect offices
- Engineering consulting firms (civil, mechanical, and electrical)
- Landscape architect offices
- Construction management firms
- Building contracting firms
- Building developers
- Computer drafting and mapping service companies
- Construction material suppliers and producers (sales, shop drawings)
- Facilities planning offices

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tr>
<td>ARC 100</td>
<td>Introduction to Architecture</td>
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<td>CAD 151</td>
<td>Engineering Drawing Fundamentals I</td>
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<td>CAD 201</td>
<td>Computer-Aided Drafting and Design I</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
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<tr>
<td>MTH 163</td>
<td>Precalculus I</td>
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<td>College Success Skills</td>
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### SEMESTER 2

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<td>ARC 133</td>
<td>Construction Methodology and Procedures I</td>
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<td>CAD 202</td>
<td>Computer-Aided Drafting and Design I</td>
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<td>MTH 164</td>
<td>Precalculus II</td>
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### SEMESTER 3

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<td>ARC 122</td>
<td>Architectural Drafting II</td>
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<td>ARC 221</td>
<td>Architectural CAD Applications Software I</td>
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<tr>
<td>MEC 131</td>
<td>Mechanics I — Statics for Engineering Technology</td>
<td>3</td>
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<tr>
<td>PHY 201</td>
<td>General College Physics I (or Approved Technical Elective)</td>
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<td>Health/Physical Education Elective</td>
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### SEMESTER 4

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<th>COURSE TITLE</th>
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<tr>
<td>CAD 280</td>
<td>Design Capstone Project</td>
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<tr>
<td>MEC 132</td>
<td>Mechanics II — Strength of Materials for Engineering Technology</td>
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<td>General College Physics II (or Approved Technical Elective)</td>
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<td>Humanities Elective</td>
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<td><strong>Semester Total</strong></td>
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</table>

**Total Minimum Credits:** 67

---

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Consult with the program head or counselor. Eligible courses for Approved Technical Elective include any ARC, CAD or MEC courses not required in the program.

### CRIMINAL JUSTICE

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice

#### CAREER STUDIES CERTIFICATE:
- Law Enforcement

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Forensic Science

#### CAREER STUDIES CERTIFICATE:
- Forensic Science

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Homeland Security

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Public Law

#### CAREER STUDIES CERTIFICATE:
- Homeland Security

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Public Law

### CERTIFICATE: COMPUTER-AIDED DRAFTING AND DESIGN TECHNOLOGY

(PLAN CODE: 727)

The CADD Certificate program provides the student with basic skills and knowledge necessary for an entry-level position as a CAD operator or drafter. Business and industry professionals can update their skills and knowledge relating to: AutoCAD and Autodesk Software, current ANSI and ISO Standards and procedures, and improve their knowledge of material selection and processing for efficient design.

### SEMESTER 1

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<tbody>
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<td>CAD 151</td>
<td>Engineering Drawing Fundamentals I</td>
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<td>CAD 201</td>
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1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Consult with the program head or counselor. Eligible courses for Approved Technical Elective include any ARC, CAD or MEC courses not required in the program.

### CRIMINAL JUSTICE

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice

#### CAREER STUDIES CERTIFICATE:
- Law Enforcement

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Forensic Science

#### CAREER STUDIES CERTIFICATE:
- Forensic Science

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Homeland Security

#### CAREER STUDIES CERTIFICATE:
- Homeland Security

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Criminal Justice
  - Specialization: Public Law

#### CAREER STUDIES CERTIFICATE:
- Public Law

The Associate of Applied Science (A.A.S.) degree in Criminal Justice offers a broad educational foundation, as well as specialized focus areas in law enforcement, criminology, and corrections. Students who complete this degree are prepared for careers in various areas of law enforcement, with opportunities for leadership in their chosen fields.

For those who wish to continue their education pursuits beyond the associate degree, Tidewater Community College has entered into formal articulation agreements with colleges and universities to ease transfer. Individuals interested in this option are encouraged to consult with a TCC advisor early in their academic program.

#### ASSOCIATE OF APPLIED SCIENCE DEGREE: CRIMINAL JUSTICE

(PLAN CODE: 400)

### SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>ADJ 105</td>
<td>The Juvenile Justice System</td>
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<td>PLS 130</td>
<td>Basics of American Politics (or PLS 211)</td>
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CAREER AND TECHNICAL EDUCATION | Tidewater Community College 2017/2018 Catalog

**SEMESTER 2**

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<td>ADJ 140</td>
<td>Introduction to Corrections</td>
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<td>ADJ 201</td>
<td>Criminology</td>
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<td>ADJ 236</td>
<td>Principles of Criminal Investigation</td>
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<td>Criminal Law, Evidence and Procedures</td>
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</table>

**Total Minimum Credits**                       | **61**  |

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Eligible courses for Approved ADJ Elective include any ADJ course not required for the degree.
3. Students may substitute CST 100 for CST 110.
4. Any activity course.

**CAREER STUDIES: LAW ENFORCEMENT**

(PLAN CODE: 221.463.01)

The Career Studies Certificate in Law Enforcement is designed for those students who wish to take only those courses that relate directly to the law enforcement field. The certificate is designed to provide a basic foundation for individuals entering some particular area of the criminal justice field that does not require an A.A.S. or higher degree in criminal justice, or for persons already in the criminal justice field who wish to extend their knowledge/skills, or for those exploring the criminal justice field as a career alternative. Courses taken in the certificate program can be applied to the Criminal Justice A.A.S. degree.

**SEMESTER 1**

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<td>ADJ 133</td>
<td>Ethics and the Criminal Justice Prof.</td>
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<td>ADJ 211</td>
<td>Criminal Law, Evidence and Procedures</td>
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<td>ADJ 212</td>
<td>Criminal Law, Evidence and Procedures</td>
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<td>ADJ 236</td>
<td>Principles of Criminal Investigation</td>
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**Total Minimum Credits**                       | **18**  

**ASSOCIATE OF APPLIED SCIENCE DEGREE: CRIMINAL JUSTICE SPECIALIZATION: FORENSIC SCIENCE**

(PLAN CODE: 400.01)

The Criminal Justice Specialization in Forensic Science is designed to prepare graduates for entry-level opportunities as a local, state, or federal law enforcement officer; commercial and industrial security officer; police officer; or private or government investigator. It provides an overview of forensic evidence, investigation methods, and procedures suitable for persons who wish to enter the law enforcement field and have a career goal of becoming an investigator as a career option or in need of training for promotion.

**SEMESTER 1 (BASED ON A FALL SEMESTER START)**

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<td>ENG 111</td>
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<td>PLS 130</td>
<td>Basics of American Politics (or PLS 211)</td>
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<td>Forensic Photography I</td>
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<td>ADJ 212</td>
<td>Criminal Law, Evidence and Procedures</td>
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<td>ADJ 275</td>
<td>Forensic Pathology</td>
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<td>ADJ 299</td>
<td>Supervised Study in Criminal Justice</td>
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**Total Minimum Credits**                       | **61**  |

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Students may substitute CST 110 for CST 100.
3. Any activity course.

**CAREER STUDIES: FORENSIC SCIENCE**

(PLAN CODE: 221.405.43)

The Career Studies Certificate in Forensic Science is designed to provide an introduction to the forensic investigation aspect of law enforcement and investigation. It provides an overview of forensic evidence, investigation methods, and procedures suitable for persons exploring the field as a career option or in need of training for promotion. Courses taken in the certificate program can be applied to the Criminal Justice: Forensic Science Specialization A.A.S. degree.

**SEMESTER 1**

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## CAREER AND TECHNICAL EDUCATION

### Tidewater Community College 2017/2018 Catalog

# CAREER AND TECHNICAL EDUCATION

## SEMESTER 2

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Total Minimum Credits 18

### ASSOCIATE OF APPLIED SCIENCE DEGREE: CRIMINAL JUSTICE

**SPECIALIZATION: HOMELAND SECURITY**

(PLAN CODE: 400.02)

The Criminal Justice Specialization in Homeland Security is designed to prepare graduates for entry-level opportunities as a local, state, or federal law enforcement officer; private security, commercial and industrial security officer; airport security, police officer; or private or government investigator, particularly in the areas of homeland security.

## SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<th>COURSE NO.</th>
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<td>ADJ 100</td>
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<td>ADJ 110</td>
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<tr>
<td>ADJ 133</td>
<td>Ethics and the Criminal Justice Professional</td>
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<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
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<tr>
<td>PLS 130</td>
<td>Basics of American Politics (or PLS 211)</td>
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## SEMESTER 2

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<td>Law Enforcement Organization and Administration I</td>
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<td>ADJ 201</td>
<td>Criminology</td>
<td>3</td>
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<tr>
<td>ADJ 234</td>
<td>Terrorism and Counter-Terrorism</td>
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<td>ADJ 236</td>
<td>Principles of Criminal Investigation</td>
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<td>CST 100</td>
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<td>ADJ 169</td>
<td>Transportation and Border Security</td>
<td>3</td>
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<tr>
<td>ADJ 211</td>
<td>Criminal Law, Evidence and Procedures I</td>
<td>3</td>
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<td>ADJ 247</td>
<td>Criminal Behavior (or PSY 255)</td>
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<td>Homeland Security and Law</td>
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<td>ADJ 299</td>
<td>Supervised Study in Criminal Justice</td>
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<td>Physical Education Elective</td>
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Total Minimum Credits 61

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Students may substitute CST 110 for CST 100.
3. Any activity course.

### CAREER STUDIES: HOMELAND SECURITY

(PLAN CODE: 221.407.90)

The Career Studies Certificate in Homeland Security may lead to entry-level positions in the law enforcement or homeland security field. Those currently in the field may enter the program to upgrade their skills, knowledge, and certifications. Courses taken in the certificate program can be applied to the Criminal Justice: Homeland Security Specialization A.A.S. degree.

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<td>Transportation and Border Security</td>
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<td>ADJ 243</td>
<td>Homeland Security and Law</td>
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<td><strong>Semester Total</strong></td>
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Total Minimum Credits 18

### ASSOCIATE OF APPLIED SCIENCE DEGREE: CRIMINAL JUSTICE

**SPECIALIZATION: PUBLIC LAW**

(PLAN CODE: 400.03)

The Criminal Justice Specialization in Public Law is designed to prepare graduates for entry-level positions in law firms of all sizes, state and federal courthouses, corporations and other business associations, banks and trust companies, educational institutions and local, state and federal government agencies. Those currently in the field may enter the program to upgrade their skills, knowledge, and certifications.

## SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>ENG 111</td>
<td>College Composition I</td>
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<tr>
<td>LGL 110</td>
<td>Introduction to Law and the Legal Assistant</td>
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Total Minimum Credits 61

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Students may substitute CST 110 for CST 100.
3. Any activity course.
CAREER STUDIES: PUBLIC LAW

(PLAN CODE: 221.456.01)

The Career Studies Certificate in Public Law may lead to entry-level positions in law offices or the law enforcement field. Those currently in the field may enter the program to upgrade their skills, knowledge, and certifications. Courses taken in the certificate program can be applied to the Criminal Justice: Public Law Specialization A.A.S. degree.

SEMESTER 1

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<td>HRI 215</td>
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<td>Principles and Applications of Catering</td>
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</table>

CULINARY ARTS

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Culinary Arts

CAREER STUDIES CERTIFICATES:

» Catering
» Classical Cooking
» Kitchen Management

The Associate of Applied Science (A.A.S.) degree in Culinary Arts is designed to provide the education and training necessary to prepare students for entry into or continued employment in food service operations. Graduates are prepared for positions such as assistant kitchen manager, chef de partie, caterer, banquet chef, chef tournant, sous chef, and eventually, executive chef.

The Culinary Arts program is accredited by the American Culinary Federation Education Foundation (ACFEF) Accrediting Commission. Graduates of the ACFEF accredited postsecondary degree program are eligible to receive a Certified Culinarian® (CC®) designation.

ASSOCIATE OF APPLIED SCIENCE DEGREE: CULINARY ARTS

(PLAN CODE: 242)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<th>COURSE NO.</th>
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<tr>
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<td>Principles of Culinary Arts I (1st 8-week session)</td>
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<tr>
<td>HRI 119</td>
<td>Applied Nutrition for Food Service</td>
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<td>HRI 158</td>
<td>Sanitation and Safety (online 1st 8-week session)</td>
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SEMESTER 2

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SEMESTER 1

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</table>

Total Minimum Credits 27

CAREER STUDIES: CLASSICAL COOKING

(PLAN CODE: 221.242.02)

The Career Studies Certificate in Classical Cooking prepares students to work as food service workers, line cooks, and chefs in various restaurant venues.

SEMESTER 1

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<td>HRI 107</td>
<td>Principles of Culinary Arts II (2nd 8-week session)</td>
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</table>
CAREER AND TECHNICAL EDUCATION

ASSOCIATE OF APPLIED SCIENCE DEGREE:

HRI 251 Food and Beverage Cost Control I 3
HRI 224 Recipe and Menu Management 3

COURSE NO. COURSE TITLE CREDITS
SEMESTER 2

CAREER STUDIES: KITCHEN MANAGEMENT
(PLAN CODE: 221.775.04)
The Career Studies Certificate in Kitchen Management offers preparation in the management of kitchens such as restaurants, school cafeterias, private enterprises, and franchises.

HRI 106 Principles of Culinary Arts I (1st 8-week session) 3
HRI 119 Applied Nutrition for Food Service 3
HRI 158 Sanitation and Safety (1st 8-week session) 3
MTH 121 Fundamentals of Mathematics I (or higher) 3

Semester Total 12
Total Minimum Credits 21

DIAGNOSTIC MEDICAL SONOGRAPHY (ULTRASOUND)

ASSOCIATE OF APPLIED SCIENCE DEGREE:
Diagnostic Medical Sonography (Ultrasound)
The Associate of Applied Science (A.A.S.) degree in Diagnostic Medical Sonography (DMS) prepares individuals for careers as staff sonographers in radiology departments, hospital settings, private offices, outpatient clinics, and the ultrasound industry. Program applications and the general admission application to the college must be submitted to the Virginia Beach Admissions Office no later than May 15.

Applicants must complete placement tests in English and math and meet all benchmarks, which includes completion of all benchmark courses with a “C” or better, to be considered for admission into the DMS program. Students must submit an unofficial transcript along with their health professions application. They must also submit an official copy of their Allied Health Program transcripts and transcripts from other colleges attended to the Office of the College Registrar at Tidewater Community College prior to the application deadline. Applicants who meet all benchmarks will continue to the next stage of the application process and will be required to complete an assigned essay and interview with the program representative(s).

The Diagnostic Medical Sonography program is accredited by the Commission on Accreditation of Allied Health Education (CAAHEP) in conjunction with the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS).

CAAHEP: 25400 US Highway 19 North, Suite 158
Clearwater, FL 33763
(727) 210-2350
http://www.caahep.org/

JRC-DMS: 6021 University Boulevard, Suite 500
Ellicott City, MD 21043
(443) 973-3251
http://www.jrcdms.org/

Admission to the college does not guarantee admission to the DMS program. If admitted, students must meet certain conditions for continuance. Students are financially responsible for their uniforms and travel. For further information, go to tcc.edu (search keywords “diagnostic medical sonography”).

ASSOCIATE OF APPLIED SCIENCE DEGREE:
DIAGNOSTIC MEDICAL SONOGRAPHY
(PLAN CODE: 109)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

COURSE NO. COURSE TITLE CREDITS
BIO 141 Human Anatomy and Physiology I 4
HLT 105 Cardiopulmonary Resuscitation 1
HLT 141 Introduction to Medical Terminology 2
MTH 126 Mathematics for Allied Health (or higher) 3
PHY 100 Elements of Physics 4
SDV 101 Orientation to Health Care 1

Semester Total 15

SEMESTER 2

COURSE NO. COURSE TITLE CREDITS
DMS 206 Introduction to Sonography 2
DMS 207 Sectional Anatomy 2
DMS 208 Ultrasound Physics and Instrumentation I 3
DMS 211 Abdominal Sonography 4
DMS 231 Clinical Education I 2

Semester Total 16

SEMESTER 3

COURSE NO. COURSE TITLE CREDITS
DMS 221 Abdominal Sonography 4
DMS 222 Sonography Registry Review 3
DMS 232 Clinical Education II 4

Semester Total 10

SEMESTER 4

COURSE NO. COURSE TITLE CREDITS
DMS 223 Clinical Education III 5

Semester Total 14

SEMESTER 5

COURSE NO. COURSE TITLE CREDITS
DMS 224 Clinical Education IV 6

Semester Total 12
Total Minimum Credits 67

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

Diesel Technology

ASSOCIATE OF APPLIED SCIENCE DEGREE:

Diesel Technology

CAREER STUDIES CERTIFICATES:

Diesel Engine Technician
Diesel Marine Technician
Diesel Medium/Heavy Truck Service Technician

The Diesel Technology programs are designed to prepare students for employment in the diesel industry as technicians in the areas of service, maintenance, and repair. The Associate of Applied Science (A.A.S.) degree in Diesel Technology offers students an in-depth background in
diesel fundamentals through theory and hands-on instruction. Students are provided with a comprehensive set of diesel skills that area employers seek when selecting technicians for their industry. Training options in career specialty areas include medium/heavy trucks and marine diesel. These programs are designed to prepare a student to work in the various industries that utilize diesel powered vehicles and equipment.

Students seeking additional credentials may pursue the National Institute for Automotive Service Excellence (ASE) Medium/Heavy Truck Certification exams.

The Diesel Technology program is accredited by the National Automotive Technicians Education Foundation (NATEF).

A valid driver’s license is required for admission into the Diesel Technology program. Students are advised to consult with the program director prior to admission into the program. Students must visit the Regional Automotive Center prior to registration.

ASSOCIATE OF APPLIED SCIENCE DEGREE: DIESEL TECHNOLOGY
(PLAN CODE: 790)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>DSL 135</td>
<td>Introduction to Diesel Technology</td>
<td>3</td>
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<tr>
<td>DSL 137</td>
<td>Basic Diesel Engine Systems</td>
<td>5</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
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<tr>
<td>SDV 101</td>
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Semester Total 17

SEMESTER 2

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<td>DSL 137</td>
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Semester Total 13

SEMESTER 3

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<td>MTH 103</td>
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Semester Total 7

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<td>Heavy Duty Drive Train Systems</td>
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Semester Total 15

SEMESTER 5

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<td>DSL 297</td>
<td>Cooperative Education in Diesel Technology</td>
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</table>

Semester Total 15

Total Minimum Credits 66

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2 A higher level of mathematics may be taken and is recommended for students planning to transfer to a four-year college or university.

3 Approved Program Electives: Choose a course mixture of 14 credits from one of the following career specialty areas of interest: All 14 elective credits must be chosen from the same career area.

Diesel Marine Technician: MAR 130, MAR 137, MAR 158, MAR 159, MAR 165

Diesel Medium/Heavy Truck Service Technician: AUT 236, DSL 210, DSL 212

CAREER STUDIES: DIESEL ENGINE TECHNICIAN
(PLAN CODE: 221.920.02)

The Career Studies Certificate in Diesel Engine Technician is designed to prepare individuals to perform diesel engine diagnosis and service diesel fuel injection systems and components. Individuals will also be able to perform basic diesel truck electrical troubleshooting and repair. Occupational opportunities include employment in the truck service and repair industries. This certificate prepares an individual to take the Automotive Service Excellence (ASE) Medium/Heavy Truck certification exams Diesel Engines (T2) and Electrical/Electronic Systems (T6).

A valid driver’s license is required for admission into the Diesel Technology program. Students are advised to consult with the program director prior to admission into the program. Students must visit the Regional Automotive Center prior to registration.

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
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<tbody>
<tr>
<td>AUT 149</td>
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<td>DSL 135</td>
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<td>DSL 137</td>
<td>Basic Diesel Engine Systems</td>
<td>5</td>
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</tbody>
</table>

Semester Total 13

CAREER STUDIES: DIESEL MARINE TECHNICIAN
(PLAN CODE: 221.920.20)

The Career Studies Certificate in Diesel Marine Technician provides students with training on modern marine diesel engines and related systems. This program includes the diagnosis, and rebuilding of diesel engines. Also included in the program is the study of fuel injection systems, marine electrical, hydraulics, and marine maintenance mechanics.

The Diesel Marine Technician program is a hands-on practical experience program. The student will study the unique requirements of marine mechanics, which includes basic nomenclature, construction and function of hulls, drive power principles, propellers, steering systems, controls, electrical equipment, instruments, and accessories. In addition, students may also consider enrolling in the Marine Gasoline Engine Technology (221.953.10) career studies program.

The Diesel Marine Technician Career Studies Certificate is approved by the American Boat and Yacht Council (ABYC) as a Marine League School.

A valid driver’s license is required for admission into the Diesel Technology program. Students are advised to consult with the program director prior to admission into the program. Students must visit the Regional Automotive Center prior to registration.

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Semester Total 13


**CAREER STUDIES: DIESEL MEDIUM/HEAVY TRUCK SERVICE TECHNICIAN**  
*(PLAN CODE: 221.920.52)*

The Career Studies Certificate in Diesel Medium/Heavy Truck Service Technician is designed to prepare individuals to perform preventive maintenance inspections (PMI), service air brakes, and service steering and suspension systems. Individuals will also be able to perform basic electrical troubleshooting and repair. Occupational opportunities include employment in the truck service and repair industries. This certificate prepares an individual to take the Automotive Service Excellence (ASE) Medium/Heavy Truck certification exams Diesel Engines (T2), Suspension and Steering (T5), and Electrical/Electronic Systems (T6).

A valid driver’s license is required for admission into the Diesel Technology program. Students are advised to consult with the program director prior to admission into the program. Students must visit the Regional Automotive Center prior to registration.

**SEMESTER 1**

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**SEMESTER 2**

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**ASSOCIATE OF APPLIED SCIENCE DEGREE: EARLY CHILDHOOD DEVELOPMENT**  
*(PLAN CODE: 636)*

**SEMESTER 1 (BASED ON A FALL SEMESTER START)**

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<td>CHD 120</td>
<td>Introduction to Early Childhood Education</td>
<td>3</td>
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<tr>
<td>CHD 145</td>
<td>Teaching Art, Music, and Movement to Children</td>
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<td>CHD 205</td>
<td>Guiding the Behavior of Children</td>
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<td>HLT 135</td>
<td>Child Health and Nutrition</td>
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<td>CHD 146</td>
<td>Math, Science, and Social Studies for Children</td>
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<td>CHD 210</td>
<td>Introduction to Exceptional Children</td>
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<td>ENG 111</td>
<td>College Composition I</td>
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<td>CST 100</td>
<td>Principles of Public Speaking (or CST 110)</td>
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<td>HLT 135</td>
<td>Child Health and Nutrition</td>
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**SEMESTER 3**

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<td>CHD 166</td>
<td>Infant and Toddler Programs</td>
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<td>CHD 215</td>
<td>Models of Early Childhood Education Programs</td>
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<td>CHD 216</td>
<td>Early Childhood Programs, School and Social Change</td>
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</table>

**EARLY CHILDHOOD DEVELOPMENT**

**ASSOCIATE OF APPLIED SCIENCE DEGREE:**

- Early Childhood Development
- Early Childhood Instruction

**CAREER STUDIES CERTIFICATES:**

- Child Development
- Educational Support Specialist
- Preschool (CDA equivalent)

The Early Childhood Development programs prepare students for work with young children in a variety of school, childcare, and agency settings.
### CAREER AND TECHNICAL EDUCATION

#### SEMESTER 2

<table>
<thead>
<tr>
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<td>HLT 135</td>
<td>Child Health and Nutrition</td>
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</table>

#### Semester Total

- Semester Total: 18
- Total Minimum Credits: 34

### CAREER STUDIES: CHILD DEVELOPMENT

(PLAN CODE: 221.636.04)

The Child Development Career Studies Certificate provides students with entry-level knowledge required to work with children. These core courses also meet the requirements for students to begin their Child Development Associate (CDA) credentialing processes.

Students enrolled in this curriculum are not eligible for federal financial assistance.

#### SEMESTER 1

<table>
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<th>COURSE TITLE</th>
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<tr>
<td>CHD 120</td>
<td>Introduction to Early Childhood Education</td>
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<tr>
<td>CHD 145</td>
<td>Teaching Art, Music, and Movement to Children</td>
<td>3</td>
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<td>CHD 205</td>
<td>Guiding the Behavior of Children</td>
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<tr>
<td>HLT 135</td>
<td>Child Health and Nutrition</td>
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#### Total Minimum Credits

- Total Minimum Credits: 12

### CAREER STUDIES: EDUCATIONAL SUPPORT SPECIALIST

(PLAN CODE: 221.629.03)

The Career Studies Certificate in Educational Support Specialist prepares individuals for work as teaching assistants in public and private school settings. Course work includes language arts, social studies, math, and science, along with child psychology behavior guidance.

#### SEMESTER 1

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<td>CHD 118</td>
<td>Language Arts for Young Children</td>
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<td>Math, Science, and Social Studies for Children</td>
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<td>CHD 205</td>
<td>Guiding the Behavior of Children</td>
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<td>PSY 235</td>
<td>Child Psychology (or PSY 231)</td>
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#### Approved Program Elective

- Approved Program Elective: 1

#### Total Minimum Credits

- Total Minimum Credits: 18

1. Approved program electives may be chosen from CHD 145, CHD 210, or HLT 135.

### CAREER STUDIES: PRESCHOOL (CDA EQUIVALENT)

(PLAN CODE: 221.636.05)

The Career Studies Certificate in Preschool education is designed to prepare individuals to create developmentally appropriate learning environments for preschool children. Occupational opportunities include employment in child development programs and child care agencies/centers that include preschool-aged children.

This certificate satisfies the requirements of the Head Start Child Development (CDA) Associate Credential.

#### SEMESTER 1

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#### Semester Total

- Semester Total: 10

### ELECTRICAL TECHNOLOGY

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:

- Electrical Technology

#### CERTIFICATE:

- Electrical Wiring

#### CAREER STUDIES CERTIFICATES:

- Electrical Wiring
- Electrical Wiring for Technicians
- Fiber and Data Cabling Installation
- Marine Electrical (see this program listing under the A.A.S. in Maritime Technologies Career Studies Certificate options)
- Renewable Energy Technologies

The Associate of Applied Science (A.A.S.) degree in Electrical Technology is designed to prepare students for employment in various industries as electrical/electronic technicians. Students develop the practical skills needed to calculate, install, and work with electrical machinery, machine control, and other electrically controlled devices in residential, commercial and industrial environments. In addition, this program also provides students with a comprehensive set of skills that are needed in the electrical industry.

Training options in career specialty areas include program and logic control, industrial and business management, renewable energy technologies, fiber and data cabling, and occupational safety. The degree offers students an in-depth background in electrical fundamentals through theory and hands-on instruction.

#### ASSOCIATE OF APPLIED SCIENCE DEGREE:

- ELECTRICAL TECHNOLOGY

(PLAN CODE: 841)

#### SEMESTER 1 (BASED ON A FALL SEMESTER START)

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#### Semester Total

- Semester Total: 15

#### SEMESTER 2

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#### Humanities/Social Science Elective

- Humanities/Social Science Elective: 3

#### Semester Total

- Semester Total: 18
### CAREER STUDIES: ELECTRICAL WIRING FOR TECHNICIANS

**PLAN CODE: 221.706.03**

The Career Studies Certificate in Electrical Wiring for Technicians provides classroom instruction—required by the Commonwealth of Virginia—to take the electrician licensing examination.

Students enrolled in this curriculum are not eligible for federal financial assistance.

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### CAREER STUDIES: FIBER AND DATA CABLING INSTALLATION

**PLAN CODE: 221.706.30**

The Career Studies Certificate in Fiber and Data Cabling Installation prepares students for careers in the maintenance, testing, troubleshooting and repair of fiber, data, and video network systems. Students who complete this program will be prepared to take the industry- and manufacturer-specific certification exams for Fiber and Data Cabling.

<table>
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<tr>
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<td>ELE 174</td>
<td>Fiber Optic Connections</td>
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<td>ELE 189</td>
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1 Approved ELE Electives:  
- ELE 179 - Satellite Dish Installation  
- ELE 250 - Fiber Optics Technology
CAREER AND TECHNICAL EDUCATION

CAREER STUDIES: RENEWABLE ENERGY TECHNOLOGIES
(PLAN CODE: 221.706.40)

The Career Studies Certificate in Renewable Energy Technologies prepares students for a career in the design, installation, and maintenance of alternative energy systems. Students who complete this program will be prepared to take industry - and manufacturer-specific certification exams for Renewable Energies Integrator Installer.

SEMMESTER 1

<table>
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<td>Digital Principles, Terminology and Applications</td>
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SEMMESTER 4

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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

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3 ETR 174 may be substituted for ETR 261.

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1 Approved ELE/ENE Electives: 
   » ELE 178 - Wind Turbine Technology
   » ELE 188 - Geothermal Technology for Electricians
   » ELE 105 - Solar Thermal Active and Passive Technology
   » ELE 225 - Commercial/Industrial Photovoltaic Design and Installation

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CERTIFICATE: ELECTRONICS ENGINEERING TECHNOLOGY
(PLAN CODE: 981)

The Certificate in Electronics Engineering Technology prepares students for entry-level electronics technician positions or assists students with advancement within the field.

ASSOCIATE OF APPLIED SCIENCE DEGREE:
ELECTRONICS TECHNOLOGY
(PLAN CODE: 981)

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THE CERTIFICATE: ELECTRONICS ENGINEERING TECHNOLOGY
(PLAN CODE: 943)

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ASSOCIATE OF APPLIED SCIENCE DEGREE:
ELECTRONICS TECHNOLOGY
(PLAN CODE: 981)

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SEMMESTER 4

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1 ETR 174 may be substituted for ETR 261.
EMERGENCY MEDICAL SERVICES

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Emergency Medical Services

CAREER STUDIES CERTIFICATES:

» Critical Care
» Emergency Medical Technician—Intermediate
» Emergency Medical Technician—Paramedic

The programs in Emergency Medical Services (EMS) prepare students for work in areas such as hospitals, fire-rescue, military, volunteer services, nursing homes, sports organizations, cruise ship lines, and other fields that require emergency services.

The Associate of Applied Science (A.A.S.) degree in Emergency Medical Services provides comprehensive education necessary to provide advanced emergency medical care for patients accessing emergency medical services. Clinical and field internships are key components of this program since they offer students opportunities to experience the role of emergency service provider in various settings.

Admission to the A.A.S. program requires a general college application. If admitted, students must meet certain conditions for continuance. For further information, go to tcc.edu (search keywords “emergency medical services”).

The TCC EMS Paramedic Program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP).

Commission on Accreditation of Allied Health Education Programs
25400 US Highway 19 N., Suite 158
Clearwater, FL 33763
(727) 210-2350
www.caahep.org

To contact CoAEMSP:
8301 Lakeview Parkway
Suite 111-312
Rowlett, TX 75088
(214) 703-8445
FAX (214) 703-8992
www.coaemsp.org

ASSOCIATE OF APPLIED SCIENCE DEGREE:
EMERGENCY MEDICAL SERVICES
(PLAN CODE: 146)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>Basic ECG Recognition</td>
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<td>ALS—Medical Care</td>
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CAREER STUDIES: CRITICAL CARE
(PLAN CODE: 221.146.10)

The Career Studies Certificate in Critical Care prepares individuals to work in critical care environments, including flight and ground transport areas, as well as critical care units in hospitals. The program is available to registered nurses and paramedics who wish to enhance their training in patient critical care. Upon completion of the certificate, nurses may take the Critical Care Nurses Exam (CCRN) and paramedics may take the Flight Paramedic exam, as added credentials in their work.

SEMESTER 1

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CAREER STUDIES: EMERGENCY MEDICAL TECHNICIAN—INTERMEDIATE
(PLAN CODE: 221.146.03)

The Career Studies Certificate in Emergency Medical Technician—Intermediate is designed for those seeking work in hospital emergency medicine, fire-rescue, military, and ambulance environments. Those who complete the certificate may take the National Registry EMT-
Intermediate certification exam. They may also be eligible to take the Virginia EMT-Enhanced exam. Note: Students entering this program must possess a current EMT/B certification.

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<td>EMS 153</td>
<td>Basic ECG Recognition</td>
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<td>EMS 155</td>
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<tr>
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<td>ALS — Trauma Care</td>
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<td>EMS 159</td>
<td>ALS — Special Populations</td>
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<td>EMS 172</td>
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**Total Minimum Credits 19**

CAREER STUDIES:
EMERGENCY MEDICAL TECHNICIAN — PARAMEDIC
(PLAN CODE: 221.146.05)
The Career Studies Certificate in Emergency Medical Technician—Paramedic prepares students to function as advanced life support providers, and to progress to the highest level in their field. Upon completion of the certificate, students may take the National Registry EMT-Paramedic exam. Note: Students entering the program must have completed the Career Studies Certificate in Emergency Medical Technician—Intermediate, or have a comparable background in emergency services.

Contact the Emergency Medical Services office for more information at (757) 822-7335.

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<td>FST 110</td>
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<td>SDV 100</td>
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<td>FST 205</td>
<td>Fire Protection Hydraulics and Water Supply</td>
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<td>FST 210</td>
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<td>FST 220</td>
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FIRE SCIENCE TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE DEGREE:
Fire Science Technology

CAREER STUDIES CERTIFICATE:
Fire Science Supervision

The Associate of Applied Science (A.A.S.) degree in Fire Science Technology prepares individuals for work as fire administrators, arson investigators, fire training coordinators, safety directors, state training coordinators, municipal department administrators, fire insurance appraisers, and fire equipment salespersons. The program is aimed at firefighters who seek advancement and wish to broaden their knowledge of the field.

Students are advised to consult with the program coordinator prior to entering the program.

ASSOCIATE OF APPLIED SCIENCE DEGREE:
FIRE SCIENCE TECHNOLOGY
(PLAN CODE: 427)

SEMESTER 1 (BASED ON A FALL SEMESTER START)
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<td>Principles of Emergency Services</td>
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<td>FST 110</td>
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<td>SDV 100</td>
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<tr>
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Transcripts from other colleges attended must be sent to Tidewater Community College, Office of the College Registrar, P.O. Box 9000, Norfolk, Virginia, 23509. These transcripts must be evaluated before any transfer credit is granted prior to the application deadline. Credit will not be granted for courses taken five years or more prior to the date of enrollment. Credit will only be granted for FNS courses taken at institutions accredited by the American Board of Funeral Service Education www.abfse.org.

Following acceptance into the program, students must maintain a C or better in all FNS courses and in SOC 201 and PSY 116. Students will be required to have completed twenty-four credit hours in order to enroll in FNS 111, 112, 113, 114, 211, 212, 231, and 232. In order to take the second part of sequenced courses, a grade of C or better must be earned in the initial course. Individuals in the Funeral Service program are required to complete the National Board Examination (NBE) prior to graduation.


In order to receive a Funeral Service license in the Commonwealth of Virginia, an individual must: (1) complete an accredited program of mortuary science; (2) pass the National Board Examination; (3) complete a 3,000 hour apprenticeship; and (4) pass the State examination. Completion of the National Board Examination (NBE) is a requirement for graduation from the TCC Funeral Service program. The cost of the exam is $500. The annual passage rate for first-time takers on the National Board Examination (NBE) before graduation.

For additional information regarding the Fire Science Technology program, see tcc.edu/academics/professional-services/programs/fire-science-technology-degree.

CAREER STUDIES: FIRE SCIENCE SUPERVISION
(PLAN CODE: 221.427.05)

The Career Studies Certificate in Fire Science Supervision is designed for students interested in the management and administration of the fire protection career field. Students seeking promotion may also wish to pursue this program as a means of enhancing their credentials.

SEMESTER 1

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<td>Fire Investigation</td>
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<td>FST 235</td>
<td>Strategy and Tactics</td>
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Total Minimum Credits 24

FUNERAL SERVICE

ASSOCIATE OF APPLIED SCIENCE DEGREE:

Funeral Service

The Associate of Applied Science (A.A.S.) degree in Funeral Service provides an extensive program designed to prepare students for careers in the field of mortuary science. A diversified curriculum addresses the changing needs and demands of contemporary funeral directing, embalming, and business management.

Entrance requirements for this program include: graduation from high school or completion of the GED and submission of high school transcript or GED certificate; placement into ENG 111; completion of MTH 1 or MTE 1-3, and MTH 95 or MTE 4; or equivalent; and successful completion (grades of C or better) of prerequisite courses (ACC 211, CHM 110, and FNS 121). Once prerequisite courses have been successfully completed, a Funeral Service Program Application must be completed. Students are also expected to have begun or declined in writing the Hepatitis-B series of shots upon entering FNS 111 and 112.
ASSOCIATE OF APPLIED SCIENCE DEGREE: FUNERAL SERVICE
(PLAN CODE: 155)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>CHM 110</td>
<td>Survey of Chemistry</td>
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<td>FNS 121</td>
<td>Anatomy for Funeral Service I</td>
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<td>PSY 116</td>
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<td>SOC 201</td>
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<td>Introduction to Funeral Service</td>
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<td>FNS 111</td>
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<td>FNS 211</td>
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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2 Additional fees associated with this course: $500 - National Board Exam; $100 - Practice National Board Exam (NBE); and $180 - Computerized Testing Program. (Fees subject to change.)
3 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

ASSOCIATE OF APPLIED SCIENCE DEGREE: GRAPHIC DESIGN
(PLAN CODE: 514)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>ART 250</td>
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<td>SDV 100</td>
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<td></td>
<td><strong>Health/Physical Education Elective 4</strong></td>
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SEMESTER 2

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>ART 121</td>
<td>Drawing I</td>
<td>3</td>
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<tr>
<td>ART 141</td>
<td>Typography I</td>
<td>4</td>
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<tr>
<td>ART 202</td>
<td>History of Art II</td>
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<tr>
<td>ART 284</td>
<td>Computer Graphics II</td>
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<td>ENG 112</td>
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SEMESTER 3

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<th>COURSE NO.</th>
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<tbody>
<tr>
<td>ART 122</td>
<td>Drawing II</td>
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<tr>
<td>ART 209</td>
<td>Creative Concepts and Copywriting</td>
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<tr>
<td>ART 251</td>
<td>Communication Design I</td>
<td>3</td>
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<tr>
<td>HIS 111</td>
<td>History of World Civilization I</td>
<td>3</td>
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<tr>
<td>PHT 164</td>
<td>Introduction to Digital Photography</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Natural Science Elective or Mathematics Elective 1</strong></td>
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<td><strong>Semester Total</strong></td>
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SEMESTER 4

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<th>COURSE NO.</th>
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<tbody>
<tr>
<td>ART 252</td>
<td>Communication Design II</td>
<td>3</td>
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<tr>
<td>ART 263</td>
<td>Interactive Design I</td>
<td>4</td>
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<tr>
<td>ART 286</td>
<td>Communication Arts Workshop 2</td>
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<td>HIS 112</td>
<td>History of World Civilization II</td>
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<td><strong>Approved Graphic Design Elective 2</strong></td>
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<td><strong>Total Minimum Credits</strong></td>
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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2 Additional fees associated with this course: $500 - National Board Exam; $100 - Practice National Board Exam (NBE); and $180 - Computerized Testing Program. (Fees subject to change.)
3 Students may choose from any of the listed courses for which they have the prerequisite and that is not already a requirement in their specialization: ART 122, ART 201, ART 203, ART 208; ART 264, ART 270, ART 271, ART 290*; ART 297*; and PHT 171. *Requires permission of Visual Arts Center Director.
4 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

ASSOCIATE OF APPLIED SCIENCE DEGREE: GRAPHIC DESIGN

SPECIALIZATION: ADVERTISING DESIGN
(PLAN CODE: 514.01)

The Advertising Design specialization teaches students the computer and design skills, marketing and public relations expertise needed to work in the field of advertising—as a layout artist, a copywriter, a freelance graphic designer, or in marketing and sales.

ASSOCIATE OF APPLIED SCIENCE DEGREE: GRAPHIC DESIGN

SPECIALIZATION: MULTIMEDIA

The Associate of Applied Science (A.A.S.) degree in Graphic Design teaches students how to design for print and the web. They will learn the specialized computer and design skills needed to create logos, magazine layouts, brochures, web pages, or any of the limitless design tasks graphic artists are called upon to invent. Graphic designers create the visual world of print and electronic media—from logos to books, magazines to billboards, TV to the Internet.

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2 Additional fees associated with this course: $500 - National Board Exam; $100 - Practice National Board Exam (NBE); and $180 - Computerized Testing Program. (Fees subject to change.)
3 Students may choose from any of the listed courses for which they have the prerequisite and that is not already a requirement in their specialization: ART 122, ART 201, ART 203, ART 208; ART 264, ART 270, ART 271, ART 290*; ART 297*; and PHT 171. *Requires permission of Visual Arts Center Director.
4 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).
### Multimedia (PLAN CODE: 514.04)

The Multimedia specialization prepares students to produce technologically sophisticated video and multimedia work—for the web, CD, DVD, video, and whatever comes next. The future of communication is digital—industry needs designers capable of shaping information, video and graphics and delivering it to the world. Graduates may seek employment as web page designers, motion graphic artists or interactive video and graphics and delivering it to the world. Graduates may seek positions as medical records technicians, insurance companies, consulting firms, and many other health related facilities. Graduates may seek positions as medical records technicians, coders, health information specialists, and similar designations.

Entrance requirements for this program include high school graduation or a GED, BIO 141, ENG 111, and successful completion of MTH 1 or MTE 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course). Students may select any of the following courses to meet this requirement: DIT 121, 125; ART 126, 215; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
ASSOCIATE OF APPLIED SCIENCE DEGREE: HEALTH INFORMATION MANAGEMENT

(PLAN CODE: 152)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<td>BIO 141</td>
<td>Human Anatomy and Physiology I</td>
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<td>College Composition I</td>
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<tr>
<td>HIM 101</td>
<td>Health Information Technology I</td>
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<td>HLT 143</td>
<td>Medical Terminology I</td>
<td>3</td>
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<td>SDV 101</td>
<td>Orientation to Health Care</td>
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Semester Total 15

SEMESTER 2

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<th>COURSE TITLE</th>
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<td>BIO 142</td>
<td>Human Anatomy and Physiology II</td>
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<tr>
<td>HIM 110</td>
<td>Introduction to Human Pathology</td>
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<tr>
<td>HIM 151</td>
<td>Reimbursement Issues in Medical Practice Management</td>
<td>2</td>
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<tr>
<td>HIM 220</td>
<td>Health Statistics</td>
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<tr>
<td>HIM 253</td>
<td>Health Records Coding</td>
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Semester Total 15

SEMESTER 3

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<tr>
<td>HIM 103</td>
<td>Health Information Technology II</td>
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<tr>
<td>HIM 249</td>
<td>Supervision and Management Practices</td>
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<td>HIM 260</td>
<td>Pharmacology for Health Information Technology</td>
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Semester Total 7

SEMESTER 4

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<tr>
<td>HIM 190</td>
<td>Coordinated Internship</td>
<td>2</td>
</tr>
<tr>
<td>HIM 226</td>
<td>Legal Aspects of Health Record Documentation</td>
<td>2</td>
</tr>
<tr>
<td>HIM 229</td>
<td>Performance Improvement in Health Care Settings</td>
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</tr>
<tr>
<td>HIM 254</td>
<td>Advanced Coding and Reimbursement</td>
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Semester Total 14

SEMESTER 5

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<th>COURSE TITLE</th>
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<tr>
<td>HIM 215</td>
<td>Health Data Classification Systems</td>
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<tr>
<td>HIM 230</td>
<td>Information Systems and Technology in Health Care</td>
<td>3</td>
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<td>HIM 290</td>
<td>Coordinated Internship</td>
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<tr>
<td>HIM 298</td>
<td>Seminar and Project</td>
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Semester Total 16

Total Minimum Credits 67

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 123, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

ASSOCIATE OF APPLIED SCIENCE DEGREE: HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION

(PLAN CODE: 904)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>AIR 111</td>
<td>Air Conditioning and Refrigeration Controls I</td>
<td>3</td>
</tr>
<tr>
<td>AIR 121</td>
<td>Air Conditioning and Refrigeration I</td>
<td>3</td>
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<tr>
<td>AIR 161</td>
<td>Heating, Air and Refrigeration Calculations I</td>
<td>3</td>
</tr>
<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
</tr>
<tr>
<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
<td>4</td>
</tr>
<tr>
<td>SDV 101</td>
<td>Orientation to Engineering and Technologies</td>
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Semester Total 17

SEMESTER 2

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<tr>
<td>AIR 154</td>
<td>Heating Systems I</td>
<td>3</td>
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<tr>
<td>AIR 159</td>
<td>Heating and Cooling Safety</td>
<td>1</td>
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<tr>
<td>AIR 160</td>
<td>Introduction to Indoor Air Quality</td>
<td>2</td>
</tr>
<tr>
<td>MTH 103</td>
<td>Applied Technical Mathematics I</td>
<td>3</td>
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<td>Approved Program Elective 3</td>
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<tr>
<td>Approved Program Elective 3</td>
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<td>Humanities/Social Science Elective 1</td>
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Semester Total 18

SEMESTER 3

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<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>AIR 206</td>
<td>Psychrometrics</td>
<td>3</td>
</tr>
<tr>
<td>AIR 278</td>
<td>HVAC System Startup and Commissioning</td>
<td>3</td>
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<tr>
<td>MKT 170</td>
<td>Customer Service</td>
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<td>Approved Program Elective 3</td>
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<td>Humanities Elective 1 (PHI 220 or PHI 226 is recommended)</td>
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Semester Total 17

SEMESTER 4

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<tr>
<td>AIR 207</td>
<td>Heat Loads and Psychrometrics</td>
<td>4</td>
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<tr>
<td>AIR 297</td>
<td>Cooperative Education</td>
<td>3</td>
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<tr>
<td>SAF 120</td>
<td>Safety and Health Standards: Regulations and Codes</td>
<td>3</td>
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<td>Approved Program Elective 3</td>
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<tr>
<td>Social Science Elective 1</td>
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</table>

Semester Total 16

Total Minimum Credits 68

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2 A higher level of mathematics may be taken and is recommended for students planning to transfer to a four-year college or university.

3 Approved Program Electives: Choose a course mixture of 15 credits from the following career specialty areas of interest. All 15 elective credits must be chosen from the same career area.

   Residential: AIR 112, AIR 116, AIR 222, AIR 158, AIR 165, AIR 200, AIR 235, AIR 238, ARC 133, ELE 127, WEL 117
   Commercial: AIR 112, AIR 116, AIR 122, AIR 158, AIR 165, AIR 200, AIR 238, AIR 240, AIR 241, AIR 273, WEL 117
   Weatherization: AIR 163, AIR 164, AIR 168, AIR 178, AIR 179
   Supervision and Management: ACC 220, BUS 100, BUS 111, BUS 165, BUS 200, BUS 201, BUS 255, BUS 265, CST 110, IND 121
   Energy Management: AIR 112, AIR 240, AIR 281, AIR 282, BLD 111, ENE 100, ENG 131

ASSOCIATE OF APPLIED SCIENCE DEGREE: HEALTH INFORMATION MANAGEMENT

(Plan Code: 152)

Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 123, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

ASSOCIATE OF APPLIED SCIENCE DEGREE: HEATING, VENTILATION, AIR CONDITIONING, AND REFRIGERATION (HVAC/R)

(Plan Code: 904)

Students should consult an academic advisor or counselor to choose the appropriate course(s).
CERTIFICATE: AIR CONDITIONING AND REFRIGERATION  
(PLAN CODE: 903)

The Certificate in Air Conditioning and Refrigeration is aimed at those who plan to seek positions in the field of heating, ventilation, air conditioning, and refrigeration. It also provides current workers the opportunity to upgrade skills and knowledge.

The Certificate program prepares students for technician jobs working on residential or commercial air conditioning systems, or for positions as a sales representative or a control services technician.

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>AIR 111</td>
<td>Air Conditioning and Refrigeration Controls I</td>
<td>3</td>
<td>HRT 125</td>
<td>Chemicals in Horticulture</td>
<td>3</td>
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<tr>
<td>AIR 121</td>
<td>Air Conditioning and Refrigeration I</td>
<td>3</td>
<td>HRT 155</td>
<td>Plants and Society</td>
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<td>AIR 161</td>
<td>Heating, Air and Refrigeration Calculations I</td>
<td>3</td>
<td>HRT 202</td>
<td>Landscape Plants II</td>
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<td>ENG 111</td>
<td>College Composition I</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
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<td>AIR 116</td>
<td>Duct Construction and Maintenance</td>
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<td>Approved Elective</td>
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<td>AIR 200</td>
<td>Hydronics</td>
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<td>Approved Elective</td>
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<tr>
<td>AIR 206</td>
<td>Psychrometrics</td>
<td>3</td>
<td>Approved Elective</td>
<td>3</td>
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<tr>
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**Total Minimum Credits**: 35

» HORTICULTURE

ASSOCIATE OF APPLIED SCIENCE DEGREE: HORTICULTURE  
(PLAN CODE: 335)

<table>
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<th>COURSE NO.</th>
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<tr>
<td>ENG 111 College Composition I</td>
<td>3</td>
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<tr>
<td>HRT 110 Principles of Horticulture</td>
<td>3</td>
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<td>HRT 201 Landscape Plants I</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITE 115 Introduction to Computer Applications and Concepts</td>
<td>4</td>
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<td>SDV 100 College Success Skills</td>
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<tr>
<td>HRT 125 Chemicals in Horticulture</td>
<td>3</td>
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<td>HRT 155 Plants and Society</td>
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<td>HRT 202 Landscape Plants II</td>
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<td>MTH 121 Fundamentals of Mathematics I (or higher)</td>
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<td>Social Science Elective</td>
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**Total Minimum Credits**: 67

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).
2 Must be chosen from a single Career Studies Certificate: Landscape Design, Landscape Management, or Plant Production. Consult your Horticulture program advisor.
3 Approved Business Elective may be chosen from ACC, BUS, GIS, HRT, ITE, MKT, or other small business-related course and must be approved by your Horticulture program advisor.
4 Consult your Horticulture program advisor.

CAREER STUDIES: LANDSCAPE DESIGN  
(PLAN CODE: 221.335.18)

The Career Studies Certificate in Landscape Design prepares students for entry-level positions as landscape designers in public and private sectors. Those currently in the field may choose to upgrade their skills, knowledge, and certifications in landscape design.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>HRT 110 Principles of Horticulture</td>
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<tr>
<td>HRT 201 Landscape Plants I</td>
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<tr>
<td>HRT 235 Landscape Drawing</td>
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51
CAREER STUDIES: LANDSCAPE MANAGEMENT
(PLAN CODE: 221.335.19)
The Career Studies Certificate in Landscape Management is designed for those seeking entry-level positions as tree care technicians, landscape gardeners, turf grass technicians, landscape installers, landscape maintenance technicians, and as employees in retail landscape businesses. Those currently in the field may choose to upgrade their skills, knowledge, and certifications in landscape management.

SEMESTER 1 (BASED ON A FALL SEMESTER START)
COURSE NO. COURSE TITLE CREDITS
HRT 110 Principles of Horticulture 3
HRT 201 Landscape Plants I 3
HRT 269 Professional Turf Care 3
Semester Total 9

SEMESTER 2
COURSE NO. COURSE TITLE CREDITS
HRT 202 Landscape Plants II 3
HRT 275 Landscape Construction and Maintenance 3
Semester Total 6

SEMESTER 3
COURSE NO. COURSE TITLE CREDITS
HRT 231 Planting Design I 3
HRT 227 Professional Landscape Management 3
Semester Total 6

SEMESTER 4
COURSE NO. COURSE TITLE CREDITS
HRT 233 Landscape Design Applications 3

Total Minimum Credits 24

HOSPITALITY MANAGEMENT
ASSOCIATE OF APPLIED SCIENCE DEGREE:
Hospitality Management
CAREER STUDIES CERTIFICATE:
Lodging Management Trainee

ASSOCIATE OF APPLIED SCIENCE DEGREE:
Food Service Management Trainee
CAREER STUDIES CERTIFICATE:
Food Service Management

The Associate of Applied Science (A.A.S.) degree in Hospitality Management prepares students for careers in the lodging industry in either hotel, motel, and restaurant management or food service management. Graduates may seek employment as front office managers, guest services managers, cost control managers, purchasing directors, sales managers, assistant hotel general managers, or executive housekeepers. Courses in supervisory management, accounting, communications, marketing, cost control, and purchasing provide a comprehensive management background.

ASSOCIATE OF APPLIED SCIENCE DEGREE:
HOSPITALITY MANAGEMENT
(PLAN CODE: 775)

SEMESTER 1 (BASED ON A FALL SEMESTER START)
COURSE NO. COURSE TITLE CREDITS
ENG 111 College Composition I 3
HRI 154 Principles of Hospitality Management 3
HRI 196 On-Site Training in Hospitality 1
ITE 115 Introduction to Computer Applications and Concepts 4
MTH 152 Mathematics for the Liberal Arts II 3
SDV 100 College Success Skills 1
Semester Total 15

SEMESTER 2
COURSE NO. COURSE TITLE CREDITS
ACC 211 Principles of Accounting I 3
HRI 159 Introduction to Hospitality Industry Computer Systems 4
HRI 199 Supervised Study in Hospitality 1
HRI 241 Supervision in the Hospitality Industry 3
Semester Total 17
### CAREER STUDIES: LODGING MANAGEMENT TRAINEE

**PLAN CODE: 221.775.02**

The Career Studies Certificate in Lodging Management Trainee prepares individuals for management trainee positions in the lodging industry, including guest services, sales, assistants in hotels and motels, and comparable roles.

#### SEMESTER 1

<table>
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<tr>
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<th>COURSE TITLE</th>
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<td>HRI 154</td>
<td>Principles of Hospitality Management</td>
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<td>HRI 160</td>
<td>Executive Housekeeping</td>
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<td>HRI 180</td>
<td>Convention Management and Service</td>
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<tr>
<td>HRI 270</td>
<td>Strategic Lodging Management</td>
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<tr>
<td>HRI 275</td>
<td>Hospitality Law</td>
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<tr>
<td>HRI 290</td>
<td>Coordinated Internship in Hospitality Management (or HRI 297)</td>
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</table>

**Semester Total:** 15

**Total Minimum Credits:** 65

1. HRI 196 requires a minimum of 15 hours of on-site training.
2. Recommended courses: CST 229, HUM 246, and PHI 220. Students may also choose eligible courses listed on page 14 in the 2017-2018 catalog.
3. Recommended courses: ECO 120, PSY 200, and SOC 200. Students may also choose eligible courses listed on page 14 in the 2017-2018 catalog.
4. HRI 290 and HRI 297 require a minimum of 80 hours of work per credit.

#### SEMESTER 2

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<td>Supervision in the Hospitality Industry</td>
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<td>HRI 270</td>
<td>Strategic Lodging Management</td>
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<td>HRI 275</td>
<td>Hospitality Law</td>
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<td>HRI 290</td>
<td>Coordinated Internship in Hospitality Management (or HRI 297)</td>
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**Semester Total:** 13

**Total Minimum Credits:** 65

1. HRI 196 requires a minimum of 15 hours of on-site training.
2. Recommended courses: CST 229, HUM 246, and PHI 220. Students may also choose eligible courses listed on page 14 in the 2017-2018 catalog.
3. Recommended courses: ECO 120, PSY 200, and SOC 200. Students may also choose eligible courses listed on page 14 in the 2017-2018 catalog.
4. HRI 290 and HRI 297 require a minimum of 80 hours of work per credit.

### CAREER STUDIES: FOOD SERVICE MANAGEMENT TRAINEE

**PLAN CODE: 221.741.64**

The Career Studies Certificate in Food Service Management Trainee is designed for individuals who seek management trainee positions in all the food service industries, including restaurants, catering, and hotel and motel food services.

#### SEMESTER 1

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<td>HRI 119</td>
<td>Applied Nutrition for Food Service</td>
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<td>HRI 215</td>
<td>Food Purchasing</td>
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<td>HRI 235</td>
<td>Marketing of Hospitality Services</td>
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<td>HRI 257</td>
<td>Catering Management</td>
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<tr>
<td>HRI 290</td>
<td>Coordinated Internship in Hospitality Management (or HRI 297)</td>
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</table>

**Semester Total:** 15

**Total Minimum Credits:** 65

1. HRI 196 requires a minimum of 15 hours of on-site training.
2. Recommended courses: CST 229, HUM 246, and PHI 220. Students may also choose eligible courses listed on page 14 in the 2017-2018 catalog.
3. Recommended courses: ECO 120, PSY 200, and SOC 200. Students may also choose eligible courses listed on page 14 in the 2017-2018 catalog.
4. HRI 290 and HRI 297 require a minimum of 80 hours of work per credit.

### ASSOCIATE OF APPLIED SCIENCE DEGREE: HOSPITALITY MANAGEMENT

### SPECIALIZATION: FOOD SERVICE MANAGEMENT

**PLAN CODE: 775.02**

The Specialization in Food Service Management focuses on principles of restaurant, catering, and hotel food and beverage management. Graduates may seek positions such as banquet managers, restaurant general managers, hotel catering managers, and others.
SEMESTER 2

<table>
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<td>Recipe and Menu Management</td>
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<td>HRI 241</td>
<td>Supervision in the Hospitality Industry</td>
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<td>HRI 251</td>
<td>Food and Beverage Cost Control I</td>
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<td>HRI 257</td>
<td>Catering Management</td>
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<td>HRI 290</td>
<td>Coordinated Internship in Hospitality Management</td>
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<td>Lodging Management or Food Service Management (or HRI 297)</td>
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</table>

Semester Total 15

Total Minimum Credits 28

1 HRI 196 requires a minimum of 15 hours of on-site training.
2 HRI 290 and HRI 297 require a minimum of 80 hours of work per credit.

† HUMAN SERVICES

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Human Services

The Associate of Applied Science (A.A.S.) degree in Human Services is designed to provide the education and training necessary for entry-level employment and career advancement in human and social services. Students obtain education and training in observation, intake and interviewing, implementing treatment plans, problem-solving, crisis intervention, case management, and referral procedures.

Graduates may seek employment as human services workers, case management aides, social work assistants, community support workers, mental health aides, community outreach workers, life skills counselors, or gerontology aides. These positions typically work under the direction of individuals in fields such as nursing, psychiatry, psychology, rehabilitative or physical therapy, and social work.

ASSOCIATE OF APPLIED SCIENCE DEGREE: HUMAN SERVICES
(PLAN CODE: 480)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<tr>
<td>ENG 111</td>
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<td>HMS 100</td>
<td>Introduction to Human Services</td>
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<tr>
<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
<td>4</td>
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<tr>
<td>PSY 201</td>
<td>Introduction to Psychology I</td>
<td>3</td>
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<td>SDV 100</td>
<td>College Success Skills</td>
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<tr>
<td>SOC 201</td>
<td>Introduction to Sociology I</td>
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Semester Total 17

SEMESTER 2

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<td>HLT 110</td>
<td>Concepts of Personal and Community Health</td>
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<td>Group Dynamics I</td>
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<td>HMS 250</td>
<td>Principles of Case Management</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I</td>
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Semester Total 18

SEMESTER 3

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<td>Case Management and Substance Abuse</td>
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<td>PHI 226</td>
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<td>PSY 230</td>
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Semester Total 15

SEMESTER 4

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<td>PSY 216</td>
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<td>SOC 268</td>
<td>Social Problems</td>
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<td>CST 110</td>
<td>Introduction to Communication</td>
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Semester Total 15

Total Minimum Credits 65

† Approved Human Services Electives:

» ADJ 232 - Domestic Violence
» CHD 210 - Introduction to Exceptional Children
» HMS 226 - Helping Across Cultures
» HMS 227 - The Helper as a Change Agent
» HMS 236 - Gerontology
» PSY 215 - Abnormal Psychology
» PSY 255 - Psychological Aspects of Criminal Behavior
» SOC 215 - Sociology of the Family

† INDUSTRIAL TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Industrial Technology

CAREER STUDIES CERTIFICATE:

» Industrial Management

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Industrial Technology

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Specialization: Industrial Maintenance Technology

CAREER STUDIES CERTIFICATE:

» Industrial Maintenance

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Industrial Technology

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Specialization: Industrial Manufacturing Engineering Technology

CAREER STUDIES CERTIFICATE:

» Specialization: Industrial Supervision

CAREER STUDIES CERTIFICATE:

» Specialization: Occupational Safety

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Industrial Technology

ASSOCIATE OF APPLIED SCIENCE DEGREE:

» Specialization: Quality Assurance

CAREER STUDIES CERTIFICATE:

» Quality Assurance

The varied programs in Industrial Technology prepare students for entry-level employment in manufacturing, engineering, and industrial services companies. Graduates will be prepared for a variety of jobs in the industrial, manufacturing, or production companies as well as federal, state, and local governments.

The Associate of Applied Science (A.A.S.) degree in Industrial Technology is designed to prepare “management-oriented technical professionals” with the practical knowledge, skills, and training to compete effectively for entry-level positions in industrial manufacturing and engineering services companies.
Graduates will be prepared for the following job opportunities: industrial or manufacturing supervisory technician, production planning technician, methods engineering technician, materials-handling technician, wage and job evaluation technician, or plant layout technician.

ASSOCIATE OF APPLIED SCIENCE DEGREE: INDUSTRIAL TECHNOLOGY
(PLAN CODE: 963)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>IND 101</td>
<td>Quality Assurance Technology I</td>
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<td>IND 106</td>
<td>Industrial Engineering Technology</td>
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Semester Total 17

SEMESTER 2

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<tr>
<td>IND 145</td>
<td>Introduction to Metrology</td>
<td>3</td>
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<td>IND 146</td>
<td>Statistical Quality Control</td>
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<td>IND 237</td>
<td>Fundamentals of ISO 9000</td>
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<td>MTH 163</td>
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Semester Total 16

SEMESTER 3

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<td>SAF 120</td>
<td>Safety and Health Standards: Regulations and Codes</td>
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Semester Total 16

SEMESTER 4

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<tr>
<td>Social Science Elective</td>
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</table>

Semester Total 16

Total Minimum Credits 65

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).

2 Consult with the program head or counselor. Courses must be approved by the appropriate academic dean.

3 Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

CAREER STUDIES: INDUSTRIAL MANAGEMENT
(PLAN CODE: 221.991.16)

The Career Studies Certificate in Industrial Management is focused on technical communication, materials and processes of industry, industrial robotics, plant layout and material handling, and ISO 9000 organizational knowledge. This program is designed for those with previous work experience. Those who complete the program may seek employment as an industrial/manufacturing technician, project engineering technician, materials-handling technician, wage and job technician, or plant layout technician.

ASSOCIATE OF APPLIED SCIENCE DEGREE: INDUSTRIAL TECHNOLOGY
SPECIALIZATION: INDUSTRIAL MAINTENANCE TECHNOLOGY
(PLAN CODE: 963.10)

The Specialization in Industrial Maintenance Technology is designed to provide training for students working in industrial maintenance, providing them with skills in managerial techniques of supervision, process management control, quality assurance, and project management.

Graduates will be prepared for the following job opportunities: plant maintenance coordinator, equipment maintenance coordinator, production-planning maintenance technician, or maintenance supervisor in a shipyard, manufacturing or assembly operation, or warehousing environment.

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
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<th>COURSE NO.</th>
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<td>MTH 163</td>
<td>Precalculus I</td>
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Semester Total 16

SEMESTER 2

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<td>ITE 115</td>
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Semester Total 17

SEMESTER 3

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</table>

Semester Total 17

Total Minimum Credits 55

1 Consult with the program head or counselor. Courses must be approved by the appropriate academic dean.

ASSOCIATE OF APPLIED SCIENCE DEGREE: INDUSTRIAL TECHNOLOGY

The Specialization in Industrial Maintenance Technology is designed to provide training for students working in industrial maintenance, providing them with skills in managerial techniques of supervision, process management control, quality assurance, and project management.

Graduates will be prepared for the following job opportunities: plant maintenance coordinator, equipment maintenance coordinator, production-planning maintenance technician, or maintenance supervisor in a shipyard, manufacturing or assembly operation, or warehousing environment.

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
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Semester Total 19

1 Consult with the program head or counselor. Courses must be approved by the appropriate academic dean.

ASSOCIATE OF APPLIED SCIENCE DEGREE: INDUSTRIAL TECHNOLOGY

The Specialization in Industrial Maintenance Technology is designed to provide training for students working in industrial maintenance, providing them with skills in managerial techniques of supervision, process management control, quality assurance, and project management.

Graduates will be prepared for the following job opportunities: plant maintenance coordinator, equipment maintenance coordinator, production-planning maintenance technician, or maintenance supervisor in a shipyard, manufacturing or assembly operation, or warehousing environment.
### CAREER STUDIES: INDUSTRIAL MANUFACTURING ENGINEERING TECHNOLOGY (PLAN CODE: 963.06)

The Specialization in Industrial Manufacturing Engineering Technology is designed for those interested in working in the manufacturing industry as production planning supervisory technicians, methods engineering technicians, robotic supervisory technicians, or computer control programmers and operator supervisor.

#### SEMESTER 1

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**Total Minimum Credits:** 67

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<td>IND 160</td>
<td>Introduction to Robotics</td>
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<td>ITE 115</td>
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<td>MTH 163</td>
<td>Precalculus I</td>
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**Total Minimum Credits:** 67

### CAREER STUDIES: INDUSTRIAL SUPERVISION (PLAN CODE: 963.04)

The Specialization in Industrial Supervision is designed to provide the practical knowledge, skills, and training for those seeking to work as industrial supervisory technicians, materials-handling supervisors, production line supervisors, or plant operations technical supervisors.

#### SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>ITE 115</td>
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**Total Minimum Credits:** 65

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3. Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).
### CAREER STUDIES: INDUSTRIAL SUPERVISION

(PLAN CODE: 221.991.07)

The Career Studies Certificate in Industrial Supervision is designed to provide those with previous work experience the practical knowledge, skills, and training for those seeking work as an industrial supervisory technician, production planning supervisor, materials-handling supervisor, production line supervisor, or plant operations technical supervisor.

Students enrolled in this curriculum are not eligible for federal financial assistance.

<table>
<thead>
<tr>
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<td>IND 121</td>
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<td>IND 216</td>
<td>Plant Layout and Materials Handling</td>
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### ASSOCIATE OF APPLIED SCIENCE DEGREE: INDUSTRIAL TECHNOLOGY

### SPECIALIZATION: OCCUPATIONAL SAFETY

(PLAN CODE: 963.12)

The Occupational Safety program is designed to provide occupational safety instruction, information, and knowledge of safety compliance in accordance with current OSHA regulations and inspection procedures.

The Industrial Technology degree Specialization in Occupational Safety is designed for any of a number of managerial/supervisory positions in safety including OSHA compliance, safety investigation and inspection, or environmental protection.

<table>
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<td>SAF 135</td>
<td>Safety Program Organization and Administration</td>
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<td>Human Factors and Safety Psychology</td>
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<td>Plant Layout and Materials Handling</td>
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### CAREER STUDIES: QUALITY ASSURANCE

(PLAN CODE: 221.991.50)

The Career Studies Certificate in Occupational Safety program prepares students with previous work experience to become a safety technician, a safety examiner for an insurance company, a consumer safety inspector, an industrial hygienist, an OSHA compliance/enforcement officer, a production specialist, or a fire marshal.

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### ASSOCIATE OF APPLIED SCIENCE DEGREE: INDUSTRIAL TECHNOLOGY

### SPECIALIZATION: QUALITY ASSURANCE

(PLAN CODE: 963.05)

The Specialization in Quality Assurance provides certification through the American Society for Quality (ASQ) and is designed to produce graduates who can manage, plan, design, and maintain effective quality control programs for a variety of industries.

The Quality Assurance program prepares technicians to handle quality assurance issues and monitoring for industry and/or manufacturing company production operations.
CAREER AND TECHNICAL EDUCATION

Graduates are prepared for promotion to supervisory technical positions and find jobs in: quality engineering, quality assurance, production, operations, material management, and other industrial marine engineering functions.

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
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<tr>
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CAREER STUDIES: QUALITY ASSURANCE

(PLAN CODE: 221.991.51)

The Career Studies Certificate in Quality Assurance provides the content for those seeking to work in the field of quality assurance.

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</table>

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INFORMATION SYSTEMS TECHNOLOGY

Purpose

The Information Systems Technology (IST) programs at TCC have three purposes: 1) to prepare students for employment in the computer and information technology field, 2) to provide computer-related skill development that supports career advancement in other fields, and 3) to offer advanced skill training for individuals already employed in the information technology field.

IST programs prepare students for employment as programmers, computer support specialists, network administrators, database specialists, and a variety of other technician-level positions in areas such as network security, web design, geographic information systems, virtualization, cloud computing, and server infrastructure administration. Students interested in employment in the information systems field should complete the Associate of Applied Science degree. This degree program will provide students with a comprehensive set of skills that employers seek in new hires. Completion of one or more Career Studies Certificate programs by students with a previous college degree can be valuable for those seeking a career change.

Programs

The IST programs at TCC are offered as Career Studies Certificates, a Certificate, and an Associate degree.

Each Career Studies Certificate consists of technology courses that focus on a specific career area in information technology:

- **Cloud Computing**
- **Cyber Security**
- **Database Specialist**
- **Geographic Information Systems**
- **Network Administration**
- **Network Infrastructure Specialist**
- **Programming and Mobile Applications Development**
- **Server Infrastructure Administrator—Windows 2012**
- **Virtualization**
- **Web Development Specialist**

(Most of the above focus areas prepare students to sit for either vendor-specific or vendor-neutral certifications.)

- **The Certificate program includes core information technology courses, general education courses, and information technology electives.**
- **The Associate degree program builds on coursework completed in a Certificate program and includes additional general education, computer, and business courses.**

Admission

For entry into any of the college's IST Career Studies Certificate programs, students are encouraged to complete the IT core requirements of ITN 101, ITN 106, ITN 107, and ITP 100 (or CSC 110). Some Career Studies Certificate programs alter these requirements slightly. Be sure to check the specific program requirements prior to enrolling in the core classes.

Additional Information

The field of information technology is constantly evolving, and TCC frequently changes its courses and programs to keep them current. Please visit the following website for the most up-to-date information: tcc.edu/it.

Students enrolled in many of the IST courses are eligible for free software from Microsoft Corporation as a result of TCC's membership in the Microsoft Developers' Network Academic Alliance (MSDNAA). See tcc.edu/it for details about MSDNAA.
ASSOCIATE OF APPLIED SCIENCE DEGREE: INFORMATION SYSTEMS TECHNOLOGY

CERTIFICATE: INFORMATION SYSTEMS TECHNOLOGY

CAREER STUDIES CERTIFICATES:
- Cloud Computing
- Cyber Security
- Database Specialist
- Geographic Information Systems
- Network Administration
- Network Infrastructure Specialist
- Programming and Mobile Applications Development
- Server Infrastructure Administrator—Windows 2012
- Virtualization
- Web Development Specialist

ASSOCIATE OF APPLIED SCIENCE DEGREE: INFORMATION SYSTEMS TECHNOLOGY
(PLAN CODE 299)
The Associate of Applied Science (A.A.S.) degree program enables students to concentrate in one of the following areas: Cloud Computing, Cyber Security, Database Specialist, Geographic Information Systems, Network Administration, Network Infrastructure Specialist, Programming and Mobile Applications Development, Server Infrastructure Administrator—Windows 2012, Virtualization, or Web Development Specialist. Students select from ONE of the IST Career Studies Certificate programs to define an area of concentration.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<td>ENG 111</td>
<td>College Composition I</td>
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<td>ITN 106</td>
<td>Microcomputer Operating Systems ²</td>
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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).
2 Students in the Database Specialist curriculum are recommended to take ITN 171 UNIX I in place of ITN 106.
3 Students in the Web Development Specialist curriculum are recommended to take ITE 130 Introduction to Internet Services in place of ITN 101.
4 IT approved electives must be selected from ONE of the IST Career Studies Certificate programs.
5 Students concentrating in Cyber Security will need to take MTH 163 instead of MTH 158 if they plan to transfer into Old Dominion University’s Bachelor of Science in IDS — Cyber Security.
6 Students concentrating in Cyber Security will need to take CST 100 or CST 110 instead of AST 205 if they plan to transfer into Old Dominion University’s Bachelor of Science in IDS — Cyber Security.

CERTIFICATE: INFORMATION SYSTEMS TECHNOLOGY
(PLAN CODE 200)
The Certificate program enables students to complete the core requirements for information technology and start their concentration in one of the following areas: Cloud Computing, Cyber Security, Database Specialist, Geographic Information Systems, Network Administration, Server Infrastructure Administrator—Windows 2012, Network Infrastructure Specialist, Programming and Mobile Applications Development, Virtualization, or Web Development Specialist. Students select from ONE of the IST Career Studies Certificate programs to define an area of concentration.

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<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
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<td>College Composition I</td>
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<td>Personal Computer Hardware and Troubleshooting</td>
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<td>ITP 100</td>
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1 Students in the Database Specialist curriculum are recommended to take ITN 171 UNIX I in place of ITN 106.
2 Students in the Web Development Specialist curriculum should take ITE 130 Introduction to Internet Services in place of ITN 101.
3 IT approved electives must be selected from ONE of the IST Career Studies Certificate programs.

CAREER STUDIES: CLOUD COMPUTING
(PLAN CODE: 221.299.50)
The Career Studies Certificate program in Cloud Computing prepares students to install, deploy, configure, manage, secure, and analyze cloud computing technologies. A graduate may be employed in positions such as storage manager, storage administrator, storage architect, business continuity administrator, business recovery administrator, cloud architect, cloud administrator, server administrator, server systems administrator, monitoring operator, network administrator, or systems analyst.
TCC is a member of the EMC Academic Alliance (EMCAA) and an authorized VMware Academic partner, which entitles students to sit for Industry certification exams.

### CAREER STUDIES: CYBER SECURITY

**CAREER STUDIES: CYBER SECURITY**

**PLAN CODE: 221.732.09**

The Cyber Security Career Studies Certificate program is designed to provide students with the skills to recognize and prevent threats to information and information systems and to master techniques for defense against such threats. Security models, intrusion detection, incident handling, firewalls, perimeter protection, and network security law issues are covered in the course work. Graduates may seek employment as information security officers and network security specialists in local businesses, educational institutions, and governmental agencies.

### SEMESTER 1

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<td>ITN 257</td>
<td>Cloud Computing: Infrastructure and Services</td>
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<td>ITN 258</td>
<td>Cloud Computing: Backup and Recovery</td>
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| Course Approved Elective | 3-4 |

### Total Minimum Credits 28

1. Prepares students to sit for the EMC Proven Professional in Information Storage and Management certification exam.
2. Prepares students to sit for the EMC Proven Professional in Cloud Infrastructure and Services certification exam.
3. Prepares students to sit for the VMware Certified Professional certification exam.
4. Prepares students to sit for the EMC Proven Professional in Backup and Recovery Systems and Architecture certification exam.

### CAREER STUDIES: DATABASE SPECIALIST

**CAREER STUDIES: DATABASE SPECIALIST**

**PLAN CODE: 221.299.11**

The Database Specialist Career Studies Certificate program provides students with skills in designing, implementing, maintaining, and troubleshooting relational databases. Graduates may seek employment as database administrators, database analysts, or database specialists.

TCC is an Oracle Academic Initiative (OAI) Partner and an authorized Oracle training site. The courses in this program prepare students for the examinations leading to Oracle Certified Associate (OCA) and Oracle Certified Professional (OCP) industry certifications.

### SEMESTER 1

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<td>Structured Query Language</td>
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<td>ITD 260</td>
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<td>ITD 134</td>
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### Total Minimum Credits 22-24

1. Electives may be chosen from any of the courses listed below:
   - ITD 136 - Database Management Software
   - ITD 251 - Database System Development
   - ITD 256 - Advanced Database Management

### CAREER STUDIES: GEOGRAPHIC INFORMATION SYSTEMS (GIS)

**CAREER STUDIES: GEOGRAPHIC INFORMATION SYSTEMS (GIS)**

**PLAN CODE: 221.719.71**

The Geographic Information Systems (GIS) Career Studies Certificate program provides students with skills to visualize, analyze, and model systems to help in the planning and decision-making processes of a business organization, thereby making geographical information accessible to scientists, planners, decision makers, and the public. Graduates may seek employment as GIS specialists within a private, public, or governmental agency.

### SEMESTER 1

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CAREER STUDIES: NETWORK ADMINISTRATION

(PLAN CODE: 221.732.01)

The Network Administration Career Studies Certificate program provides students with a broad background in network administration utilizing a number of network operating systems, such as Windows, Unix, and Linux. In addition, students configure and maintain routers to support the network infrastructure. Graduates may seek employment as network administrators or help desk technicians.

SEMESTER 1

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Total Minimum Credits: 28

CAREER STUDIES: NETWORK INFRASTRUCTURE SPECIALIST

(PLAN CODE: 221.732.07)

The Network Infrastructure Specialist Career Studies Certificate program is designed to provide students with the skills to install and configure a network, optimize Wide Area Networks (WANs) through Internet access solutions that reduce bandwidth and lower costs, configure routers and switches, design and implement wireless solutions, and secure the networks. Graduates may seek employment as network infrastructure administrators, specialists, analysts, or engineers.

The courses in this program prepare students for the examinations leading to industry certifications as a Cisco Certified Networking Associate (CCNA).

SEMESTER 1

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<td>Java Programming II</td>
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CAREER STUDIES: PROGRAMMING AND MOBILE APPLICATIONS DEVELOPMENT

(PLAN CODE: 221.299.06)

The Programming and Mobile Applications Development Career Studies Certificate program provides students with the skills to apply critical-thinking and problem-solving techniques utilizing structured and object-oriented programming languages. Students design, code, debug, and document their programs in addition to developing web-based application programs. Graduates may be employed as entry-level programers or applications support personnel.

SEMESTER 1

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<td>ITP 140</td>
<td>Client Side Scripting</td>
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<td>Game Design &amp; Development</td>
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<td>ITP 233</td>
<td>Studies in Mobile Device Applications and Programming</td>
<td>4</td>
</tr>
<tr>
<td>ITP 222</td>
<td>C++ Programming II</td>
<td>4</td>
</tr>
<tr>
<td>ITP 247</td>
<td>Native Mobile Programming (iOS)</td>
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<tr>
<td></td>
<td><strong>Semester Total</strong></td>
<td><strong>12</strong></td>
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</tbody>
</table>

CAREER STUDIES: SERVER INFRASTRUCTURE ADMINISTRATOR—WINDOWS 2012

(PLAN CODE: 221.732.32)

The Career Studies Certificate in Server Infrastructure Administrator - Windows 2012 is designed to provide students with the skills to plan, design, configure, administer, maintain, analyze, and troubleshoot a local area network and an enterprise-level network using the Windows Server 2012 operating system. Graduates may seek employment as server administrators, server systems administrators, monitoring operators, local area network administrators, enterprise systems administrators, IT system administrators, enterprise security administrators, computer support specialists, information security analysts, or systems architects.

The courses in this program assist students in their pursuit of the Microsoft Certified Solutions Associate (MCSD) - Windows Server 2012 by successfully completing ITN 111, ITN 112, and ITN 113.
ITN 254 Virtual Infrastructure: Installation and Configuration (4)
Prepares students to sit for the VMware Certified Advanced Professional 5-DCA certification exam.

ITN 255
Prepares students to sit for the VMware Certified Professional certification exam.

ITN 113 Active Directory (Windows 2012) (4)
IT Approved Elective 1

ITN 260 Network Security Basics (4)
Semester Total (8)

Total Minimum Credits (27-28)

CAREER STUDIES: VIRTUALIZATION
(PLAN CODE: 221.299.71)
The Career Studies Certificate in Virtualization prepares students to install, deploy, configure, manage, secure, and analyze a VMware virtual infrastructure in a networked environment. Graduates may seek employment as server administrators, monitoring operators, local area network administrators, enterprise systems administrators, IT systems administrators, or systems architects, along with a growing field of VMware specialists. Those who complete the program may also wish to pursue industry certifications, such as VMware Certified Professional (VCP) or EMC Proven Professional Associate.

SEMESTER 1 (BASED ON A SUMMER SEMESTER START)
COURSE NO. COURSE TITLE CREDITS
ITN 101 Introduction to Network Concepts 4
Semester Total 4

SEMESTER 2
COURSE NO. COURSE TITLE CREDITS
ITN 112 Network Infrastructure (Windows 2012) 4
ITN 260 Network Security Basics 4
Semester Total 8

SEMESTER 3
COURSE NO. COURSE TITLE CREDITS
ITN 113 Active Directory (Windows 2012) (4)
IT Approved Elective 1

Semester Total (7-8)

Total Minimum Credits (27-28)

1 IT Approved Electives:
   · ITN 154 - Network Fundamentals, Router Basics, and Configuration (ICND1) - Cisco
   · ITN 171 - Unix I
   · ITN 213 - Information Storage and Management
   · ITN 257 - Cloud Computing: Infrastructure and Services
   · ITN 258 - Cloud Computing: Backup and Recovery
   · ITN 261 - Network Attacks, Computer Crime and Hacking
   · ITN 262 - Network Communication, Security and Authentication
   · ITN 263 - Internet/Intranet Firewalls and E-Commerce Security
   · ITN 267 - Legal Topics in Network Security

CAREER STUDIES: WEB DEVELOPMENT SPECIALIST
(PLAN CODE: 221.352.01)
The Web Development Specialist Career Studies Certificate program is designed to provide students with the skills to design, administer, and troubleshoot web pages and websites. Graduates may seek employment as web page designers and managers, website managers, web graphics designers, web application developers, web programmers, or web database programmers.

These courses in this program prepare students for the following Certified Internet Webmaster (CIW) industry certifications:
   · ITN 109 - Internet Business Associate and Network Technology Associate
   · ITN 110 - Site Development Associate
   · ITD 210 - Web Design Specialist

SEMESTER 1
COURSE NO. COURSE TITLE CREDITS
ITD 110 Web Page Design I 4
ITD 112 Designing Web Page Graphics 4
Semester Total 8

SEMESTER 2
COURSE NO. COURSE TITLE CREDITS
ITN 109 Internet and Network Foundations 4
ITP 140 Client Side Scripting 4
Semester Total 8

SEMESTER 3
COURSE NO. COURSE TITLE CREDITS
ITD 210 Web Page Design II 4
ITD 212 Interactive Web Design 4
Semester Total 8
Total Minimum Credits 24

INTERIOR DESIGN

ASSOCIATE OF APPLIED SCIENCE DEGREE:
   · IT Interior Design

CAREER STUDIES CERTIFICATES:
   · IT Associate Designer
   · IT Green Design for Interiors
   · IT Kitchen and Bath Design

The Associate of Applied Science (A.A.S.) degree in Interior Design provides a foundation in both commercial and residential spaces, allowing students to develop skills in visual presentation, spatial and lighting design, color coordination, material selection, estimating, and contract planning. Students work with state-of-the-art technology that incorporates interior design with the latest versions of computer-aided design (CAD) software. Graduates may seek positions in visual merchandising, floor coverings, decorative accessories, and home furnishings. They work for architectural firms, commercial designers, retailers, or open their own design firms.

ASSOCIATE OF APPLIED SCIENCE DEGREE: INTERIOR DESIGN
(PLAN CODE: 520)

SEMESTER 1 (BASED ON A FALL SEMESTER START)
COURSE NO. COURSE TITLE CREDITS
IDS 100 Theory and Techniques of Interior Design 3
IDS 105 Architectural Drafting for Interior Design 3
IDS 205 Materials and Sources 3
MTH 158 College Algebra (or MTH 121) 3
SOC 301 Orientation to Interior Design 1
Social Science Elective 3
Semester Total 16
<table>
<thead>
<tr>
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<th>COURSE NO.</th>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
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<td>IDS 106</td>
<td>Three-Dimensional Drawing and Rendering</td>
<td>3</td>
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<tr>
<td>IDS 109</td>
<td>Styles of Furniture and Interiors</td>
<td>3</td>
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<tr>
<td>IDS 206</td>
<td>Lighting and Furnishings</td>
<td>3</td>
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<tr>
<td></td>
<td>Humanities/Social Science Elective 1</td>
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<tr>
<td>IDS 120</td>
<td>Estimation for Interior Coverings</td>
<td>3</td>
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<td>Humanities Elective 1</td>
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<tr>
<td></td>
<td>IDS Approved Elective 2</td>
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<tr>
<td>IDS 116</td>
<td>Period Residential Design</td>
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<tr>
<td>IDS 215</td>
<td>Theory and Research in Commercial Design</td>
<td>3</td>
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<tr>
<td></td>
<td>Computer-Aided Drafting Software Requirement (IDS 245, 246 or 247)</td>
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<td>IDS Approved Elective 1</td>
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<tr>
<td>IDS 222</td>
<td>Designing Commercial Interiors II</td>
<td>4</td>
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<td>IDS 225</td>
<td>Business Procedures</td>
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<td>IDS 285</td>
<td>Portfolio and Resume Preparation for Interior Designers</td>
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</table>

**Total Minimum Credits 66**

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).
2. IDS Approved Elective. Any IDS course not already required as part of this AAS degree. This may include an Art or related design course approved by the department representative.
3. Any SDV course may be substituted.

**CAREER STUDIES: ASSOCIATE DESIGNER**

(PLAN CODE: 221.520.17)

The Associate Designer Career Studies Certificate provides a basic foundation in visual presentation skills, spatial design, color coordination, the evolution of furniture and interior styles, and estimation. All courses count toward the associate degree.

This Career Studies Certificate program prepares the student for employment as a color consultant or sales associate of retail interior design.

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>IDS 100</td>
<td>Theory and Techniques of Interior Design</td>
<td>3</td>
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<tr>
<td>IDS 105</td>
<td>Architectural Drafting for Interior Design</td>
<td>3</td>
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<tr>
<td>IDS 205</td>
<td>Materials and Sources</td>
<td>3</td>
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<tr>
<td></td>
<td>Computer-Aided Drafting Software Requirement (IDS 245, 246 or 247)</td>
<td>3</td>
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<tr>
<td>IDS 106</td>
<td>Three-Dimensional Drawing and Rendering</td>
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<tr>
<td>IDS 109</td>
<td>Styles of Furniture and Interiors</td>
<td>3</td>
<td></td>
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<tr>
<td>IDS 120</td>
<td>Estimation of Interior Coverings</td>
<td>3</td>
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<td>Lighting and Furnishings</td>
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</table>

**Total Minimum Credits 24**

**CAREER STUDIES: GREEN DESIGN FOR INTERIORS**

(PLAN CODE: 221.520.10)

The Career Studies Certificate in Green Design for Interiors prepares students for a career emphasis in “Green Design.” This Career Studies Certificate is based upon the requirements for LEED Certification (Leadership in Energy and Environmental Design), and is designed to prepare individuals to take the LEED Certification exam for Homes (LEED-H). Program graduates will be able to assist their clients through the inclusion of more eco-friendly interior materials and techniques for “Green Design” interiors.

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<tbody>
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<td>Theory and Techniques of Interior Design</td>
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<tr>
<td>IDS 105</td>
<td>Architectural Drafting for Interior Design</td>
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<tr>
<td>IDS 250</td>
<td>Green Design for Interior Designers</td>
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<tr>
<td>IDS 205</td>
<td>Materials and Sources</td>
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<td>IDS 206</td>
<td>Lighting and Furnishings</td>
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<td>IDS 255</td>
<td>Green Design for Commercial Interiors</td>
<td>3</td>
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</table>

**Total Minimum Credits 18**

**CAREER STUDIES: KITCHEN AND BATH DESIGN**

(PLAN CODE: 221.520.25)

The Career Studies Certificate in Kitchen and Bath Design prepares students for a career emphasis in the design of kitchens, baths, and related cabinetry. This Career Studies Certificate is based on the requirements of the National Kitchen and Bath Association (NKBA), and it prepares individuals to take the NKBA examination for an Associate Kitchen and Bath Designer (AKBD) certification. Graduates of the program are prepared to apply through the NKBA to take the certification exam for the Associate Kitchen and Bath Designer certification (AKBD).

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>IDS 105</td>
<td>Architectural Drafting for Interior Design</td>
<td>3</td>
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<tr>
<td>IDS 130</td>
<td>Introduction to Kitchen and Bath Design Systems</td>
<td>3</td>
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<tr>
<td>IDS 205</td>
<td>Materials and Sources</td>
<td>3</td>
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<tr>
<td>IDS 106</td>
<td>Three-Dimensional Drawing and Rendering</td>
<td>3</td>
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<td>IDS 206</td>
<td>Lighting and Furnishings</td>
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<tbody>
<tr>
<td>IDS 247</td>
<td>Kitchen and Bath Design Software</td>
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<tr>
<td>IDS 290</td>
<td>Coordinated Internship in Interior Design (or IDS 297)</td>
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<tr>
<td>IDS 225</td>
<td>Business Procedures</td>
<td>3</td>
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<tr>
<td>IDS 289</td>
<td>Seminar and Project in Interior Design</td>
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**Total Minimum Credits 27**
MACHINE TECHNOLOGY

CAREER STUDIES CERTIFICATES:
- Basic Metal and Plastic Machine Operator
- Computer Numerical Controls (CNC) Operator

CAREER STUDIES:
BASIC METAL AND PLASTIC MACHINE OPERATOR
(PLAN CODE: 221.952.70)
The Career Studies Certificate in Basic Metal and Plastic Machine Operator is focused on the operation and entry-level production use of Computer Numerical Control (CNC) systems. Following completion of this program, individuals may seek employment as CNC operators.

Upon completion of this program, students are prepared to study for the National Institute for Metalworking Skills (NIMS) industry certification.

SEMESTER 1

<table>
<thead>
<tr>
<th>COURSE NO.</th>
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<tr>
<td>CAD 160</td>
<td>Machine Blueprint Reading</td>
<td>3</td>
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<tr>
<td>ELE 239</td>
<td>Programmable Controllers</td>
<td>3</td>
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<tr>
<td>MAC 121</td>
<td>Numerical Control I</td>
<td>3</td>
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<tr>
<td>MAC 161</td>
<td>Machine Shop Practices I</td>
<td>3</td>
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<tr>
<td>MAC 209</td>
<td>Standards, Measurements and Calculations</td>
<td>3</td>
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<tr>
<td>SDV 101</td>
<td>Orientation to Engineering and Technologies</td>
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</table>

CAREER STUDIES:
COMPUTER NUMERICAL CONTROLS (CNC) OPERATOR
(PLAN CODE: 221.938.02)
The Career Studies Certificate program in Computer Numerical Controls (CNC) Operator prepares students to operate computer numerical controlled machines and the advanced production use of CNC systems. Students are prepared to obtain the National Institute for Metalworking Skills (NIMS) industry certification.

SEMESTER 1

<table>
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<th>COURSE TITLE</th>
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<tr>
<td>MAC 121</td>
<td>Numerical Control I</td>
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<td>MAC 126</td>
<td>Introductory CNC Programming</td>
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<td>MAC 161</td>
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<td>SDV 101</td>
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SEMESTER 2

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<td>MAC 122</td>
<td>Numerical Control II</td>
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<td>Introduction to Computer-Aided Manufacturing</td>
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<td>MAC 162</td>
<td>Machine Shop Practices II</td>
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MANAGEMENT

ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Management

ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Management
  - Specialization: Maritime Logistics

ASSOCIATE OF APPLIED SCIENCE DEGREE:
- Management
  - Specialization: Small Business Management and Entrepreneurship

CAREER STUDIES CERTIFICATES:
- Small Business Management
- Supervisory Management

The programs in Management are designed for those interested in entering or advancing in business and industry as supervisor trainees, managers, department heads, or administrative assistants. The Associate of Applied Science (A.A.S.) degree in Management offers broad theoretical and practical perspectives that include accounting, marketing, business law, statistics, economics, and human resource management. Students may also choose a cooperative education option in which they earn academic credit while gaining work experience at local sites.

ASSOCIATE OF APPLIED SCIENCE DEGREE: MANAGEMENT
(PLAN CODE: 212)

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<td>ACC 211</td>
<td>Principles of Accounting I</td>
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<td>BUS 100</td>
<td>Introduction to Business</td>
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<td>ENG 111</td>
<td>College Composition I</td>
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<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
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<td>Applied Business Mathematics</td>
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<td>ECO 201</td>
<td>Principles of Macroeconomics (or ECO 120)</td>
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<td>BUS 220</td>
<td>Introduction to Business Statistics</td>
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<td>BUS 241</td>
<td>Business Law I</td>
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<td>BUS 265</td>
<td>Ethical Issues in Management</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MKT 100</td>
<td>Principles of Marketing</td>
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</table>
### ASSOCIATE OF APPLIED SCIENCE DEGREE: MANAGEMENT

**SPECIALIZATION: MARITIME LOGISTICS**  
*(PLAN CODE: 212.02)*

The Associate of Applied Science (A.A.S.) degree specialization in Management: Maritime Logistics is aimed at those seeking employment or advancing in the area of supply chain management and supervision in maritime organizations. Particular emphasis is placed on the effectiveness and efficiency of planning, implementation, and control of the flow and storage of goods, services, and information from point of origin to point of consumption. In addition to general management course work, this program covers theoretical and practical approaches to supply chain processes, purchasing, inventory and warehouse management, accounting, integrated logistics, and financial management.

Graduates of the maritime logistics program may enter or continue employment in the field of logistics management in maritime or traditional business environments.

#### SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>ACC 211</td>
<td>Principles of Accounting I</td>
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<td>BUS 100</td>
<td>Introduction to Business</td>
<td>3</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
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<tr>
<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
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#### SEMESTER 2

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<td>AST 205</td>
<td>Business Communications</td>
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<td>BUS 125</td>
<td>Applied Business Mathematics</td>
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<td>BUS 200</td>
<td>Principles of Management</td>
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<tr>
<td>ECO 120</td>
<td>Survey of Economics (or ECO 201)</td>
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#### SEMESTER 3

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<tr>
<td>BUS 215</td>
<td>Purchasing and Materials Management (or BUS Approved Elective ³)</td>
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<tr>
<td>BUS 223</td>
<td>Distribution and Transportation</td>
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<td>BUS 265</td>
<td>Ethical Issues in Management</td>
<td>3</td>
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<td>BUS 297</td>
<td>Cooperative Education (or BUS prefix courses only)</td>
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**Total Minimum Credits**: 67

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).

2. Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121,130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

---

### ASSOCIATE OF APPLIED SCIENCE DEGREE: MANAGEMENT

**SPECIALIZATION: SMALL BUSINESS MANAGEMENT AND ENTREPRENEURSHIP**  
*(PLAN CODE: 212.03) (PENDING APPROVAL)*

The Associate of Applied Science (A.A.S.) degree in Management with a specialization in Small Business Management and Entrepreneurship is designed for students who plan to start, expand or manage a small business. Students may choose a cooperative education option in which they earn academic credit while gaining work experience in a small business setting. Students should consult with their advisor to ensure they select electives that will best prepare them for their intended goals.

#### SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
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<tr>
<td>ACC 220</td>
<td>Accounting for Small Business ¹ (or ACC 211)</td>
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<tr>
<td>BUS 100</td>
<td>Introduction to Business</td>
<td>3</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
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<tr>
<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
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#### SEMESTER 2

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<td>ACC 212</td>
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<td>AST 205</td>
<td>Business Communications</td>
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<tr>
<td>BUS 125</td>
<td>Applied Business Mathematics</td>
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<tr>
<td>BUS 165</td>
<td>Small Business Management</td>
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<td>ECO 201</td>
<td>Principles of Macroeconomics</td>
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#### SEMESTER 3

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<td>BUS 241</td>
<td>Business Law I</td>
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<td>BUS 265</td>
<td>Ethical Issues in Management</td>
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<tr>
<td>MKT 160</td>
<td>Marketing for Small Business (or MKT Elective ⁴)</td>
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<td>Humanities Elective ¹</td>
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<td><strong>Semester Total</strong></td>
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</tbody>
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1. Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).

2. BUS Approved Electives:  
   - BUS 130 - Maritime Logistics Afloat  
   - BUS 131 - Maritime Logistics Ashore

3. Students may select any of the following courses to meet this requirement: DIT 121, 125; HLT 100, 105, 106, 110, 116, 121,130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).
CAREER AND TECHNICAL EDUCATION | Tidewater Community College 2017/2018 Catalog

CAREER STUDIES CERTIFICATES:

CAREER STUDIES: SUPERVISORY MANAGEMENT
(PLAN CODE: 221.212.25)
The Career Studies Certificate in Supervisory Management offers a comprehensive perspective of human resources, communication, management, organizational behavior, and other aspects of supervision in a variety of fields. Students who already have several years of work experience are prepared for positions such as office manager, supervisor, management trainee, and administrative assistant.

SEMESTER 1

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>ACC 220</td>
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<td>Introduction to Business</td>
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<td>BUS 111</td>
<td>Principles of Supervision I</td>
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SEMESTER 2

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<td>BUS 116</td>
<td>Entrepreneurship</td>
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<td>BUS 165</td>
<td>Small Business Management</td>
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<td>BUS 265</td>
<td>Ethical Issues in Management</td>
<td>3</td>
</tr>
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<td>BUS 297</td>
<td>Cooperative Education (or Approved Elective 1)</td>
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<td>MKT 160</td>
<td>Marketing for Small Business</td>
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<td><strong>Semester Total</strong></td>
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</table>

Total Minimum Credits: 28

CAREER STUDIES: SMALL BUSINESS MANAGEMENT
(PLAN CODE: 221.212.24)
The Career Studies Certificate in Small Business Management provides a strong foundation for those interested in launching and/or operating small business ventures. Course work covers theoretical and practical details related to small business accounting, marketing, legal considerations, planning and control, financial management, communications, and supervision.

SEMESTER 1

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>ACC 220</td>
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<td>BUS 100</td>
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<td>BUS 111</td>
<td>Principles of Supervision I</td>
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<td>MKT 115</td>
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Semester Total: 14

Total Minimum Credits: 67

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. See your academic advisor or counselor to choose the appropriate course(s).

2. Students may select any of the following courses to meet this requirement: BUS 116, BUS 260, FIN 215, MKT 110, MKT 220, MKT 271, MKT 276, MKT 282, and MKT 284.

3. ACC 220 may only be used as a prerequisite for ACC 212 for students completing the Small Business Management Career Studies Certificate and pursuing the AAS in Management with a Specialization in Small Business Management and Entrepreneurship.

4. May use any MKT course not already required in the program.

MARINE GASOLINE ENGINE TECHNOLOGY

CAREER STUDIES CERTIFICATE:

The Career Studies Certificate in Marine Gasoline Engine Technology is designed for those planning to maintain, diagnose, and repair marine inboard and outboard engines and stern drive systems found in the commercial and pleasure boating industry.

Students are advised to consult with the program director prior to entering the program. In addition, students may also consider enrolling in the Diesel Marine Technician Career Studies Certificate program. The Marine Gasoline Engine Technology Career Studies Certificate is approved by the American Boat and Yacht Council (ABYC) as a Marine League School.

A valid driver’s license is required for admission into the Marine Gasoline Engine Technology program. Students must visit the Regional Automotive Center prior to registration. Students are advised to consult with the program director prior to admission into the program.

CAREER STUDIES: MARINE GASOLINE ENGINE TECHNOLOGY
(PLAN CODE: 221.953.10)

SEMESTER 1

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<tbody>
<tr>
<td>MAR 130</td>
<td>Marine Maintenance Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>MAR 137</td>
<td>Basic Marine Electrical Circuits</td>
<td>4</td>
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<tr>
<td>MAR 157</td>
<td>Small Outboard Engine Service</td>
<td>4</td>
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<tr>
<td>MAR 165</td>
<td>Stern Drive Transmission Service</td>
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<tbody>
<tr>
<td>MAR 140</td>
<td>Introduction to Hydraulics and Hydraulic Systems</td>
<td>4</td>
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<tr>
<td>MAR 158</td>
<td>Inboard Engine Service</td>
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<td>MAR 159</td>
<td>Large Outboard Engine Service</td>
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Total Minimum Credits: 27

MARITIME TECHNOLOGIES

ASSOCIATE OF APPLIED SCIENCE DEGREE:

CAREER STUDIES CERTIFICATES:

The Associate of Applied Science (A.A.S.) degree in Maritime Technologies is designed to prepare students who are in maritime-related apprenticeship programs to gain the necessary increase in skill level to move into supervisory positions both within their technical fields and within their companies.

Secondarily, this program is designed to prepare novice students for employment in a variety of areas within the maritime industry, to include the following: electrician, electronics technician, inside machinist, outside
machinist, pipefitter, rigger, painter, carpenter, insulator, shipfitter, welder and sheetmetal worker. The program provides students with a comprehensive set of maritime industry-related skills that employers seek when selecting technicians for their industry.

Graduates of the Maritime Technologies program who have also completed a registered apprenticeship program will be prepared to apply for supervisory positions within the maritime industry or to pursue a career pathway to a university in a related program. Those graduates who entered the program with no maritime experience will be prepared to apply for positions within the industry.

ASSOCIATE OF APPLIED SCIENCE DEGREE: MARITIME TECHNOLOGIES
(PLAN CODE: 746)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>CAD 160</td>
<td>Machine Blueprint Reading (or CAD 140)</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
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<tr>
<td>ITE 115</td>
<td>Introduction to Computer Applications and Concepts</td>
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<td>MAR 120</td>
<td>Introduction to Ship Systems</td>
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<td>SDV 101</td>
<td>Orientation to Maritime Careers</td>
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<tr>
<td>ENG 115</td>
<td>Technical Writing</td>
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<tr>
<td>SAF 126</td>
<td>Principles of Industrial Safety</td>
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SEMESTER 3

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<td>IND 101</td>
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<td>Cooperative Education in Maritime Technologies</td>
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SEMESTER 4

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<td>Cardiopulmonary Resuscitation</td>
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<td>Team Concepts and Problem Solving</td>
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<td>MAR 297</td>
<td>Cooperative Education in Maritime Technologies</td>
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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2 Approved Mathematics Elective must be taken from the following: MTH 115, MTH 158, MTH 163.
3 Approved Electives: Choose a course mix of 15-16 credits from one of the following career areas of interest. All five electives must be chosen from the same career area.
   - Electrical (Electrician, Electronics Technician)
     - ELE 145, ELE 146, ELE 150, ELE 174, ELE 233, ELE 239, MAR 160, MAR 210
   - Mechanical (Outside Machinist, Rigger, Painter, Carpenter, Insulator)
     - ELE 239, IND 115, MEC 154, MEC 155, MEC 268, MEC 269
   - Structural (Shipfitter, Welder, Sheetmetal Worker)
     - IND 115, WEL 165, WEL 170, WEL 171, WEL 210, WEL 220, WEL 230
   - HVAC (HVAC Technician, Junior HVAC Technician)
     - AIR 211, AIR 121, AIR 122, AIR 123, AIR 200, AIR 206
   - CAD (Entry-level Designer, Junior Designer)
     - CAD 151, CAD 152, CAD 211, CAD 241, CAD 242, CAD 280
   - Industrial Management (Entry-level Construction Supervisor, Entry-level QC, Foreman)
     - ACC 211, BUS 100, BUS 200, BUS 201, BUS 265, IND 121, IND 122, IND 150, IND 236
   - Occupational Safety (Industrial Hygienist)
     - IND 165, IND 216, SAF 120, SAF 205, SAF 246
   - Pipefitter
     - MEC 148, MEC 205, WEL 126, WEL 127, WEL 129
   - Inside Machinist
     - MAC 165, MAC 166, MAC 163, MAC 164, MAC 209

CAREER STUDIES: INSIDE MACHINIST
(PLAN CODE: 221.952.03)

The Career Studies Certificate in Inside Machinist prepares students for a career in the manufacturing or maritime industry operating manual machine tools. Following completion of this program, students may seek employment as an inside machinist. Students are prepared to obtain the National Institute for Metalworking Skills (NIMS) industry certifications.

SEMESTER 1

<table>
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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tr>
<td>CAD 160</td>
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<td>MAC 161</td>
<td>Machine Shop Practices I</td>
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<td>Machine Shop Practices II</td>
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SEMESTER 2

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<td>MAC 209</td>
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<td>MAC 163</td>
<td>Machine Shop Practices III</td>
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CAREER STUDIES: MARINE ELECTRICAL
(PLAN CODE: 221.706.10)

The Career Studies Certificate in Marine Electrical is focused on the maintenance and repair of shipboard electrical and electronic systems. Following completion of this program, individuals may seek employment as marine electricians.

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>ELE 239</td>
<td>Programmable Controllers</td>
<td>3</td>
</tr>
<tr>
<td>MAR 120</td>
<td>Introduction to Ship Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Approved Electrical Elective¹</td>
<td>3</td>
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<tr>
<td>Semester Total</td>
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### CAREER AND TECHNICAL EDUCATION

<table>
<thead>
<tr>
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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td></td>
<td>ELE 145</td>
<td>Transformer Connections and Circuits</td>
<td>2</td>
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<td></td>
<td>ELE 146</td>
<td>Electric Motor Control</td>
<td>4</td>
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<td></td>
<td>MAR 210</td>
<td>Marine Electronics for Maritime Vessels</td>
<td>4</td>
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<td><strong>Semester Total</strong></td>
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</tr>
</tbody>
</table>

**Total Minimum Credits**

| 19 |

#### CAREER STUDIES: MARINE MECHANICAL

**PLAN CODE: 221.953.20**

The Career Studies Certificate in Marine Mechanical prepares students for a career in the maintenance and repair of shipboard mechanical systems. Following completion of this program, individuals may seek employment as marine mechanical technicians.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td></td>
<td>CAD 160</td>
<td>Machine Blueprint Reading</td>
<td>3</td>
</tr>
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<td></td>
<td>MAR 120</td>
<td>Introduction to Ship Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>SDV 101</td>
<td>Orientation to Maritime Careers</td>
<td>1</td>
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<td><strong>Approved Elective</strong></td>
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<td><strong>Semester Total</strong></td>
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</tr>
</tbody>
</table>

**Total Minimum Credits**

| 19 |

#### CAREER STUDIES: MARITIME WELDING

**PLAN CODE: 221.953.30**

The Career Studies Certificate in Maritime Welding prepares students for entry-level positions as maritime welders. While some welding skills are universal, this program will focus specifically on developing the knowledge, skills, and abilities needed to obtain employment as a maritime welder.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAR 120</td>
<td>Introduction to Ship Systems</td>
<td>3</td>
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<tr>
<td></td>
<td>WEL 165</td>
<td>Introduction to Maritime Welding</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>WEL 170</td>
<td>Maritime Shielded Metal Arc Fillet Welding (SMAW I)</td>
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<td></td>
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<td><strong>Semester Total</strong></td>
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</table>

#### CAREER STUDIES: PIPEFITTER

**PLAN CODE: 221.995.79**

The Career Studies Certificate in Pipefitter prepares students for careers in the installation, maintenance and repair of commercial, industrial and maritime piping systems. Following completion of this program, individuals may seek employment as pipewrights and steamfitters.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td></td>
<td>CAD 160</td>
<td>Machine Blueprint Reading</td>
<td>3</td>
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<tr>
<td></td>
<td>MEC 148</td>
<td>Industrial Pipefitting</td>
<td>3</td>
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<td>SDV 101</td>
<td>Orientation to Maritime Careers</td>
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<td></td>
<td>WEL 126</td>
<td>Pipe Welding I</td>
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<td></td>
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<td><strong>Semester Total</strong></td>
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</tbody>
</table>

#### CAREER STUDIES: PIPEFITTING AND FABRICATION

**PLAN CODE: 221.953.38**

The Career Studies Certificate in Maritime Technologies prepares students with the core education and skills necessary for entry-level work in the commercial or naval ship repair industry. The students gain familiarization with basic ship construction and ship processes and techniques, various ship systems and the basic knowledge and terminology to report to worksites aboard ships or in the shipyard.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td></td>
<td>CAD 160</td>
<td>Machine Blueprint Reading</td>
<td>3</td>
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<tr>
<td></td>
<td>IND 101</td>
<td>Quality Assurance Technology I</td>
<td>3</td>
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<td>MAR 120</td>
<td>Introduction to Ship Systems</td>
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<td>SDV 101</td>
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</table>

**Total Minimum Credits**

| 19 |
MECHANICAL ENGINEERING TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE DEGREE:

»Mechanical Engineering Technology

The Associate of Applied Science (A.A.S.) degree in Mechanical Engineering Technology prepares graduates for careers in the fields of mechanical engineering technology, mechanical design, manufacturing, and ship repair. Graduates are prepared for employment in many settings such as industrial laboratories, shipyards and maintenance organizations including public, private, governmental and military commands, organizations, and bureaus.

ASSOCIATE OF APPLIED SCIENCE DEGREE:
MECHANICAL ENGINEERING TECHNOLOGY
(PLAN CODE: 956)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>CHM 111</td>
<td>General Chemistry I</td>
<td>4</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
</tr>
<tr>
<td>IND 115</td>
<td>Materials and Processes of Industry</td>
<td>4</td>
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<tr>
<td>MTH 163</td>
<td>Precalculus I</td>
<td>3</td>
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<td>SDV 101</td>
<td>Orientation to Engineering and Technologies</td>
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SEMESTER 2

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<tbody>
<tr>
<td>MTH 164</td>
<td>Precalculus II</td>
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<tr>
<td>PHY 201</td>
<td>General College Physics I</td>
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<td>Program Elective 2</td>
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<tr>
<td></td>
<td>Social Science Elective 1</td>
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SEMESTER 3

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<th>COURSE NO.</th>
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<tbody>
<tr>
<td>EGR 110</td>
<td>Engineering Graphics</td>
<td>3</td>
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<tr>
<td>MEC 131</td>
<td>Mechanics I - Statics for Engineering Technology</td>
<td>3</td>
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<tr>
<td>MTH 173</td>
<td>Calculus with Analytic Geometry I</td>
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<tr>
<td>CST 100</td>
<td>Principles of Public Speaking</td>
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<td>Program Elective 2</td>
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SEMESTER 4

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<tr>
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<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>CAD 241</td>
<td>Parametric Solid Modeling I</td>
<td>3</td>
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<tr>
<td>MEC 132</td>
<td>Mechanics II - Strength of Materials for Engineering Technology</td>
<td>3</td>
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<tr>
<td>MEC 135</td>
<td>Mechanics Laboratory</td>
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<tr>
<td>PHY 202</td>
<td>General College Physics II</td>
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<td>Program Elective 2</td>
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<td>Humanities Elective 1</td>
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</table>

Total Minimum Credits: 65

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

MECHATRONICS

ASSOCIATE OF APPLIED SCIENCE DEGREE:

»Mechatronics

CAREER STUDIES CERTIFICATE:

»Mechatronics

The Associate of Applied Science (A.A.S.) degree in Mechatronics prepares students for employment in a variety of industries, to include the following: industrial mechanical, electrical, electronic equipment repair; industrial automation installation, programming, repair; and robotics, electrical and mechanical equipment assembler; mechatronics systems and electromechanical technicians; automated machinery maintenance mechanic; industrial automation and process controls technician. This program also provides students with a comprehensive set of skills that employers seek when selecting technicians for their industry.

ASSOCIATE OF APPLIED SCIENCE DEGREE: MECHATRONICS
(PLAN CODE: 706)

SEMESTER 1 (BASED ON A FALL SEMESTER START)

<table>
<thead>
<tr>
<th>COURSE NO.</th>
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<tr>
<td>MEC 140</td>
<td>Introduction to Mechatronics</td>
<td>3</td>
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<tr>
<td>ELE 150</td>
<td>A.C. and D.C. Circuit Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>ENG 111</td>
<td>College Composition I</td>
<td>3</td>
</tr>
<tr>
<td>SDV 101</td>
<td>Orientation to Engineering and Technologies</td>
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<tr>
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<tr>
<td></td>
<td>Mathematics Elective 3</td>
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SEMESTER 2

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<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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</thead>
<tbody>
<tr>
<td>ELE 146</td>
<td>Electric Motor Control</td>
<td>4</td>
</tr>
<tr>
<td>ELE 211</td>
<td>Electrical Machines I</td>
<td>3</td>
</tr>
<tr>
<td>ETR 281</td>
<td>Digital Systems</td>
<td>3</td>
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<tr>
<td>INS 230</td>
<td>Instrumentation I</td>
<td>3</td>
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<tr>
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SEMESTER 3

<table>
<thead>
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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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</thead>
<tbody>
<tr>
<td>ELE 233</td>
<td>Programmable Logic Controller Systems I</td>
<td>3</td>
</tr>
<tr>
<td>ETR 203</td>
<td>Electronic Devices I</td>
<td>3</td>
</tr>
<tr>
<td>MEC 154</td>
<td>Mechanical Maintenance I</td>
<td>3</td>
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<tr>
<td>MEC 269</td>
<td>Fluid Power—Pneumatic Systems</td>
<td>3</td>
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<td></td>
<td><strong>Semester Total</strong></td>
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SEMESTER 4

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>MEC 155</td>
<td>Mechanisms</td>
<td>3</td>
</tr>
<tr>
<td>MEC 268</td>
<td>Fluid Power—Hydraulic Systems</td>
<td>3</td>
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<td><strong>Semester Total</strong></td>
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</tbody>
</table>

Total Minimum Credits: 66-67

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2 Approved Electives: Choose 9 credits from the following courses.

» BUS 204 - Project Management
» IND 106 - Industrial Engineering Technology
» IND 146 - Statistical Quality Control
» IND 406 - Industrial Management
» MEC 111 - Materials for Industry

3 Approved MTH Electives may be chosen from MTH 103, MTH 115, MTH 163, or other MTH course approved by the appropriate academic dean.
CAREER STUDIES: MECHATRONICS
(PLAN CODE: 221.706.90)
The Career Studies Certificate in Mechatronics is aimed at those interested in the maintenance and repair of automation and process control systems. Individuals who complete this certificate may seek employment in machinery design, construction, and repair. They will also be prepared to take industry- and manufacturer-specific certification exams for Mechatronics.

COURSE NO. COURSE TITLE CREDITS
SEMESTER 1
ELE 150 A.C. and D.C. Circuit Fundamentals 3
ETR 281 Digital Systems 3
ELE 246 Industrial Robotics Programming 3
Semester Total 9

SEMESTER 2
ELE 146 Electric Motor Control 4
INS 230 Instrumentation I 3
ELE 233 Programmable Logic Controller Systems I 3
Semester Total 10

SEMESTER 3
ELE 234 Programmable Logic Controller Systems II 3
INS 233 Process Control Integration 4
Approved Fluid Power Elective 1 3
Semester Total 10
Total Minimum Credits 29

1 Approved Fluid Power Elective:
   • MEC 268 - Fluid Power - Hydraulic Systems
   • MEC 269 - Fluid Power - Pneumatic Systems

MEDICAL LABORATORY TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE DEGREE:
Medical Laboratory Technology
The Associate of Applied Science (A.A.S.) degree in Medical Laboratory Technology (MLT) prepares students for employment as medical laboratory technicians upon graduation and certification. Graduates may work under the supervision of a physician or medical technologist (MT) performing routine clinical laboratory tests for the diagnosis, treatment, and prevention of disease.

Admission to the college does not guarantee admission to the MLT program. Applicants to this program must complete BIO 101, BIO 141, and MTH 158 (or 157) with a “C” or higher for consideration of admission. Students must submit an unofficial transcript along with their health professions application. They must also submit an official copy of their transcripts from other colleges attended to the Office of the College Registrar prior to the program application deadline. Applicants must have maintained a curricular GPA of 2.5 or better during previous college study. Attendance at an orientation session and a personal interview are also required. For further information regarding admission, continuance and graduation, go to tcc.edu (search keywords “medical laboratory technology”).

Upon completion of an accredited program, Medical Laboratory Technicians are eligible to complete a national certification exam administered by the American Society for Clinical Pathology (ASCP) to become certified as a medical laboratory technician.

The Medical Laboratory Technology Program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):
5600 N. River Road, Suite 720
Rosemont, IL 60018
(773) 714-8880

ASSOCIATE OF APPLIED SCIENCE DEGREE:
MEDICAL LABORATORY TECHNOLOGY
(PLAN CODE: 151)

PRE-ADMISSION SEMESTER

COURSE NO. COURSE TITLE CREDITS
BIO 101 General Biology I 4
BIO 141 Human Anatomy and Physiology I 4
MTH 158 College Algebra (MTH 157 preferred) 3
Semester Total 11

SEMESTER 1
COURSE NO. COURSE TITLE CREDITS
CHM 111 General Chemistry I 4
ENG 111 College Composition I 3
HLT 105 Cardiopulmonary Resuscitation 1
MDL 101 Introduction to Medical Laboratory Techniques 3
SDV 101 Orientation to Health Care 1
Semester Total 12

SEMESTER 2
COURSE NO. COURSE TITLE CREDITS
MDL 125 Clinical Hematology I 3
MDL 210 Immunology and Serology 2
MDL 251 Clinical Microbiology I 3
MDL 261 Clinical Chemistry and Instrumentation I 4
Semester Total 12

SEMESTER 3
COURSE NO. COURSE TITLE CREDITS
MDL 190 Coordinated Internship in Phlebotomy 1
Humanities Elective 1 3
Semester Total 4

SEMESTER 4
COURSE NO. COURSE TITLE CREDITS
MDL 216 Blood Banking 3
MDL 225 Clinical Hematology II 3
MDL 252 Clinical Microbiology II 2
MDL 265 Advanced Clinical Chemistry 2
Social Science Elective 1 3
Semester Total 13

SEMESTER 5
COURSE NO. COURSE TITLE CREDITS
MDL 266 Clinical Chemistry Techniques 3
MDL 276 Clinical Hematology Techniques 3
MDL 277 Clinical Blood Banking Techniques 4
MDL 278 Clinical Microbiology Techniques II 4
MDL 298 Seminar and Project 1
Semester Total 15
Total Minimum Credits 67

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

MUSIC

CAREER STUDIES CERTIFICATE:
Music
The Career Studies Certificate in Music provides students with an introduction to music. It is intended for students who are interested in enhancing their understanding and appreciation of Music History and Music Theory, or pursuing a music degree at a four-year institution. The program further enhances students’ performance skills in Choral and/or Instrumental Ensemble Performance.

Music Theory students are expected to have a basic understanding of reading sheet music notation. Students will take a content review exam upon enrollment in MUS 111 during the first week of classes. Students
who do not pass will be advised to enroll in MUS 8 - Fundamentals of Music, for one semester, before enrolling in MUS 111 - Music Theory I. Contact Music Program Head for details.

Students interested in pursuing further studies in music may opt to enter the college’s Associate of Fine Arts in Music curriculum (pending approval). Contact the music department for more information at (757) 822-1262.

**CAREER STUDIES: MUSIC**

(PLAN CODE: 221.529.01)

### SEMESTER 1

<table>
<thead>
<tr>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>MUS 111</td>
<td>Music Theory I</td>
<td>4</td>
</tr>
<tr>
<td>MUS 121</td>
<td>Music Appreciation I (or MUS 221)</td>
<td>3</td>
</tr>
<tr>
<td>Applied Music Elective</td>
<td>2</td>
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<tr>
<td>Approved Music Ensemble</td>
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<tr>
<td><strong>Semester Total</strong></td>
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</table>

1 Music Theory students are expected to have a basic understanding of reading sheet music notation. Students who do not pass will be advised to enroll in MUS 8 - Fundamentals of Music, for one semester, before enrolling in MUS 111 - Music Theory I. Contact Music Program Head for details.

2 Music Theory II students are strongly advised to enroll in MUS 122 - Music Theory II (History of Music II). MUS 121 and MUS 122 will not apply to the A.F.A. in Music degree. Contact the Music Program Head for details.

3 Approved Music Elective must be taken from the following:
   - MUS 136 - Applied Music - Voice
   - MUS 145 - Applied Music - Keyboard
   - MUS 155 - Applied Music - Woodwinds
   - MUS 165 - Applied Music - Strings
   - MUS 175 - Applied Music - Brass
   - MUS 185 - Applied Music - Percussion
   - MUS 236 - Advanced Applied Music - Voice
   - MUS 245 - Advanced Applied Music - Keyboard
   - MUS 255 - Advanced Applied Music - Woodwinds
   - MUS 265 - Advanced Applied Music - Strings
   - MUS 275 - Advanced Applied Music - Brass
   - MUS 285 - Advanced Applied Music - Percussion

4 Approved Music Ensemble must be taken from the following:
   - MUS 135 - Jazz Ensemble
   - MUS 137 - Chorus Ensemble
   - MUS 146 - Percussion Ensemble
   - MUS 148 - Orchestra Ensemble
   - MUS 237 - Advanced Chorus Ensemble
   - MUS 239 - Advanced Jazz Ensemble
   - MUS 248 - Orchestra

5 Approved Music Elective must be taken from the following:
   - MUS 131 - Class Voice I / MUS 132 - Class Voice II
   - MUS 141 - Class Piano I / MUS 142 - Class Piano II
   - MUS 211 - Advanced Music Theory I / MUS 212 - Advanced Music Theory II

**NURSING**

**ASSOCIATE OF APPLIED SCIENCE DEGREE:**

**RN Nursing**

The Associate of Applied Science (A.A.S.) degree in Nursing prepares students who wish to pursue careers as Registered Nurses (RNs).

Graduates may seek employment in acute care, doctor's offices, health departments, home health services, hospices, long-term care facilities, and mental health and rehabilitation centers. Students take courses in both theoretical and practical applications of nursing care. The program integrates clinical laboratory practice using state-of-the-art patient care simulators and laboratory equipment for enhanced preparation in the field of health care.

Admission to the Nursing program is competitive; therefore, admission to the college does not guarantee admission to the program. Detailed information regarding the admission criteria, selection process, etc. can be found in the Beazley School of Nursing Admissions Procedures and Information Booklet, which can be reviewed or downloaded from the tcc.edu website (search keywords “nursing admission procedures”). Prospective nursing students must also attend a Nursing Program Information Session, which is held on the Portsmouth Campus. Please see the Nursing Program Information Session schedule online at tcc.edu (search keywords “nursing information session”).

**LPN to RN Options**

Licensed Practical Nurses (LPNs) who wish to pursue their RN course work have two options: Articulation or Advanced Placement. Articulation awards credits based on previous learning experiences obtained from approved regional LPN programs following the students' successful completion of NUR 115 (Transition from LPN to RN Education). Additional information can be found in the Nursing Admission Procedures and Information Booklet or online at tcc.edu (search keywords “LPN to RN”).

TCC’s Beazley School of Nursing has been awarded Continuing Accreditation by the Accreditation Commission for Education in Nursing (ACEN), 3343 Peachtree Road NE, Suite 850, Atlanta, GA 30326, (404) 975-5000, www.acenursing.org. The Nursing program is approved by the Virginia Board of Nursing.

**ASSOCIATE OF APPLIED SCIENCE DEGREE: NURSING**

(PLAN CODE: 156)

### SEMESTER 1

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<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tr>
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<td>ENG 111</td>
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<tr>
<td>NUR 180</td>
<td>Essentials of Medical/Surgical Nursing</td>
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<td>NUR 108</td>
<td>Nursing Principles and Concepts I</td>
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<td>NUR 130</td>
<td>Physical Assessment and Basic Pharmacology</td>
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<td>Orientation to Health Care</td>
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### SEMESTER 2

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<td>NUR 170</td>
<td>Essentials of Medical/Surgical Nursing</td>
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<td>NUR 180</td>
<td>Essentials of Maternal/Newborn Nursing</td>
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<td>PSY 201</td>
<td>Introduction to Psychology I (or PSY 200)</td>
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<td>NUR 201</td>
<td>Psychiatric Nursing</td>
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<td>PHI 226</td>
<td>Social Ethics (or PHI 220)</td>
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<td>PSY 235</td>
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<td>Introductory Microbiology</td>
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<td>NUR 270</td>
<td>Essential Nursing Concepts II</td>
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ASSOCIATE OF APPLIED SCIENCE DEGREE:

ASSOCIATE OF APPLIED SCIENCE DEGREE: OCCUPATIONAL THERAPY ASSISTANT

(PLAN CODE: 126)

PRE-ADMISSION SEMESTER

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Semester Total 4

SEMESTER 1

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<td>HLT 143</td>
<td>Medical Terminology I</td>
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<td>HLT 150</td>
<td>Cross Cultural Health and Wellness Practices</td>
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<tr>
<td>OCT 100</td>
<td>Introduction to Occupational Therapy</td>
<td>3</td>
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<tr>
<td>OCT 201</td>
<td>Occupational Therapy with Psychosocial Dysfunction</td>
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<td>PSY 231</td>
<td>Life Span Human Development I</td>
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Semester Total 14

PARALEGAL STUDIES

ASSOCIATE OF APPLIED SCIENCE DEGREE: PARALEGAL STUDIES

CERTIFICATE:

CAREER STUDIES CERTIFICATES:

PARALEGAL STUDIES

ASSOCIATE OF APPLIED SCIENCE DEGREE:

ASSESSMENT OF APPLIED SCIENCE DEGREE: OCCUPATIONAL THERAPY ASSISTANT

(PLAN CODE: 126)

PRE-ADMISSION SEMESTER

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Semester Total 4

SEMESTER 1

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<td>HLT 150</td>
<td>Cross Cultural Health and Wellness Practices</td>
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<td>Life Span Human Development I</td>
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Semester Total 14

The Occupational Therapy Assistant program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449, phone (301) 652-AOTA, www.aota.org.

Individuals in the Occupational Therapy Assistant program may elect to pursue professional certification following completion of the A.A.S. The National Board for Certification in Occupational Therapy (NBCOT) offers a national certification examination for the occupational therapy assistant (OTA). Most states, including Virginia, require certification in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination.

The Occupational Therapy Assistant program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449, phone (301) 652-AOTA, www.aota.org.

The Paralegal Studies program prepares students for careers as paralegals in offices specializing in general practice or litigation. A cooperative education program enables students to earn academic credit and supplement their income while gaining work experience at local sites. Placement test scores should indicate a readiness for ENG 111 prior to registering for any LGL course offering.

The Associate of Applied Science (A.A.S.) degree in Paralegal Studies prepares students to work as a paralegal in diverse settings. Electives can be selected to enable students to concentrate in general practice, litigation, or a combination of each.

Students in the Paralegal Studies program will be subject to an audit of their transcripts in the first month of their last semester before graduation. This audit will serve as a preliminary review to ensure that all requirements for graduation have been met and further, to confirm that the maximum credit hours completed through online coursework and permissible under
Program accreditation standards have not been exceeded. The audit will be conducted by the Program Head or such other designee as may be appointed by the Program Head or Academic Dean.

Program note: Legal assistants and paralegals cannot give legal advice to members of the public. Most jurisdictions impose significant penalties for the unauthorized practice of law. This program is not intended to give legal advice to students or to educate or train students to give legal advice or otherwise engage in the unauthorized practice of law.

### ASSOCIATE OF APPLIED SCIENCE DEGREE: PARALEGAL STUDIES

**(PLAN CODE: 260)**

#### SEMESTER 1 (BASED ON A FALL SEMESTER START)

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<td>Information Systems for Legal Assistants</td>
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<td>LGL 110</td>
<td>Introduction to Law and the Legal Assistant</td>
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<td>LGL 117</td>
<td>Family Law</td>
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<td>LGL 200</td>
<td>Ethics for the Legal Assistant</td>
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<td>MTH 121</td>
<td>Fundamentals of Mathematics I (or higher)</td>
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<tr>
<td>SDV 100</td>
<td>College Success Skills</td>
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**Semester Total** 17

#### SEMESTER 2

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<tr>
<td>LGL 125</td>
<td>Legal Research</td>
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<tr>
<td>LGL 130</td>
<td>Law Office Administration and Management</td>
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**Semester Total** 17

#### SEMESTER 3

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<td>Principles of Public Speaking</td>
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<td>LGL 126</td>
<td>Legal Writing</td>
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<td>LGL 216</td>
<td>Trial Preparation and Discovery Practice</td>
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<td>Approved Elective 1</td>
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<td>LGL Elective 2</td>
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**Semester Total** 17

#### SEMESTER 4

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<td>Bankruptcy</td>
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<td>LGL 297</td>
<td>Cooperative Education (or Business Elective 4)</td>
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<tr>
<td>Social Science Elective 1</td>
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**Semester Total** 15

**Total Minimum Credits** 67

1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

2. Before selecting a LGL elective, be sure that you have successfully completed the prerequisite course(s). Students wishing to concentrate in general practice or litigation should select LGL electives from the following lists:

   - **General Practice**: LGL 115, LGL 221, LGL 225, LGL 235, LGL 236, LGL 250
   - **Litigation**: LGL 215, LGL 218, LGL 221, LGL 230, LGL 236, LGL 250
   - **Bankruptcy**
   - **Real Estate Law**
   - **Legal Aspects of Business Organizations**

3. Approved electives: Any LGL course that is not already applied to the program: ADJ 105, ADJ 201, ADJ 202, ADJ 206, AEL 101, AEL 102, AST 101, AST 133, PLS 211, PLS 230, PSY 200, and SPA 101 (or higher).

4. Business electives include courses which have the following prefix: ACC, ACQ, AST, BUS, ECO, FIN, GIS, HRM, ITD, ITE, ITM, ITN, INJ, and REA.

5. Students may select any of the following courses to meet this requirement: DIT 121, 125, HLT 100, 105, 106, 110, 116, 121, 130, 138, 141, 150, 160, 200, 204, 215; PED (any activity course).

### CERTIFICATE: LEGAL ASSISTANT

**(PLAN CODE: 261)**

The Certificate in Legal Assistant program may lead to entry-level positions in a general practice law firm or as a legal assistant with a trial-work concentration depending upon the selected electives.

#### SEMESTER 1

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<tr>
<th>COURSE NO.</th>
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<tr>
<td>ENG 111</td>
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<td>ITE 109</td>
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<td>LGL 110</td>
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<td>SDV 100</td>
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**Semester Total** 11

#### SEMESTER 2

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**Semester Total** 12

**Total Minimum Credits** 35

1. Before selecting a LGL elective, be sure that you have successfully completed the prerequisite course(s). Students wishing to concentrate in general practice or litigation should select LGL electives from the following lists:

   - **General Practice**: LGL 115, LGL 221, LGL 225, LGL 235, LGL 236, LGL 250
   - **Litigation**: LGL 215, LGL 218, LGL 221, LGL 230, LGL 236, LGL 250

### CAREER STUDIES: PARALEGAL GENERAL PRACTICE SPECIALIST

**(PLAN CODE: 221.260.02)**

The Career Studies Certificate program in Paralegal General Practice Specialist enables students to upgrade their skills if they are currently employed as a legal assistant in general practice law. It gives those who already have a degree the training they need to make a career change.
**CAREER AND TECHNICAL EDUCATION**

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**PHARMACY TECHNICIAN**

**CAREER STUDIES CERTIFICATE:**

> Pharmacy Technician

The Career Studies Certificate program in Pharmacy Technician prepares students to order, stock, package, prepare, and dispense medications under the supervision of a licensed pharmacist. Students will prepare to take the National Pharmacy Technician Certification Examinations in order to become a Certified Pharmacy Technician (CPhT). Entrance requirements for this program include high school graduation or a GED, completion of MTH 1, MTE 1-3 or equivalent, and ENG 111 placement on the Virginia Placement Test. For program information, call (757) 822-1122 or (757) 822-2300.

**CAREER STUDIES: PHARMACY TECHNICIAN**

(PLAN CODE: 221.190.08)

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**PHLEBOTOMY**

**CAREER STUDIES CERTIFICATE:**

> Phlebotomy

The Phlebotomy program prepares students for entry-level employment in hospitals, medical offices, and clinics with training in blood draw and preparation/processing of blood tests. It also prepares students to take the National Certification Examination in Phlebotomy.

Admission to the college does not guarantee admission to the Phlebotomy program, with applications accepted until classes are full. Students must submit a copy of their immunization records at the time of application. For further information regarding admission, continuance, and graduation requirements, (e.g., proof of satisfactory health status, “C” grade point average or better), go to tcc.edu (search keyword “phlebotomy”).

Students enrolled in this curriculum are not eligible for federal financial assistance.
ASSOCIATE OF APPLIED SCIENCE DEGREE:

Physical Therapist Assistant

The Associate of Applied Science (A.A.S.) degree in Physical Therapist Assistant (PTA) is designed for those who wish to enter employment as physical therapist assistants working under the supervision of a physical therapist. Graduates may work in acute care hospitals, skilled nursing facilities, home health agencies, out-patient clinics, rehabilitation hospitals, fitness and wellness centers, public schools, and similar settings.

Admission to the college does not guarantee admission to the PTA program, with 25 to 30 students admitted to the program each fall semester. Selection is highly competitive, and is based on a system of points using several criteria. Entrance requirements include high school graduation or a GED and successful completion of BIO 141, ENG 111, HLT 130, PSY 230, and SDV 101, with achievement in BIO 141 as a key admission determinant. Participation in a minimum of 40 documented observation hours in specific health care settings is required and applicants must submit recommendation letters from two separate employers, professional associates, physical therapy clinicians or professors.

Official transcripts from other colleges attended must be sent to Tidewater Community College, Office of the College Registrar, P.O. Box 9000, Norfolk, VA 23509, and be evaluated prior to the application deadline date. For further information regarding admission, continue and graduate, go to tcc.edu (search keywords “physical therapist assistant”).

Licensure is required in most states. In Virginia, program graduates must pass a national licensure examination.


ASSOCIATE OF APPLIED SCIENCE DEGREE:

Physical Therapist Assistant

(PLAN CODE: 221.151.02)

SEMESTER 1

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<td>HLT 141</td>
<td>Introduction to Medical Terminology</td>
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<td>MDL 105</td>
<td>Phlebotomy (1st 8-weeks)</td>
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<td>MDL 106</td>
<td>Clinical Phlebotomy (2nd 8-weeks)</td>
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PHYSICAL THERAPIST ASSISTANT

ASSOCIATE OF APPLIED SCIENCE DEGREE:

Physical Therapist Assistant

The Associate of Applied Science (A.A.S.) degree in Physical Therapist Assistant (PTA) is designed for those who wish to enter employment as physical therapist assistants working under the supervision of a physical therapist. Graduates may work in acute care hospitals, skilled nursing facilities, home health agencies, out-patient clinics, rehabilitation hospitals, fitness and wellness centers, public schools, and similar settings.

Admission to the college does not guarantee admission to the PTA program, with 25 to 30 students admitted to the program each fall semester. Selection is highly competitive, and is based on a system of points using several criteria. Entrance requirements include high school graduation or a GED and successful completion of BIO 141, ENG 111, HLT 130, PSY 230, and SDV 101, with achievement in BIO 141 as a key admission determinant. Participation in a minimum of 40 documented observation hours in specific health care settings is required and applicants must submit recommendation letters from two separate employers, professional associates, physical therapy clinicians or professors.

Official transcripts from other colleges attended must be sent to Tidewater Community College, Office of the College Registrar, P.O. Box 9000, Norfolk, VA 23509, and be evaluated prior to the application deadline date. For further information regarding admission, continue and graduate, go to tcc.edu (search keywords “physical therapist assistant”).

Licensure is required in most states. In Virginia, program graduates must pass a national licensure examination.


ASSOCIATE OF APPLIED SCIENCE DEGREE:

Physical Therapist Assistant

(PLAN CODE: 180)

SEMESTER 1 PRE-ADMISSION REQUIREMENTS

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<td>ENG 111</td>
<td>College Composition I</td>
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<td>HLT 130</td>
<td>Nutrition and Diet Therapy</td>
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<td>PSY 230</td>
<td>Developmental Psychology</td>
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<td>Orientation to Health Care</td>
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SEMESTER 2 (BASED ON A FALL SEMESTER START)

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<td>PTH 105</td>
<td>Introduction to Physical Therapist Assisting</td>
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<td>PTH 121</td>
<td>Therapeutic Procedures I</td>
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<td>PTH 151</td>
<td>Musculoskeletal Structure and Function</td>
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<td>Semester Total</td>
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</table>

Total Minimum Credits 12

Total Minimum Credits 67

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

ASSOCIATE OF APPLIED SCIENCE DEGREE:

Radiography

The Associate of Applied Science (A.A.S.) degree in Radiography prepares individuals for entry-level employment as radiographers in a variety of health care settings, including hospitals, imaging centers, clinics, doctors’ offices, and others.

Entrance requirements for this program include preparation for ENG 111 and MTH 126, as well as successful completion of BIO 141 or its equivalent. The program is highly competitive, and selection is based on a system of points using these criteria, in addition to grades in BIO 141 and 142, ENG 111, SDV 101, PSY 230 or an approved Social Science elective, an approved Humanities elective, HLT 141 (or 143), HLT 150, and MTH 126 or higher.

Priority admission is granted to Virginia residents who reside in political subdivisions supported by the college. Call the Information Center at (757) 822-1122 to request a program admission packet that will outline all aspects of the program. The packet is also available online (tcc.edu, search keywords “radiography packet”). In addition, prospective students are encouraged to attend an Open House session for Radiography, held on the third Thursday of each month (with the exception of December).

Students are enrolled for six consecutive semesters of full-time study, primarily during daytime hours. The program does not have part-time or evening options. The clinical component of the program requires 1,440 hours of practice in affiliate hospitals, where students must adhere to high standards of professionalism and competence. Prospective students should be aware that certain medical facilities require both criminal/sex offender background checks, as well as drug screens, prior to being authorized to attend clinical components of the program. The cost of the background check and drug screen is the student’s responsibility.

Program students are required to purchase uniforms, shoes and lead markers for clinical practice.
ASSOCIATE OF APPLIED SCIENCE DEGREE: RADIOGRAPHY

(PLAN CODE: 172)

PRE-ADMISSION SEMESTER

<table>
<thead>
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<tbody>
<tr>
<td>BIO 141</td>
<td>Human Anatomy and Physiology I</td>
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Semester Total 4

SEMESTER 1 (BASED ON A SUMMER SEMESTER START)

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<td>HLT 150</td>
<td>Cross Cultural Health and Wellness Practices</td>
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<td>Introduction to Medical Terminology (or HLT 143)</td>
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<td>RAD 120</td>
<td>Medical Care Procedures and Safety in Radiology</td>
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<td>RAD 141</td>
<td>Principles of Radiographic Quality I</td>
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<td>SDV 101</td>
<td>Orientation to Health Care</td>
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Semester Total 11

SEMESTER 2

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<tr>
<td>BIO 142</td>
<td>Human Anatomy and Physiology II</td>
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<tr>
<td>RAD 121</td>
<td>Radiographic Procedures I</td>
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<td>RAD 131</td>
<td>Elementary Clinical Procedures I</td>
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<td>Principles of Radiographic Quality II</td>
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Semester Total 15

SEMESTER 3

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<td>ENG 111</td>
<td>College Composition I</td>
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<td>RAD 132</td>
<td>Elementary Clinical Procedures II</td>
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<tr>
<td>RAD 205</td>
<td>Radiation Protection and Radiobiology</td>
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<td>RAD 221</td>
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Semester Total 13

SEMESTER 4

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<tr>
<td>RAD 190</td>
<td>Coordinated Internship in Radiography</td>
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<tr>
<td>RAD 245</td>
<td>Radiologic Specialists</td>
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Semester Total 4

SEMESTER 5

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<tr>
<td>MTH 126</td>
<td>Mathematics for Allied Health (or higher)</td>
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<td>RAD 206</td>
<td>Human Disease and Radiography</td>
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<td>RAD 231</td>
<td>Advanced Clinical Procedures I</td>
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<td>RAD 255</td>
<td>Radiographic Equipment</td>
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Semester Total 13

SEMESTER 6

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<td>PSY 230</td>
<td>Developmental Psychology (or Social Science Elective)</td>
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<td>RAD 232</td>
<td>Advanced Clinical Procedures II</td>
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<td>RAD 280</td>
<td>Terminal Competencies in Radiography</td>
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Semester Total 12

Total Minimum Credits 72

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

CAREER STUDIES: COMPUTED TOMOGRAPHY

(PLAN CODE: 221.XXX.XX) (PENDING APPROVAL)

Computed Tomography is an advanced practice area of Radiography. The Career Studies Certificate in Computed Tomography (CT) provides the opportunity for registered radiographers, radiation therapists, and nuclear medicine technologists to acquire the competencies and skills necessary in preparation for certification in CT through the American Registry of Radiologic Technologists (ARRT). Admission to the program is limited to the number of available clinical sites, with preference given based on Virginia domicile, Veteran status, and previous TCC Radiography student status.

Students enrolled in this curriculum are not eligible for federal financial assistance.

SEMESTER 1

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<td>RAD 196</td>
<td>On-Site Training</td>
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<td>RAD 247</td>
<td>Cross-Sectional Anatomy</td>
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Semester Total 5

SEMESTER 2

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<td>RAD 196</td>
<td>On-Site Training</td>
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<tr>
<td>RAD 242</td>
<td>Computed Tomography Procedures and Instrumentation</td>
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Semester Total 4

Total Minimum Credits 9

1 RAD 242 satisfies the American Registry of Radiologic Technologists’ Structured Education Requirements for post-primary certification and registration (https://www.arrt.org/Education/Structured-Education-Requirements).

RESPIRATORY THERAPY

ASSOCIATE OF APPLIED SCIENCE DEGREE:

Respiratory Therapy

The Respiratory Therapy program prepares students to work under the direction of a physician in assisting in diagnosis, treatment, and management of patients with cardiopulmonary disorders, and in helping patients to recover their lung function. Respiratory Care Practitioners (RCPs) deliver medications and oxygen, operate life support machines, and assure that patients have open breathing passages, among other duties. Graduates of the program may seek employment in hospital emergency rooms, intensive care units, outpatient clinics, and home health care.

Admission to the college does not guarantee admission to the Respiratory Therapy program. Entrance requirements for this program include completion of ENG 111; completion of MTH 1 or MTE 1-3, and MTH 95 or MTE 4-5; or equivalent; high school chemistry or CHM 1, SDV 101, and BIO 141 (BIO 142 is recommended), along with both a college and a Division of Health Professions application. Qualified candidates will be granted an interview based on the number and quality of applicants. Participation in an orientation session is mandatory. Official transcripts from other colleges attended must be submitted to the Office of the College Registrar at Tidewater Community College prior to the application deadline. For further information regarding admission, continuance, and graduation requirements, go to tcc.edu (search keywords “respiratory therapy”).

The Associate of Applied Science (A.A.S.) degree in Respiratory Therapy prepares students to take the examinations to become a Registered Respiratory Therapist. The Respiratory Therapy Program is accredited by the Commission on Accreditation for Respiratory Care, 1248 Harwood Road, Bedford, Texas, 76021-4244, (817) 283-2835, www.coarc.com.
ASSOCIATE OF APPLIED SCIENCE DEGREE: 
RESPIRATORY THERAPY  
(PLAN CODE: 181)

PRE-ADMISSION SEMESTER  
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<td>RTH 102</td>
<td>Integrated Sciences for Respiratory Care II</td>
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<td>Fundamental Theory for Respiratory Care</td>
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<td>RTH 131</td>
<td>Respiratory Care Theory and Procedures I</td>
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<td>BIO 142</td>
<td>Human Anatomy and Physiology II</td>
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<tr>
<td>RTH 121</td>
<td>Cardiopulmonary Science I</td>
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<tr>
<td>RTH 122</td>
<td>Respiratory Care Theory and Procedures II</td>
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<td>RTH 145</td>
<td>Pharmacology for Respiratory Care I</td>
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<td>RTH 217</td>
<td>Pulmonary Rehabilitation, Home Care and Health Promotion</td>
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<td>RTH 235</td>
<td>Diagnostic and Therapeutic Procedures II</td>
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<td>RTH 236</td>
<td>Critical Care Monitoring</td>
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<tr>
<td>RTH 222</td>
<td>Cardiopulmonary Science II</td>
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<td>RTH 290</td>
<td>Coordinated Internship in Respiratory Therapy</td>
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SEMESTER 5  
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<tr>
<td>RTH 223</td>
<td>Cardiopulmonary Science III</td>
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<tr>
<td>RTH 225</td>
<td>Neonatal and Pediatric Respiratory Procedures</td>
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<td>Coordinated Internship in Respiratory Therapy</td>
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SEMESTER 6  
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<tr>
<td>HLT 155</td>
<td>Current Issues in Health Care</td>
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<tr>
<td>RTH 290</td>
<td>Coordinated Internship in Respiratory Therapy</td>
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<tr>
<td>RTH 298</td>
<td>Seminar and Project in Respiratory Therapy</td>
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</table>

| Total Minimum Credits | 67 |

1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).

STUDIO ARTS

ASSOCIATE OF APPLIED ARTS DEGREE:  
Studio Arts

ASSOCIATE OF APPLIED ARTS DEGREE:  
Studio Arts  
› Specialization: Glass

ASSOCIATE OF APPLIED ARTS DEGREE:  
Studio Arts  
› Specialization: Photographic Media Arts

ASSOCIATE OF APPLIED ARTS DEGREE:  
Studio Arts  
› Specialization: Pre-Art Therapy

The Associate of Applied Arts (A.A.A.) degree in Studio Arts is designed for those entering or continuing in the field of visual arts, which may include the study of two- and three-dimensional design, photography, ceramics, glass, painting, sculpture, printmaking, and drawing. Students gain extensive studio experience, learning from masters in visual art media. Students are prepared for employment in museums, art centers, galleries, and similar areas; they are also prepared for owning a business in the arts or for personal enrichment in one or more areas of the visual arts. While not designed as a transfer program, courses from the Studio Arts program may be transferable to corresponding programs at four-year colleges and universities.

ASSOCIATE OF APPLIED ARTS DEGREE: STUDIO ARTS  
(PLAN CODE: 532)

SEMESTER 1 (BASED ON A FALL SEMESTER START)  
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<td>ART 131</td>
<td>Fundamentals of Design I</td>
<td>3</td>
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<tr>
<td>ART 201</td>
<td>History of Art I</td>
<td>3</td>
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<tr>
<td>ENG 111</td>
<td>College Composition I</td>
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<tr>
<td>ART 122</td>
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<td>ART 134</td>
<td>Three Dimensional Design (or ART 231)</td>
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<tr>
<td>ART 202</td>
<td>History of Art II</td>
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<tr>
<td>PHT 164</td>
<td>Introduction to Digital Photography</td>
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<td>Painting I</td>
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<td>ART 271</td>
<td>Printmaking I</td>
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<td>ART 280</td>
<td>Graphic Design for Studio Arts</td>
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<td>CST 100</td>
<td>Principles of Public Speaking</td>
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<td>HIS 111</td>
<td>History of World Civilization I</td>
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<td>ART 242</td>
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<td>ART 287</td>
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1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. Students may substitute CST 110 for CST 100. Students planning to transfer should consult the transfer institution to ensure that the substitution is appropriate.
3. ART 287 should be taken in the final semester before graduation and is offered in the fall and spring semesters only. Instructor permission is required.
4. Approved Studio Electives: Students may take any of the listed electives for which they have the prerequisites and that are not a requirement in their specialization: ART 221, ART 222, ART 231, ART 243, ART 244, ART 245, CRF 102, CRF 105, CRF 130, CRF 151, CRF 199, PHT 126.

ASSOCIATE OF APPLIED ARTS DEGREE: STUDIO ARTS

SPECIALIZATION: GLASS

(PLAN CODE: 532.04)

The Specialization in Glass provides students with both the historical background and the advances in modern technology relative to glass blowing. Students learn from masters of this craft as they enhance their glass skills in surface design, fusing, slumping and blowing with glass. Graduates are prepared to work as gallery representatives, museum educators, freelance craft persons, or art center instructors. While not designed as a transfer program, courses from the Glass specialization may be transferable to corresponding programs at four-year colleges and universities.

<table>
<thead>
<tr>
<th>SEMESTER 1 (BASED ON A FALL SEMESTER START)</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>ART 121</td>
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<td>ART 131</td>
<td>Fundamentals of Design I</td>
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<td>ART 201</td>
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<td>CRF 130</td>
<td>Glass Blowing I</td>
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<td>ENG 111</td>
<td>College Composition I</td>
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<td>Three Dimensional Design (or ART 231)</td>
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<td>PHT 164</td>
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<th>COURSE NO.</th>
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<tbody>
<tr>
<td>ART 202</td>
<td>History of Art II</td>
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<td>ART 271</td>
<td>Printmaking</td>
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<td>ART 280</td>
<td>Graphic Design for Studio Arts</td>
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<tr>
<td>CRF 230</td>
<td>Glass Blowing III</td>
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<td>HIS 111</td>
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<tbody>
<tr>
<td>ART 287</td>
<td>Portfolio and Resume Preparation ²</td>
<td>3</td>
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<tr>
<td>CRF 151</td>
<td>Glass Fusing and Painting</td>
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1. Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2. ART 287 should be taken in the final semester before graduation and is offered in the fall and spring semesters only. Instructor permission is required.
3. Approved Studio Elective: Students may take any of the listed electives for which they have the prerequisites and that are not a requirement in their specialization: ART 221, ART 222, ART 231, ART 241, ART 102, CRF 105, CRF 151, CRF 199, PHT 126.

ASSOCIATE OF APPLIED ARTS DEGREE: STUDIO ARTS

SPECIALIZATION: PHOTOGRAPHIC MEDIA ARTS

(PLAN CODE: 532.03)

The Specialization in Photographic Media Arts provides students with instruction in current photographic technology, video and related media. Students are provided an opportunity to tell stories, capture moments and communicate through the use of visual images. Students will be introduced to composition, lighting techniques and a variety of camera equipment, hardware and software necessary for the capture, imaging and output of photographic projects. Students will be introduced to techniques and best practices regarding ideation, creative processes and visual problem solving, a skill set mandatory for the highly competitive field of photography. Graduates are prepared for jobs in the photography industry, to include agency photographer, photographer’s assistant, freelance photographer, fine art photographer, and art center educators.

<table>
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<td>History of Art I</td>
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<td>ENG 111</td>
<td>College Composition I</td>
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<td>PHT 164</td>
<td>Introduction to Digital Photography</td>
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<td>PHT 110</td>
<td>History of Photography</td>
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<td>Introduction to Video Techniques</td>
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<td>PHT 171</td>
<td>Imaging and Concepts in Photographic Media Arts</td>
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ASSOCIATE OF APPLIED ARTS DEGREE: STUDIO ARTS

SPECIALIZATION: PRE-ART THERAPY

(PLAN CODE 532.05)

The Specialization in Pre-Art Therapy is designed to prepare graduates to work in the areas of Studio Arts and/or Social and Human Services in positions such as gallery assistants, museum educators or tour guides, recreation aides at cultural art centers or recreation centers, technicians in mental health, activity directors in nursing homes, or a variety of health and recreation aides. This degree program and specialization will require the study of the foundations of studio art as well as courses in Psychology and Basic Counseling Skills. While not designed as a transfer program, the courses in the Pre-Art Therapy Specialization may transfer to corresponding programs at four-year colleges and universities.

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<td>ART 131</td>
<td>Fundamentals of Design I</td>
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<tr>
<td>ART 183</td>
<td>Introduction to Art Therapy</td>
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<td>ART 201</td>
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<td>ART 134</td>
<td>Three Dimensional Design (or ART 231)</td>
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<td>ART 241</td>
<td>Painting I</td>
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<td>ART 271</td>
<td>Printmaking I</td>
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<td>History of World Civilization I</td>
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<td>HMS 121</td>
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<td>PSY 230</td>
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1 Eligible courses are listed on page 14 in the 2017-2018 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s).
2 Students may substitute CST 110 for CST 100. Students planning to transfer should consult the transfer institution to ensure that the substitution is appropriate.
3 ART 287 should be taken in the final semester before graduation and is offered in the fall and spring semesters only. Instructor permission is required.
4 Approved Studio Electives: Students may take any of the listed electives for which they have the prerequisites and that are not a requirement in their specialization: ART 134, ART 221, ART 222, ART 231, ART 233, ART 234, CRF 102, CRF 105, CRF 130, CRF 151.

ASSOCIATE OF APPLIED ARTS DEGREE: STUDIO ARTS

SPECIALIZATION: THEATRE ARTS

(PLAN CODE 221.529.02)

The Career Studies Certificate in Theatre Arts is designed to prepare graduates to work in the areas of Studio Arts and Social and Human Services in positions such as gallery assistants, museum educators or tour guides, recreation aides at cultural art centers or recreation centers, technicians in mental health, activity directors in nursing homes, or a variety of health and recreation aides. This degree program and specialization will require the study of the foundations of studio art as well as courses in Psychology and Basic Counseling Skills. While not designed as a transfer program, the courses in the Pre-Art Therapy Specialization may transfer to corresponding programs at four-year colleges and universities.

SEMESTER 1

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<tbody>
<tr>
<td>CST 141</td>
<td>Theatre Appreciation I</td>
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<td>CST 233</td>
<td>Rehearsal and Performance I</td>
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SEMESTER 3

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1 Students interested in performance theatre must select 15 credits from the following: CST 111, 131, 132, 145, 241, 266, 290.
2 Students interested in technical theatre must select 15 credits from the following: CST 145, 241, 251, 266, 290.

THEATRE ARTS

CAREER STUDIES CERTIFICATE:

Theatre Arts

The Career Studies Certificate in Theatre Arts provides students with an introduction to the theatre arts and hands-on production experience in a variety of theatre spaces including the Chesapeake Studio Theatre and the TCC Roper Performing Arts Center in Norfolk. Students are introduced to performance and technical aspects of theatre production and select approved electives from one of these areas to gain additional exposure. Graduates are prepared for positions as actors, directors’ assistants, communications and public relations representatives, set designers, shop technicians, sound and lighting technicians, and comparable theatre-related roles.

Note: Students planning to transfer into a baccalaureate degree program in theatre should enroll in the Associate of Arts degree in Liberal Arts and consult with a TCC counselor or program advisor to select courses appropriate for transfer.

CAREER STUDIES: THEATRE ARTS
### TRUCK DRIVING

**CAREER STUDIES CERTIFICATE:**
- **Truck Driving**

The Career Studies Certificate in Truck Driving prepares students to obtain a Class A commercial driver’s license (CDL) which allows them to drive tractor trailer trucks. In addition, it will allow them to drive Class B trucks such as buses, dump trucks, and straight trucks. The program offers day and evening sessions. It operates on an eight-week, five-days-a-week schedule, and simulates the working environment. Contact the Truck Driving program office at (757) 822-2428 for the admissions packet. Students must have a valid Virginia driver’s license and a record free of serious violations. Students must also pass a Department of Transportation medical examination and drug/alcohol screening.

**CAREER STUDIES: TRUCK DRIVING**
(PLAN CODE: 221.729.02)

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<td>Preparation for Employment</td>
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<td>TRK 101</td>
<td>DOT Safety Rules and Regulations</td>
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<td>TRK 102</td>
<td>Preventive Maintenance for Truck Drivers</td>
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<td>TRK 103</td>
<td>Tractor Trailer Driving</td>
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<td>TRK 110</td>
<td>Survey of the Trucking Industry</td>
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### VETERINARY ASSISTANT

**CAREER STUDIES CERTIFICATE:**
- **Veterinary Assistant**

The Career Studies Certificate program in Veterinary Assistant prepares students to assist and support licensed veterinary technicians and veterinarians in the health and handling of a variety of small domestic animals and exotic species. Veterinary Assistants perform receptionist functions, assist in filling prescriptions, keep exam rooms and kennels cleaned and prepped, set up lab work, assist with inventory, update medical records, assist with nursing care, assist with surgical preparation and procedure, assist with radiography, interact with clients, etc. The college has achieved approval of its program by the National Association of Veterinary Technicians in America (NAVTA). Upon graduation from a NAVTA approved Veterinary Assistant Program, a participant is eligible to sit for the national examination and upon successful completion will be designated an Approved Veterinary Assistant (AVA).

Admission to the college does not guarantee admission to the Veterinary Assistant Program, with 15-18 students admitted to the program each spring semester. Selection is highly competitive with entrance requirements for this program to include: high school graduation or a GED, college admission, a letter documenting five hours of shadowing in a veterinary hospital or clinic within the last year, completion of ENG 111, completion of MTH 1, MTE 1-3 or equivalent, letter of recommendation, and personal interview with the Program Director. For additional information regarding admission, continuance, and graduation requirements, go to [tcc.edu](http://tcc.edu) (search keywords “veterinary assistant”).

**CAREER STUDIES: VETERINARY ASSISTANT**
(PLAN CODE: 221.188.04)

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<td>VET 101</td>
<td>Introduction to Veterinary Assisting</td>
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<td>VET 103</td>
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<td>VET 190</td>
<td>Coordinated Internship in Veterinary Assisting</td>
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### WELDING

**CAREER STUDIES CERTIFICATE:**
- **Welding**

The Welding programs prepare students for employment in the welding industry. Two tracks are offered: a general welding focus and a maritime welding focus. Graduates are provided education and training for environments such as shipyards, utilities, manufacturing, marine, and oil refineries. A moderate level of manual dexterity and an average mechanical aptitude are helpful. Prospective welding students should contact the Welding Department at (757) 822-2300 for prior approval before enrolling.

**CAREER STUDIES CERTIFICATE:**
- **Maritime Welding**

The Welding programs prepare students for employment in the welding industry. Two tracks are offered: a general welding focus and a maritime welding focus. Graduates are provided education and training for environments such as shipyards, utilities, manufacturing, marine, and oil refineries. A moderate level of manual dexterity and an average mechanical aptitude are helpful. Prospective welding students should contact the Welding Department at (757) 822-2300 for prior approval before enrolling.

**CERTIFICATE: WELDING**
(PLAN CODE: 995)

The Certificate in Welding builds on the skills presented in the Career Studies Certificate in Welding. In addition to learning about college success skills, students gain competencies in English and math.

<table>
<thead>
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<td>WEL 117</td>
<td>Oxyfuel Welding and Cutting</td>
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<td>WEL 123</td>
<td>Shielded Metal Arc Welding (Basic)</td>
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<td>WEL 141</td>
<td>Welder Qualification Tests I</td>
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<td>Welding III (Inert Gas)</td>
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<td>Pipe and Tube Welding (TIG)</td>
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<td>WEL 150</td>
<td>Welding Drawing and Interpretation</td>
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| **Total Minimum Credits** |             |             | **33**  |
CAREER STUDIES: WELDING

(PLAN CODE: 221.995.01)

The Career Studies Certificate in Welding prepares students for immediate employment in a number of industrial environments, including shipyards, utilities, manufacturing firms, and oil refineries. Students are introduced to various types of equipment and materials used in welding. Successful completers may qualify as tack welders or as journeyman welders. Students qualifying as a journeyman may successfully pass the AWS Journeyman Certification tests.

<table>
<thead>
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<th>SEMESTER 2</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEL 124</td>
<td>Shielded Metal Arc Welding (Advanced)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>WEL 136</td>
<td>Welding III (Inert Gas)</td>
<td>2</td>
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<tr>
<td>WEL 142</td>
<td>Welder Qualification Tests II</td>
<td>3</td>
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</table>

  Semester Total 8

<table>
<thead>
<tr>
<th>SEMESTER 3</th>
<th>COURSE NO.</th>
<th>COURSE TITLE</th>
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<tbody>
<tr>
<td>WEL 126</td>
<td>Pipe Welding I (ARC)</td>
<td>3</td>
<td></td>
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<tr>
<td>WEL 135</td>
<td>Inert Gas Welding</td>
<td>2</td>
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<tr>
<td>WEL 138</td>
<td>Pipe and Tube Welding (TIG)</td>
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<tr>
<td>WEL 150</td>
<td>Welding Drawing and Interpretation</td>
<td>2</td>
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</tr>
</tbody>
</table>

  Semester Total 9

Total Minimum Credits 26
GENERAL USAGE COURSES

These courses are used in all disciplines by using the appropriate course prefix with a specific discipline or course content title.

ACC 120 | 3 CREDITS
Advanced Bookkeeping
Emphasizes the complexities of bookkeeping. Stresses methods to avoid typical pitfalls in preparation for the Certified Bookkeeper Exam. Lecture 3 hours per week.

ACC 211 | 3 CREDITS
Principles of Accounting I
Introduces accounting principles with respect to financial reporting. Demonstrates how decision makers use accounting information for reporting purposes. Focuses on the preparation of accounting information and its use in the operation of organizations, as well as methods of analysis and interpretation of accounting information. Prerequisite: Placement into MTH 121 or higher. Lecture 3 hours per week.

ACC 212 | 3 CREDITS
Principles of Accounting II
Introduces accounting principles with respect to cost and managerial accounting. Focuses on the application of accounting information with respect to product costing, as well as its use within the organization to provide direction and to judge performance. Prerequisite: ACC 211 (or ACC 220 for students in plan 221.212.24 – Career Studies: Small Business Management). Lecture 3 hours per week.

ACCOUNTING

ACC 100 | 5 CREDITS
Introduction to Bookkeeping
Presents the accounting cycle, focusing on the routine recording of data in journals and ledgers. Includes payroll preparation and practical procedures. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

ACC 124 | 3 CREDITS
Payroll Accounting
Presents accounting systems and methods used in computing and recording payroll to include payroll taxes and compliance with federal and state legislation. Lecture 3 hours per week.
ACC 241 | 3 CREDITS  
Auditing I  
Introduces techniques of investigating, interpreting, and appraising accounting records and assertions. Studies internal control design and evaluation, evidence-gathering techniques and other topics. Prerequisite or co-requisite: ACC 212 or equivalent. Lecture 3 hours per week.

ACC 261 | 3 CREDITS  
Principles of Federal Taxation I  
Provides an intense review of important areas in post-award contract modifications, award law, government property, defective pricing data, as related to the different kinds of contracts, contract changes, contract modification, administrative procedures for disputes and terminations, protest, disputes, appeals, and contract close-out. Prerequisite: ACC 121. Lecture 3 hours per week.

ACQ 221 | 3 CREDITS  
Advanced Acquisition and Procurement Management I  
Studies advanced areas of acquisition planning, government provided property, sealed bidding, funding, and acquisition of information resources. Emphasizes interactions with service contracts, value engineering, commercial activities, technical requirements, construction requirements, and socio-economic programs. Prerequisite: ACQ 121. Lecture 3 hours per week.

ACQ 231 | 3 CREDITS  
Principles of Contract Pricing and Negotiations I  
Covers the environment in which cost and price analysis takes place, sources of data for cost and price analysis, methods for analyzing direct and indirect costs, methods for performing profit analysis, and a selection of current pricing topics. Lecture 3 hours per week.

ACQ 232 | 3 CREDITS  
Principles of Contract Pricing and Negotiations II  
Continues the environment in which cost and price analysis takes place. Includes individual and group negotiation activities, which address the fundamentals of the negotiation process, essential techniques, strategies, and tactics. Prerequisite: ACQ 231. Lecture 3 hours per week.

ACQ 235 | 3 CREDITS  
Contract Administration  
Provides an intense review of important areas in post-award contract management. Focuses on the administration of government contracts as related to the different kinds of contracts, contract changes, contract modification, administrative procedures for disputes and terminations, specification, inspecting and acceptance, and close-out. Prerequisite: ACQ 121. Lecture 3 hours per week.

ADJ 100 | 3 CREDITS  
Survey of Criminal Justice  
Introduces technical and fundamental procedures of government acquisition and procurement. Focuses on appropriations and funding, competition requirements, types of specifications, small business and labor surplus areas, pre-solicitation considerations, solicitations, and contractor qualifications. Lecture 3 hours per week.

ADJ 105 | 3 CREDITS  
The Juvenile Justice System  
Presents the evolution, philosophy, structures and processes of the American juvenile delinquency system; surveys the rights of juveniles, dispositional alternatives, rehabilitation methods and current trends. Lecture 3 hours per week.

ADJ 110 | 3 CREDITS  
Introduction to Law Enforcement  
Studies the philosophy and history of law enforcement, presenting an overview of the crime problem and policy response issues. Surveys the jurisdictions and organizations of local, state, and federal law enforcement agencies. Examines the qualification requirements and career opportunities in the law enforcement profession. Lecture 3 hours per week.
ADJ 111 | 3 CREDITS
Law Enforcement Organization and Administration I
Teaches the principles of organization and administration of law enforcement agencies. Studies the management of line operations, staff and auxiliary services, investigative and juvenile units. Introduces the concept of data processing; examines policies, procedures, rules, and regulations pertaining to crime prevention. Surveys concepts of protection of life and property, detection of offenses, and apprehension of offenders. Lecture 3 hours per week.

ADJ 127 | 3 CREDITS
Firearms and Marksmanship
Surveys lethal weapons in current use and current views on weapon types and ammunition design. Examines the legal guidelines as to the use of deadly force, safety in handling of weaponry, and weapon care and cleaning; marksmanship instruction under standard range conditions. Prerequisite: Instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ADJ 133 | 3 CREDITS
Ethics and the Criminal Justice Professional
Examines ethical dilemmas pertaining to the criminal justice system, including those in policing, courts and corrections. Focuses on some of the specific ethical choices that must be made by the criminal justice professional. Lecture 3 hours per week.

ADJ 140 | 3 CREDITS
Introduction to Corrections
Focuses on societal responses to the offender. Traces the evolution of practices based on philosophies of retribution, deterrence, and rehabilitation. Reviews contemporary correctional activities and their relationships to other aspects of the criminal justice system. Lecture 3 hours per week.

ADJ 160 | 3 CREDITS
Police Response to Critical Incidents
Provides a basic introduction to incident command and emerging trends. Addresses bomb threats; hostage/barricade situations; attacks on institutions such as schools and hospitals; criminal hazmat; terrorist, militia/paramilitary, and extended crime scene evidence collection scenarios; and other long term or large scale events. Lecture 3 hours per week.

ADJ 169 | 3 CREDITS
Transportation and Border Security
Discusses substantive issues regarding transportation security within the role of Homeland Security measures implemented by the United States. Introduces the student to and examines global preparedness from a transportation perspective. Considers the interrelationship among natural disasters, and sustainable infrastructure. Describes intermodal and integrated transportation and physical models of movement and discusses mobility as a cultural lifeline. Lecture 3 hours per week.

ADJ 171-172 | 3 CREDITS EACH
Forensic Science I-II
Introduces student to crime scene technology, procedures for sketching, diagramming and using casting materials. Surveys the concepts of forensic chemistry, fingerprint classification/identification and latent techniques, drug identification, hair and fiber evidence, death investigation techniques, thin-layer chromatographic methods, and arson materials examination. Lecture 3 hours per week.

ADJ 173 | 3 CREDITS
Forensic Photography I
Surveys fundamental photographic skills--exposure, composition, film, filters, darkroom materials and procedures. Emphasizes use of photography for law enforcement purposes and for courtroom presentation. Considers current status and trends in photographic law. Lecture 3 hours per week.

ADJ 201 | 3 CREDITS
Criminology
Studies current and historical data pertaining to criminal and other deviant behavior. Examines theories that explain crime and criminal behavior in human society. Lecture 3 hours per week.

ADJ 211-212 | 3 CREDITS EACH
Criminal Law, Evidence and Procedures I-II
Teaches the elements of proof for major and common crimes and the legal classification of offenses. Studies the kinds, degrees and admissibility of evidence and its presentation in criminal proceedings with emphasis on legal guidelines for methods and techniques of evidence acquisition. Surveys the procedural requirements from arrest to final disposition in the various American court systems with focus on the Virginia jurisdiction. Prerequisite for ADJ 212: ADJ 211. Lecture 3 hours per week.

ADJ 231 | 3 CREDITS
Community Policing
Examines the history of police-community relations and the role of both the community and the police in establishing a crime fighting partnership for success. Emphasizes building relationships between police officers and the community they serve. Includes case studies from various cities that have undertaken the philosophy of community policing. Lecture 3 hours per week.

ADJ 232 | 3 CREDITS
Domestic Violence
Surveys historical issues that have affected family violence. Examines current trends in the context of the criminal justice system. Lecture 3 hours per week.

ADJ 234 | 3 CREDITS
Terrorism and Counter-Terrorism
Surveys the historical and current practices of terrorism that are national, transnational, or domestic in origin. Includes biological, chemical, nuclear, and cyber-terrorism. Teaches the identification and classification of terrorist organizations, violent political groups and issue-oriented militant movements. Examines investigative methods and procedures utilized in counter terrorist efforts domestically and internationally. Lecture 3 hours per week.

ADJ 236 | 3 CREDITS
Principles of Criminal Investigation
Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling and preserving of evidence. Lecture 3 hours per week.

ADJ 243 | 3 CREDITS
Homeland Security and Law
Covers relationships abroad, the mission of federal, state, and local government at home, and best practices to provide for the common defense. Examines Homeland Security and emergency management, the Federal Emergency Management Agency's place in public policy, law, and management, Homeland Security initiatives, and new partnerships for Homeland Security covering the government, private sector and higher education. Discusses civil rights issues, the USA Patriot Act; future challenges and roles of intelligence agencies; foreign policy aspects and views. Lecture 3 hours per week.
**ADMINISTRATIVE SUPPORT TECHNOLOGY**

**AST 101 | 3 CREDITS**  
**Keyboarding I**  
Teaches the alpha/numeric keyboard with emphasis on correct techniques, speed, and accuracy. Teaches formatting of basic personal and business correspondence, reports, and tabulation. Lecture 3 hours per week.

**AST 102 | 3 CREDITS**  
**Keyboarding II**  
Develops keyboarding and document production skills with emphasis on preparation of specialized business documents. Continues skill-building for speed and accuracy. Prerequisite: AST 101. Lecture 3 hours per week.

**AST 117 | 1 CREDIT**  
**Keyboarding for Computer Usage**  
Teaches the alphabetic keyboard and 10-key pad. Develops correct keying techniques. Lecture 1 hour per week.

**AST 132 | 1 CREDIT**  
**Word Processing I (Microsoft Office Word)**  
Introduces students to a word processing program to create, edit, save and print documents. Lecture 1 hour per week.

**AST 141 | 4 CREDITS**  
**Word Processing (Microsoft Office Word)**  
Teaches creating and editing documents, including line and page layouts, columns, fonts, search/replace, cut/ paste, spell/thesaurus, and advanced editing and formatting features of word processing software. Prerequisite: AST 101 or equivalent. Lecture 4 hours per week.

**AST 150 | 1 CREDIT**  
**Desktop Publishing I (Publisher)**  
Presents desktop publishing features including page layout and design, font selection, and use of graphic images. Lecture 1 hour per week.

**AST 154 | 1 CREDIT**  
**Voice Recognition Applications**  
Teaches the computer user to use the voice as an input device to compose documents and to give commands directly to the computer. Lecture 1 hour per week.

**AST 201 | 3 CREDITS**  
**Keyboarding III**  
Develops decision-making skills, speed, and accuracy in production keying. Applies word processing skills in creating specialized business documents. Prerequisite: AST 102. Lecture 3 hours per week.

**AST 205 | 3 CREDITS**  
**Business Communications**  
Teaches techniques of oral and written communications. Emphasizes writing and presenting business-related material. Prerequisite: ENG 111. Lecture 3 hours per week.

**AST 207 | 3 CREDITS**  
**Records and Database Management**  
Teaches filing and records management procedures using microcomputer database software. Incorporates both manual and electronic methods for managing information. Lecture 3 hours per week.

**AST 221 | 3 CREDITS**  
**Specialized Software Applications**  
Teaches specialized integrated software applications on the microcomputer. Emphasizes document production to meet business and industry standards. Prerequisite: AST 101 or equivalent. Lecture 4 hours per week.

**AST 222 | 3 CREDITS**  
**Medical Insurance and Coding**  
Teaches coding for medical services rendered within a medical office setting utilizing current coding books for maximum reimbursement. Prerequisite: HLT 143. Lecture 3 hours per week.

**AST 234 | 3 CREDITS**  
**Office Administration II**  
Develops an understanding of the administrative support role and the skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes the development of critical thinking, problem-solving, and job performance skills in a business office environment. Prerequisite: AST 101. Lecture 3 hours per week.

**AST 242 | 3 CREDITS**  
**Medical Machine Transcription**  
Enhances skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes administrative and supervisory role of the office professional. Includes travel and meeting planning, office budgeting and financial procedures, international issues, and career development. Prerequisite: AST 243 or equivalent. Lecture 3 hours per week.

**AST 244 | 3 CREDITS**  
**Office Administration I**  
Develops an understanding of the administrative support role and the skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes the development of critical thinking, problem-solving, and job performance skills in a business office environment. Prerequisite: AST 101. Lecture 3 hours per week.

**AST 245 | 3 CREDITS**  
**Medical Machine Transcription**  
Enhances skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes administrative and supervisory role of the office professional. Includes travel and meeting planning, office budgeting and financial procedures, international issues, and career development. Prerequisite: AST 243 or equivalent. Lecture 3 hours per week.

**AST 257 | 4 CREDITS**  
**WP Desktop Publishing (Microsoft Office Word)**  
Uses word processing software to teach advanced document preparation. Prerequisite: AST 101. Lecture 4 hours per week.
AIR 111-112 | 3 CREDITS EACH
Air Conditioning and Refrigeration Controls I-II
Presents electron theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurement, A.C. motors, power distribution controls and their application. Co-requisite for AIR 111: AIR 121. Prerequisites for AIR 112: AIR 111 and AIR 161. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 116 | 2 CREDITS
Duct Construction and Maintenance
Presents duct materials including sheet metal, aluminum, and fiber glass. Explains development of duct systems, layout methods, safety hand tools, cutting and shaping machines, fasteners and fabrication practices. Includes duct fittings, dampers and regulators, diffusers, heater and air washers, fans, insulation, and ventilating hoods. Prerequisites: AIR 161 and AIR 165. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

AIR 121-122 | 3 CREDITS EACH
Air Conditioning and Refrigeration I-II
Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, and metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Co-requisite for AIR 121: AIR 111. Prerequisites for AIR 122: AIR 121 and AIR 161. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 154 | 3 CREDITS
Heating Systems I
Introduces types of fuels and their characteristics of combustion; types, components and characteristics of burners, and burner efficiency analyzers. Studies forced air heating systems including troubleshooting, preventive maintenance and servicing. Prerequisites: AIR 111 and AIR 161. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 158 | 2 CREDITS
Mechanical Codes
Presents mechanical code requirements for installation, service, and inspection procedures. Uses the BOCA code in preparation for the master's card. Prerequisite: AIR 161. Lecture 2 hours per week.

AIR 159 | 1 CREDIT
Heating and Cooling Safety
Presents standard safety procedures used in the heating and cooling industry. Discusses proper handling of equipment refrigerants and electricity. Lecture 1 hour per week.

AIR 160 | 2 CREDITS
Introduction to Indoor Air Quality
Examines the common sources of indoor air contaminants (pollutants), minimum ventilation rate requirements, and the analysis of properties of indoor air in residential and commercial buildings. Covers methods of air properties, data collection, data analysis, and the implementation of Heating, Ventilation, and Air Conditioning (HVAC) systems performance remediation techniques. Prerequisite: AIR 161. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
AIR 181 | 2 CREDITS
Planning and Estimating I
Studies the principles of blueprint reading as applied to the building trades. Emphasizes air conditioning distribution, designing and drawing residential and commercial systems, take-off of materials and estimating the cost of the systems. Prerequisite: AIR 161. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

AIR 200 | 2 CREDITS
Hydronics
Studies the principles of hydronics systems for heating and cooling. Includes steam heated and chilled water systems. Primarily concerns systems using water under forced circulation. Prerequisites: AIR 111 and AIR 161. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

AIR 206 | 3 CREDITS
Psychrometrics
Studies air and its properties, characteristics and measurements as they apply to human comfort. Considers control of temperature, humidity and distribution of air and air mixtures. Prerequisites: AIR 121 and AIR 161. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 207 | 4 CREDITS
Heat Loads and Psychrometrics
Studies air and its properties, characteristics and measurements as they apply to human comfort. Considers control of temperature, humidity and distribution of air and air mixtures. Studies heat loss and heat gain factors. Considers the effect, the selection and layout of residential air conditioning and refrigeration systems. Prerequisite: AIR 161. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 235 | 3 CREDITS
Heat Pumps
Studies the theory and operation of reverse cycle refrigeration including supplementary heat as applied to heat pump systems, including service, installation and maintenance. Prerequisites: AIR 112 and AIR 122. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 238 | 3 CREDITS
Advanced Troubleshooting and Service
Presents advanced service techniques on a wide variety of equipment used in refrigeration, air conditioning, and phases of heating and ventilation and controls. Prerequisites: AIR 112 and AIR 122. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 240 | 3 CREDITS
Direct Digital Controls (DDC) I
Studies the principles of direct digital controls. Presents common terms used within the HVAC control industry. Covers the function and operating characteristics of sensors, controllers, and final control devices. Highlights transfer function for a control device and details the development of equations for typical control transfer functions. Prerequisites: AIR 112 and AIR 161. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 241 | 3 CREDITS
Direct Digital Controls (DDC) II
Studies electronics and its applications in the HVAC field. Covers computers, programmable controllers, and microprocessors in the HVAC industry. Describes the construction, operation, and installation of more commonly used HVAC sensors, controllers, and final control devices. Covers the selection of a controller based upon the process characteristics, calibration of a control loop for best efficiency. Describes how to develop flow charts. Prerequisite: AIR 240. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 273 | 3 CREDITS
Refrigeration III
Studies heat pumps, sizing, installation, and servicing, reciprocating screw and centrifugal chillers air conditioners. Prerequisites: AIR 112 and AIR 122. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 278 | 3 CREDITS
HVAC System Startup and Commissioning
Presents the process for ensuring that a Heating, Ventilation, and Air Conditioning (HVAC) system meets operational requirements and that it provides acceptable indoor air quality. Covers different levels of commissioning from basic to the actual re-commissioning evaluation. Includes functional performance testing, operator training, Material Safety Data Sheet (MSDS) forms, and equipment data sheets as well as operational and maintenance manuals. Prerequisites: AIR 111 and AIR 161. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 281-282 | 3 CREDITS EACH
Energy Management I-II
Introduces methodology for residential audits covering heat flow analysis, construction methods and materials. Discusses effects of lifestyle on energy consumption, conservation and practices, renewable energy sources, calculating costs and savings, interviewing and education techniques. Introduces commercial and industrial energy audits, methodology for the performance of audits covering heat flow analysis, construction methods and materials. Prerequisite for AIR 281: AIR 161. Prerequisite for AIR 282: AIR 281. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 287 | 1-5 CREDITS
Cooperative Education in Air Conditioning and Refrigeration
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Prerequisite: Instructor permission. Variable hours per week.

AMERICAN SIGN LANGUAGE

ASL 101-102 | 3 CREDITS EACH
American Sign Language I-II
Introduces the fundamentals of American Sign Language (ASL) used by the Deaf Community, including basic vocabulary, syntax, fingerspelling, and grammatical non-manual signals. Focuses on communicative competence. Develops gestural skills as a foundation for ASL enhancement. Introduces cultural knowledge and increases understanding of the Deaf Community. Prerequisite for ASL 102: ASL 101. Lecture 3 hours per week.

ASL 115 | 2 CREDITS
Fingerspelling and Number Use in ASL
Provides intensive practice in comprehension and production of finger spelled words and numbers with emphasis on clarity and accuracy. Focuses on lexicalized fingerspelling and numeral incorporation as used by native users of American Sign Language. Prerequisite: ASL 101 or Instructor permission. Lecture 2 hours per week.

ASL 125 | 3 CREDITS
History & Culture of the Deaf Community I
Presents an overview of various aspects of Deaf Culture, including educational and legal issues. Lecture 3 hours per week.
COURSE DESCRIPTIONS

ASL 150 | 2 CREDITS
Working with Deaf and Hard-of-Hearing People
Explores career options for serving Deaf/hard-of-hearing people and/or for using American Sign Language skills in a career. Examines interests, skills, and educational assessments. Investigates job market viability via the internet and professional periodicals. Develops opportunities for students to network with professionals in the field of deafness. Lecture 2 hours per week.

ASL 201-202 | 3 CREDITS EACH
American Sign Language II-III
Develops vocabulary, conversational competence, and grammatical knowledge with a total immersion approach. Introduces increasingly complex grammatical aspects including those unique to ASL. Discusses culture and literature. Contact with the Deaf Community is encouraged to enhance linguistic and cultural knowledge. Prerequisite for ASL 201: ASL 102, Qualifying Placement Test score into ASL 201, or program head permission. Prerequisite for ASL 202: ASL 201. Lecture 3 hours per week.

ASL 220 | 3 CREDITS
Comparative Linguistics: ASL & English
Describes spoken English and ASL (American Sign Language) on five levels: phonological, morphological, lexical, syntactic, and discourse. Compares and contrasts the two languages on all five levels using real-world examples. Documents similarities between signed languages and spoken languages in general. Describes the major linguistic components and processes of English and ASL. Introduces basic theories regarding ASL structure. Emphasizes ASL's status as a natural language by comparing and contrasting similarities and unique differences between the two languages. Prerequisite: ASL 201. Lecture 3 hours per week.

ASL 225 | 3 CREDITS
Literature of the U.S. Deaf Community
Presents an overview of various aspects of literature common in the U.S. Deaf Community, including those forms written in English and those forms signed in ASL. Applies the recurring themes and metaphors in the context of the history of the U.S. Deaf Community. Prerequisites: ASL 125, ASL 202, and ASL 220 or equivalent. Lecture 3 hours per week.

ASL 261-262 | 3 CREDITS EACH
American Sign Language V-VI
Develops advanced American Sign Language comprehension and production skills. Emphasizes advanced linguistic aspects of ASL. Presents ASL literary forms. Encourages contact with the Deaf Community. Prerequisite for ASL 261: ASL 202 or Qualifying Placement Test score into ASL 261. Prerequisites for ASL 262: ASL 202 and ASL 261. Lecture 3 hours per week.

ARCHITECTURE

ARC 100 | 3 CREDITS
Introduction to Architecture
Outlines history and impact of architecture. Emphasizes dynamics and social aspects of architecture and society; focuses on 19th and 20th century architectural forms. Lecture 3 hours per week.

ARC 121-122 | 3 CREDITS EACH
Architectural Drafting I-II
Introduces techniques of architectural drafting, including lettering, dimensioning, and symbols. Requires production of plans, sections, and elevations of a simple building. Studies use of common reference material and the organization of architectural working drawings. Requires development of a limited set of working drawings, including a site plan, related details, and pictorial drawings. Prerequisite for ARC 121: ARC 121. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ARC 133 | 3 CREDITS
Construction Methodology and Procedures I
Studies materials used in construction of buildings, covering foundations to structural framing systems. Includes appropriate use of materials for various construction types. Includes specification of materials and installation procedures, types of specifications and writing procedures, bidding procedures, and contract documents. Lecture 3 hours per week.

ARC 220 | 3 CREDITS
Introduction to Landscape Architecture and Site Planning
Introduces the basics of landscape design and development concepts through architectural construction and plantings. Shows relationship between design and environment, including objectives of design elements, materials, and facilities. Lecture 3 hours per week.

ARC 221 | 3 CREDITS
Architectural CAD Applications Software I
Teaches the principles and techniques of architectural drawing practices through the use of architecture specific CAD software. Utilizes the commands and features of the software to generate drawings that emphasize architectural design and structural systems. Prerequisites: ARC 121 and CAD 201. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ARC 222 | 3 CREDITS
Architectural CAD Applications Software II
Uses advanced features of architectural CAD software to teach students to develop working drawings and details that adhere to the practices and techniques of architectural drawing principles. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ARC 231 | 4 CREDITS
Advanced Architectural Design, and Graphics I
Provides fundamental knowledge of principles and techniques of architectural drawing procedures. Familiarizes student with design process. Provides a better understanding of the relation between architectural design and structural systems. Prerequisite: ARC 122 or equivalent. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

ARC 246 | 4 CREDITS
Materials and Methods of Construction
Introduces the characteristics of building materials and the methods of construction in which these materials are used in the erection of structures. Introduces the physical properties of steel, concrete, timber, glass, and related materials as well as methods used in testing materials. All sixteen CSI divisions are discussed. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
### ARTS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC 258</td>
<td>3</td>
<td>Building Codes, Contract Documents and Professional Office Practices</td>
<td></td>
<td>Covers professional role of the architectural technician with regard to the construction industry. Includes building codes and their effect on specifications and drawings. Teaches purpose and writing of specifications with their legal and practical application to working drawings. Analyzes contract documents for client-architect-contractor responsibilities and duties. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>ART 101-102</td>
<td>3</td>
<td>History and Appreciation of Art I-II</td>
<td></td>
<td>Presents the history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of Western civilization to the present. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>ART 114</td>
<td>3</td>
<td>General Art</td>
<td></td>
<td>Introduces art to the student without previous training. Provides studio exercises in drawing, painting, and two and three-dimensional design. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 121-122</td>
<td>3</td>
<td>Drawing I-II</td>
<td></td>
<td>Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such as proportion, space, perspective, tone and composition as applied to still life, landscape and the figure. Uses drawing media such as pencil, charcoal, ink wash and color media. Includes field trips and gallery assignments as appropriate. Prerequisites for ART 122: ART 121 and ART 131. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 131</td>
<td>3</td>
<td>Fundamentals of Design I</td>
<td></td>
<td>Explores the concepts of two- and three-dimensional design and color. May include field trips as required. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 134</td>
<td>3</td>
<td>Three Dimensional Design</td>
<td></td>
<td>Introduces sculptural concepts and methods of production in traditional and contemporary media. Includes clay, plaster, wood, stone, metal, plastics and terra cotta. May include field trips. Prerequisites: ART 121 and ART 131. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 141</td>
<td>4</td>
<td>Typography I</td>
<td></td>
<td>Studies the history of letter forms and typefaces and examines their uses in contemporary communications media. Emphasizes applications to specific design problems. Includes identification and specification of type and uses current technologies for copy fitting and hands-on typesetting problems. Prerequisites: ART 131 and ART 283. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.</td>
</tr>
<tr>
<td>ART 183</td>
<td>3</td>
<td>Introduction to Art Therapy</td>
<td></td>
<td>Introduces the history of art therapy, contemporary approaches, and various settings in which art therapy may occur. Provides instruction in the use of art materials in therapy, dynamics of the creative process and psychological theory. Reviews educational steps leading to a successful career in art therapy. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>ART 201-202</td>
<td>3</td>
<td>History of Art I-II</td>
<td></td>
<td>Studies the historical context of art of the ancient, medieval, Renaissance and modern worlds. Includes research project. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>ART 203</td>
<td>4</td>
<td>Animation I</td>
<td></td>
<td>Introduces the student to the basic techniques of animation, both traditional and computer generated. Teaches theoretical elements of the aesthetics of sequential imagery. Provides practical experience in animation. Exposes students to a variety of animation techniques. Prerequisite: ART 283. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.</td>
</tr>
<tr>
<td>ART 208</td>
<td>4</td>
<td>Video Techniques</td>
<td></td>
<td>Addresses the fundamentals of video technology and nonlinear video editing. Focuses on the aesthetics of time-coded editing using current industry software. Teaches a student to shoot and capture video and record and edit sound, and combine artwork, animation, video, and sound in the creation of professional-quality original video projects. Prerequisite: ART 283. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.</td>
</tr>
<tr>
<td>ART 209</td>
<td>3</td>
<td>Creative Concepts and Copywriting</td>
<td></td>
<td>Focuses on the generation of creative verbal/visual concepts and the techniques of effective written communication necessary for success in the graphic design industry. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>ART 221-222</td>
<td>3</td>
<td>Drawing III-IV</td>
<td></td>
<td>Introduces advanced concepts and techniques of drawing as applied to the figure, still life and landscape. Gives additional instruction in composition, modeling, space and perspective. Encourages individual approaches to drawing. Prerequisite for ART 221: ART 122. Prerequisite for ART 222: ART 221. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 231</td>
<td>3</td>
<td>Sculpture I</td>
<td></td>
<td>Introduces sculptural concepts and methods of production in traditional and contemporary media. Includes clay, plaster, wood, stone, metal, plastics and terra cotta. May include field trips. Prerequisites: ART 121 and ART 131. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 241-242</td>
<td>3</td>
<td>Painting I-II</td>
<td></td>
<td>Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Prerequisite for ART 241: ART 122 or divisional approval. Prerequisites for ART 242: ART 122 and ART 241. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>ART 243-244</td>
<td>3</td>
<td>Watercolor I-II</td>
<td></td>
<td>Presents abstract and representational painting in watercolor with emphasis on design, color, composition, technique and value. Prerequisite: ART 131 or divisional approval. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.</td>
</tr>
</tbody>
</table>
**ART 245 | 3 CREDITS**  
**Portrait Painting**  
Explores portrait painting as representational and abstract art. Emphasizes analytical study of the head using a variety of mediums. Prerequisites: ART 241 and ART 121. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

**ART 247 | 3 CREDITS**  
**Painting Techniques for Illustrators**  
Introduces materials and techniques used by the illustrator. Includes water-soluble paints (watercolor, acrylic, gouache), oil-based paints, and mixed media. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

**ART 250 | 3 CREDITS**  
**History of Design**  
Surveys the development of graphic design and illustration with emphasis on the 19th and 20th centuries. Analyzes the work of outstanding designers and illustrators. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

**ART 251-252 | 3 CREDITS EACH**  
**Communication Design I-II**  
Studies the principles of visual communications as applied to advertising in newspapers, magazines, direct mail advertising, house organs, etc. Analyzes the influence of contemporary art on design. Prerequisites for ART 251: ART 131 and ART 141. Prerequisites for ART 252: ART 131 and ART 251. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

**ART 263 | 4 CREDITS**  
**Interactive Design I**  
Focuses on conceptualization and problem solving for interactive design. Instructs students in techniques specific to web, multimedia for the web and other interactive design projects using current technology and standards. Interactive functionality and usability are covered. Part I of II. Prerequisites: ART 121, ART 131, ART 141 and ART 263. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

**ART 264 | 4 CREDITS**  
**Interactive Design II**  
Builds on the studies completed in Interactive Design I. Focuses on conceptualization and problem solving for interactive design. Instructs students in intermediate techniques specific to web, multimedia for the web and other interactive design projects using current technology and standards. Includes interactive documents and experiences. Part II of II. Prerequisites: ART 121, ART 131, ART 141, and ART 263. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

**ART 270 | 3 CREDITS**  
**Motion Graphics I**  
Introduces fundamental concepts for motion graphics, including graphics and promos for television networks and film titles and logos for advertising. Focuses on design presentation and development, screen composition, graphic transitions and content. Prerequisites: ART 131 and ART 283. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

**ART 271 | 3 CREDITS**  
**Printmaking I**  
Introduces the student to the full range of printmaking techniques. Includes woodcut, silkscreen, etching, and lithography. Provides historical perspective on printmaking. Prerequisites: ART 121 and ART 131. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

**ART 280 | 3 CREDITS**  
**Graphic Design for Studio Arts**  
Introduces digital tools, software, and techniques used by visual artists and design professionals to create day-to-day business forms, documents and self-promotional material. Explores the fundamental principles of layout and design that govern the use of image, type and color. Presents professional standards and practices used for organizing, archiving, printing, and presenting their work. Prerequisites: ART 131 and PHT 164. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

**ART 283-284 | 4 CREDITS EACH**  
**Computer Graphics I-II**  
Utilizes microcomputers and software to produce computer graphics. Employs techniques learned to solve studio projects which reinforce instruction and are appropriate for portfolio use. Prerequisites for ART 284: ART 131 and ART 283. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

**ART 286 | 3 CREDITS**  
**Communication Arts Workshop**  
Requires special project and/or research focusing on career opportunities. Teaches resume and portfolio preparation and interview techniques. May include internship with a professional design firm. Recommended for final semester Graphic Design program students. Prerequisite: Instructor permission. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

**ART 287 | 3 CREDITS**  
**Portfolio and Resume Preparation**  
Focuses on portfolio preparation, resume writing, and job interviewing for students. Recommended for final semester Studio Arts program students. Prerequisite: Instructor permission. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

**ART 290 | 1-5 CREDITS**  
**Coordinated Internship in Visual Arts**  
Supervises on-the-job training in selected business, industrial, or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week.

**ART 297 | 1-5 CREDITS**  
**Cooperative Education in Visual Arts**  
Provides on-the-job training for pay in approved business, industrial, and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week.

**AUTO BODY**

**AUB 102 | 4 CREDITS**  
**Basic Non-Structural Repair**  
Examines basic non-structural repair techniques using current industry standards. Covers metal repair, use of body filler, trim and hardware removal, and plastic and composite repair. Prepares students for the Inter-Industry Conference on Auto Collision Repair (I-CAR) ProLevel 1 certification in Non-Structural Repair. Prerequisite: AUB 127. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**AUB 103 | 4 CREDITS**  
**Basic Refinishing**  
Examines basic refinishing techniques using current industry standards. Covers preparation, masking, sanding, spraying, and basecoat/clearcoat applications. Prepares students to receive Inter-Industry Conference on Auto Collision Repair (I-CAR) Pro-Level 1 Platinum certification in Refinishing. Prerequisite: AUB 127. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
AUB 115 | 2 CREDITS

Damage Repair Estimating

Teaches inspection and estimation of cost to repair collision damage. Emphasizes writing acceptable estimates for insurance companies. Studies practices used by repair shops and insurance adjusters. Prerequisite: AUB 127. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUB 127 | 3 CREDITS

Introduction to Collision Repair Technology

Introduces shop practices for auto body laboratory and shop safety, identification and use of hand tools, general power equipment and maintenance of auto body shop. Explains basic operation procedures, careers, terminology, estimating, and cycle time principles. Presents Occupational Safety and Health Act (OSHA) standards and Environmental Protection Agency (EPA) regulations pertaining to the collision repair field. Student will complete the Inter Industry Conference on Auto Collision Repair (I-CAR) modules related to the major course topics. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AUB 197 | 1-5 CREDITS

Cooperative Education in Collision Repair Technology

Provides on-the-job training for pay in approved business, industrial and service firms, coordinated by the college’s cooperative education office. Is applicable to all occupational-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours/week. Variable hours per week.

AUB 202 | 4 CREDITS

Advanced Non-Structural Repair

Examines advanced non-structural repair techniques using current industry standards. Covers resistant welding, Metal Inert Gas (MIG) welding, bolt-on exterior panels, panel bonding, wind noise and water leak identification, and electric and hybrid vehicle safety. Prepares students for the Inter-Industry Conference on Auto Collision Repair (I-CAR) ProLevel 2 Platinum certification in Non-Structural Repair. Prerequisite: AUB 102. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUB 203 | 4 CREDITS

Advanced Refinishing

Examines advanced refinishing techniques using current industry standards. Covers application of color theory, mixing, tinting and blending, and three-stage refinishing. Prepares students for the Inter-Industry Conference on Auto Collision Repair (I-CAR) ProLevel 2 Platinum certification in Refinishing. Prerequisite: AUB 103. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 210 | 3 CREDITS

Restoration and Automotive Customizing

Provides hands-on instruction for automotive restoration, and techniques for disassembly, restoration and reassembly processes. Explains proper use of vehicle computer programs for modification of data and design. Provides instruction for the installation, operation, and function of custom automotive components. Provides hands-on procedures for the assembly and fabrication of custom parts. Prerequisite: AUT 101 or equivalent. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUB 297 | 1-5 CREDITS

Cooperative Education in Collision Repair Technology

Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Prerequisite: AUB 127. Variable hours per week.

AUT 101 | 3 CREDITS

Introduction to Automotive Systems

Introduces fundamental systems of the automobile: the engine, exhaust, electric, ignition, lubrication, cooling, transmission, steering, brake and suspension systems. Teaches theory and function of each system. Demonstrates operation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AUT 149 | 5 CREDITS

Basic Automotive Electrical Diagnostics

Introduces basic automotive electrical concepts, including theory and practical application. Provides instruction on using circuit wiring diagrams to accurately diagnose, troubleshoot, and repair simple electric circuits. Covers basic electrical principles, electrical terminology, and how to use electrical testing equipment. This course provides preparation for the Automotive Service Excellence (ASE) A6 Electrical/Electronic Systems ASE Certification examination. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 151 | 5 CREDITS

Automotive Braking Systems Diagnostics

Introduces basic and advanced automotive braking system concepts, including theory and practical application. Provides instruction on Antilock Braking Systems, base brake systems, and Virginia State Inspection practices. Covers basic mechanical brake systems, hydraulics, precision measuring instruments, and how to use diagnostic test equipment. Provides preparation for the Automotive Service Excellence (ASE) A5 Brakes ASE Certification examination. Prerequisite: AUT 149. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 152 | 5 CREDITS

Automotive Engine Diagnostics

Introduces basic and advanced internal combustion engine concepts, including theory and practical application. Covers cooling systems, lubrication, valve train, block assembly, and general engine diagnosis. Provides preparation for the Automotive Service Excellence (ASE) A1 Engine Repair ASE Certification examination. Prerequisite: AUT 149. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 153 | 5 CREDITS

Automotive Steering and Suspension Systems Diagnostics

Introduces basic and advanced automotive steering and suspension system concepts, including theory and practical application. Covers steering systems, suspension systems, tires and wheels, electronic suspension, power assisted steering, and wheel alignments. Provides preparation for the Automotive Service Excellence (ASE) A4 Steering and Suspension ASE Certification examination. Prerequisite: AUT 149. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 155 | 5 CREDITS

Basic Automotive Engine Performance Diagnostics

Introduces basic engine performance concepts, including theory and practical application. Covers vehicle communications, scan tool diagnostics, basic engine mechanical tests, and diagnosing and repairing vehicle drivability issues. Provides preparation for the Automotive Service Excellence (ASE) A8 Engine Performance ASE Certification examination. Prerequisite: AUT 149. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 156 | 2 CREDITS

Small Gasoline Engines

Studies small gasoline engine operating principles, construction, design, variety, and their many purposes. Gives instruction on two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system, and lubricating systems. Demonstrates disassembly, reconditioning, overhaul and reassembly in the lab. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.
AUT 178  |  4 CREDITS
Automotive Final Drive and Manual Transmission Systems
Presents the operation, design, construction and repair of manual
transmissions and final drive systems, for both front and rear drive
vehicles, including clutches, synchronizers, torque multiplication/gear
reduction, along with differentials, transmission/transaxles, drive axels,
U-joints, CV joints, 4-wheel drive and all-wheel drive systems. Includes
preparation for ASE Test A3. Lecture 3 hours. Laboratory 3 hours. Total
6 hours per week.

AUT 197  |  1-5 CREDITS
Cooperative Education in Automotive Technology
Provides on-the-job training for pay in approved business, industrial
and service firms. Applies to all career-technical curricula at the discretion
of the college. Credit/work ratio not to exceed 1:5 hours/week. Variable
hours per week.

AUT 236  |  4 CREDITS
Automotive Climate Control
Introduces principles of refrigeration, air conditioning controls, and
adjustment and general servicing of automotive air conditioning
systems. Prerequisite: AUT 149. Lecture 3 hours. Laboratory 3 hours.
Total 6 hours per week.

AUT 249  |  5 CREDITS
Advanced Automotive Electrical Diagnostics
Introduces advanced automotive electrical concepts, including theory
and practical application. It provides instruction on diagnosing and
repairing computer controlled modules, circuits, and systems. Covers
advanced electronic principles, definitions of electronic terminology,
computer networking, and how to use electronic test equipment.
Provides preparation for the Automotive Service Excellence (ASE)
A6 Electrical/Electronic Systems ASE Certification examination.
Prerequisite: AUT 149. Lecture 2 hours. Laboratory 6 hours. Total 8
hours per week.

AUT 250  |  3 CREDITS
Chassis Dynamometer Testing and Tuning
Teaches the dynamic application of engine management by using a
chassis dynamometer to measure and record performance gains and
losses during component and software alterations. Provides instruction
on proper use of a chassis dynamometer. Introduces different
combinations of engine performance evaluation methods in a climate-
controlled, 1200HP-capable, dynamometer cell. Teaches how to reduce
chances of major engine damage through proper dynamometer tuning
techniques. Prerequisites: AUT 166 and AUT 167 or equivalent. Lecture
2 hours. Laboratory 2 hours. Total 4 hours per week.

AUT 251  |  4 CREDITS
Automatic Transmissions
Studies several types of automatic transmissions, torque converters,
and their principles of operation. Includes adjustment, maintenance,
and rebuilding. Prerequisite: AUT 149. Lecture 2 hours. Laboratory 4
hours. Total 6 hours per week.

AUT 255  |  5 CREDITS
Advanced Automotive Engine Performance Diagnostics
Introduces advanced engine performance concepts, including theory
and practical application. Covers vehicle communications, scan-
tool diagnostics, advanced engine mechanical tests, and diagnosing
and repairing vehicle drivability issues. Provides preparation for the
Automotive Service Excellence (ASE) A8 Engine Performance ASE
Certification examination. Prerequisite: AUT 155. Lecture 2 hours.
Laboratory 6 hours. Total 8 hours per week.

AUT 260  |  2 CREDITS
Advanced Small Gasoline Engines
Presents advanced theory of operation for small gasoline engines,
combustion principles, construction, design, variety, and their many
purposes. Explains two-cycle and four-cycle small gas engine operation,
ignition systems, various construction principles, functional design
and usage, fuel systems and lubricating systems. Provides hands-on
instruction in disassembly, reconditioning, overhaul and reassembly
procedures in the lab. Prerequisite: AUT 156 or equivalent. Lecture 1
hour. Laboratory 2 hours. Total 3 hours per week.

AUT 297  |  1-5 CREDITS
Cooperative Education in Automotive Technology
Provides on-the-job training for pay in approved business, industrial
and service firms. Applies to all career-technical curricula at the discretion
of the college. Credit/work ratio not to exceed 1:5 hours. Variable
hours per week.

BIO 100  |  3 CREDITS
Basic Human Biology
Presents basic principles of human anatomy and physiology. Discusses
cells, tissues, and selected human systems. Lecture 3 hours per week.

BIO 101  |  4 CREDITS
General Biology I
Focuses on foundations in cellular structure, metabolism, and genetics
in an evolutionary context. Explores the core concepts of evolution;
structure and function; information flow, storage and exchange;
pathways and transformations of energy and matter; and systems
biology. Emphasizes process of science, interdisciplinary approach,
and relevance of biology to society. Part I of a two-course sequence.
Prerequisites: Placement into ENG 111 and completion of MTH 1, MTE
2 or equivalent. Lecture 3 hours. Recitation and laboratory 3 hours.
Total 6 hours per week.

BIO 102  |  4 CREDITS
General Biology II
Focuses on diversity of life, anatomy and physiology of organisms,
and ecosystem organization and processes in an evolutionary context.
Explores the core concepts of evolution; structure and function;
information flow, storage and exchange; pathways and transformations
of energy and matter; and systems biology. Emphasizes process
of science, interdisciplinary approach, and relevance of biology to society.
Part II of a two-course sequence. Prerequisite: BIO 101. Lecture 3
hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 141  |  4 CREDITS
Human Anatomy and Physiology I
Integrates anatomy and physiology of cells, tissues, organs, and
systems of the human body. Integrates concepts of chemistry, physics,
and pathology. Part I of II. Prerequisite: NAS 2 or acceptable NAS 2
Challenge Exam score. Lecture 3 hours. Laboratory 3 hours. Total 6
hours per week.

BIO 142  |  4 CREDITS
Human Anatomy and Physiology II
Integrates anatomy and physiology of cells, tissues, organs, and
systems of the human body. Integrates concepts of chemistry, physics,
and pathology. Part II of II. Prerequisite: BIO 141. Lecture 3 hours.
Laboratory 3 hours. Total 6 hours per week.

BIO 150  |  4 CREDITS
Introductory Microbiology
Studies the general characteristics of microorganisms. Emphasizes
their relationships to individual and community health. Lecture 3 hours.
Recitation and laboratory 3 hours. Total 6 hours per week.
BUILDING

**BLD 111 | 3 CREDITS**

**Blueprint Reading and the Building Code**
Introduces reading and interpreting various kinds of blueprints and working drawings with reference to local, state, and national building codes. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**BLD 115 | 3 CREDITS**

**Building Codes**
Examines the building codes and standards applicable to building construction and inspection processes. Covers how to search, interpret and implement the Virginia Uniform State Wide Building Code. Lecture 3 hours per week.

**BLD 117 | 3 CREDITS**

**Contract Documents and Construction Law**
Covers contractual relationships, contract forms and documents, managing general conditions, good documentation processes, differing site conditions, time impacts, and negotiation of resolutions. Lecture 3 hours per week.

**BLD 215 | 2 CREDITS**

**OSHA 30 Construction Safety**
Covers all topics included in the OSHA 30-hour course. Lecture 2 hours per week.

**BUS 100 | 3 CREDITS**

**Introduction to Business**
Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, production, human resource management, marketing, finance, and risk management. Develops business vocabulary. Lecture 3 hours per week.

**BUS 111 | 3 CREDITS**

**Principles of Supervision I**
Teaches the fundamentals of supervision, including the primary responsibilities of the supervisor. Introduces factors relating to the work of supervisor and subordinates. Covers aspects of leadership, job management, work improvement, training and orientation, performance evaluation, and effective employee/supervisor relationships. Lecture 3 hours per week.

**BUS 116 | 3 CREDITS**

**Entrepreneurship**
Presents the various steps considered necessary when going into business. Includes areas such as product-service analysis, market research evaluation, setting up books, ways to finance startup, operations of the business, development of business plans, buyouts versus starting from scratch, and franchising. Uses problems and cases to demonstrate implementation of these techniques. Lecture 3 hours per week.

**BUS 117 | 3 CREDITS**

**Leadership Development**
Covers interpersonal relations in hierarchical structures. Examines the dynamics of teamwork, motivation, handling change and conflict and how to achieve positive results through others. Lecture 3 hours per week.

**BUS 125 | 3 CREDITS**

**Applied Business Mathematics**
Applies mathematical operations to business processes and problems such as wages and payroll, sales and property taxes, checkbook records and bank reconciliation, depreciation, overhead, distribution of profit and loss in partnerships, distribution of corporate dividends, commercial discounts, markup, markdown, simple interest, present values, bank discount notes, multiple payment plans, compound interest annuities, sinking funds, and amortization. Prerequisite: MTH 121 or higher. Lecture 3 hours per week.

**BUS 130 | 3 CREDITS**

**Maritime Logistics Afloat**
Examines the technician and mid-level management responsibilities required to perform all tasks relative to maritime logistics operations afloat using current occupational standards for Logisticians. Discusses the three major areas in the Naval Supply System of Inventory, logistics, and financial management. Lecture 3 hours per week.

**BUS 131 | 3 CREDITS**

**Maritime Logistics Ashore**
Examines the technician and mid-level management responsibilities required to perform all tasks relative to ashore maritime logistics. Focuses on current occupational standards for Logisticians. Discusses the three major topic areas in the Naval Supply System of Inventory, logistics, and financial management. Lecture 3 hours per week.

**BUS 156 | 3 CREDITS**

**Introduction to Operating Management**
Introduces quantitative methods to control cost. Analyzes cost concepts and behavior from a managerial viewpoint. Applies quantitative tools such as PERT, linear programming, transportation models, and queuing theory. Encourages use of microcomputer. Lecture 3 hours per week.

**BUS 160 | 1 CREDIT**

**Legal Aspects of Small Business Operations**
Covers the functional areas of business law, specifically as it applies to small business. Provides the students with a working knowledge of business contracts, agency relationships, and product liability. Provides a knowledge base for small business owners to overcome problems that are individually within their abilities. Covers selection of professional assistance for problems of a more serious nature. Lecture 1 hour per week.

**BUS 165 | 3 CREDITS**

**Small Business Management**
Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses. Lecture 3 hours per week.

**BUS 200 | 3 CREDITS**

**Principles of Management**
Teaches management and the management functions of planning, organizing, leading and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives. Prerequisite: BUS 100. Lecture 3 hours per week.
BUS 201 | 3 CREDITS
Organizational Behavior
Presents a behaviorally oriented course combining the functions of management with the psychology of leading and managing people. Focuses on the effective use of human resources through understanding human motivation and behavior patterns, conflict management and resolution, group functioning and process, the psychology of decision-making, and the importance of recognizing and managing change. Lecture 3 hours per week.

BUS 202 | 3 CREDITS
Applied Management Principles
Focuses on management practices and issues. May use case studies and/or management decision models to analyze problems in developing and implementing a business strategy while creating and maintaining competitive advantage. Prerequisite: BUS 200. Lecture 3 hours per week.

BUS 204 | 3 CREDITS
Project Management
Provides students with knowledge of essential skills and techniques necessary to lead or participate in projects assigned to managerial personnel. Covers time and task scheduling, resource management, problem solving strategies and other areas related to managing a project. Lecture 3 hours per week.

BUS 205 | 3 CREDITS
Human Resource Management
Introduces employment, selection, and placement of personnel, forecasting, job analysis, job descriptions, training methods and programs, employee evaluation systems, compensation, benefits, and labor relations. Lecture 3 hours per week.

BUS 208 | 3 CREDITS
Quality and Productivity Management
Focuses on the key quality improvement concepts regarding products and services, customers and suppliers, and systems and processes that make quality a part of the work life of an organization. Emphasizes the role of teams and a variety of quality improvement tools, charts, matrices, and diagrams. Details workflow process analysis and redesign in the healthcare industry, with an emphasis on human factors and usability. Lecture 3 hours per week.

BUS 215 | 3 CREDITS
Purchasing and Materials Management
Teaches the principles of effective purchasing and management of materials and equipment. Includes determination of requirements, source selection, pricing, value analysis, contracting, inventory management, and equipment requisition decisions. Lecture 3 hours per week.

BUS 216 | 3 CREDITS
Probability and Statistics for Business and Economics
Introduces methods of probability assessment and statistical inference. Includes data collection and presentation; descriptive statistics; basic probability concepts; discrete and continuous probability distributions; decision theory; sampling and estimation; and hypothesis testing. Emphasizes business and economic applications. Utilizes computer software as a tool for problem solving. Prerequisite: MTH 163 or higher. Lecture 3 hours per week.

BUS 220 | 3 CREDITS
Introduction to Business Statistics
Introduces statistics as a tool in decision-making. Emphasizes ability to collect, present, and analyze data. Employs measures of central tendency and dispersion, statistical inference, index numbers, probability theory, and time series analysis. Prerequisite: MTH 121 or higher. Lecture 3 hours per week.

BUS 223 | 3 CREDITS
Distribution and Transportation
Examines the background and history of transportation, emphasizing the fundamental role and importance the industry plays in companies, society, and the environment in which transportation service is provided. Provides an overview of carrier operations, management, technology, and strategies including transportation regulations and public policy. Lecture 3 hours per week.

BUS 234 | 3 CREDITS
Supply Chain Management
Examines the process of planning, organizing, and controlling the flow of materials and services from supplier to end users/customers. Focuses on coordinating supply management, operations and integrated logistics into a seamless pipeline to maintain a continual flow of products and services. Lecture 3 hours per week.

BUS 236 | 3 CREDITS
Communication in Management
Introduces the functions of communication in management with emphasis on gathering, organizing, and transmitting facts and ideas. Teaches the basic techniques of effective oral and written communication. Lecture 3 hours per week.

BUS 241 | 3 CREDITS
Business Law I
Develops a basic understanding of the U.S. business legal environment. Introduces property and contract law, agency and partnership liability, and government regulatory law. Students will be able to apply these legal principles to landlord/tenant disputes, consumer rights issues, employment relationships, and other business transactions. Lecture 3 hours per week.

BUS 242 | 3 CREDITS
Business Law II
Focuses on business organization and dissolution, bankruptcy and Uniform Commercial Code. Introduces international law and the emerging fields of E-Commerce and Internet Law. Prerequisite: BUS 241. Lecture 3 hours per week.

BUS 255 | 3 CREDITS
Inventory and Warehouse Management
Emphasizes the relationships of inventory and warehouse management to customer service and profitability of the wholesale distributor. Focuses on the role of computerized systems and resulting information for effective management of inventory and the warehouse under various conditions. Lecture 3 hours per week.

BUS 260 | 2 CREDITS
Planning for Small Business
Provides knowledge of the development of a business plan, which can be used to acquire capital and serve as a management guide. Combines knowledge that has been acquired in the areas of planning, management, and finance using pro forma statements and marketing. Covers internet searching techniques. Recommended as a capstone course. Lecture 2 hours per week.

BUS 265 | 3 CREDITS
Ethical Issues in Management
Examines the legal, ethical, and social responsibilities of management. May use cases to develop the ability to think and act responsibly. Lecture 3 hours per week.
CHEMISTRY

CHM 1 | 4 CREDITS
Chemistry
Presents basic inorganic and organic principles to students with little or no chemistry background. Can be taken in subsequent semesters as necessary until course objectives are completed. Lecture 4 hours per week.

CHM 110 | 3 CREDITS
Survey of Chemistry
Introduces the basic concepts of general, organic, and biochemistry with emphasis on their applications to other disciplines. No previous chemistry background required. Lecture 3 hours per week.

CHM 111-112 | 4 CREDITS EACH
General Chemistry I-II
Explores the fundamental laws, theories, and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Prerequisite for CHM 111: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6-9; or equivalent. Prerequisite for CHM 112: CHM 111. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 121-122 | 4 CREDITS EACH
Health Science Chemistry I-II
Introduces the health science student to concepts of inorganic, organic, and biological chemistry as applicable to the allied health profession. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 241 | 3 CREDITS
Organic Chemistry I
Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Part I of II. Prerequisite: CHM 112. Lecture 3 hours per week.

CHM 242 | 3 CREDITS
Organic Chemistry II
Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Part II of II. Prerequisite: CHM 241. Lecture 3 hours per week.

BUS 266 | 3 CREDITS
Production and Operations Management
Examines the process by which both goods and services-producing businesses, many not-for-profit institutions, and governmental agencies transform resources into an end product to meet the demands of customers or clients. Includes a survey of some of the quantitative methods involved in the process. Lecture 3 hours per week.

BUS 280 | 3 CREDITS
Introduction to International Business
Studies the problems, challenges, and opportunities, which arise when business operations or organizations transcend national boundaries. Examines the functions of international business in the economy, international and transnational marketing, production, and financial operations. Lecture 3 hours per week.

BUS 297 | 1-5 CREDITS
Cooperative Education in Business Management & Administration
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week Prerequisite: Instructor permission.

CHD 118 | 3 CREDITS
Language Arts for Young Children
Emphasizes the early development of children’s language and literacy skills. Presents techniques and methods for supporting all aspects of early literacy. Surveys children’s literature, and examines elements of promoting oral literacy, print awareness, phonological awareness, alphabetic principle, quality storytelling and story reading. Addresses strategies for intervention and support for exceptional children and English Language Learners. Prerequisite: placement into ENF 1. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 119 | 3 CREDITS
Introduction to Reading Methods
Focuses on promoting language and literacy skills as the foundation for emergent reading. Emphasizes phonetic awareness and alphabetic principles, print awareness and concepts, comprehension and early reading and writing. Addresses strategies for intervention and support for exceptional children and English Language Learners. Prerequisite: Placement into ENG 111. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 120 | 3 CREDITS
Introduction to Early Childhood Education
Introduces early childhood development through activities and experiences in early childhood, pre-kindergarten, kindergarten, and primary programs. Investigates classroom organization and procedures, and use of classroom time and materials, approaches to education for young children, professionalism, and curricular procedures. Prerequisite: Placement into ENF 1. Lecture 3 hours per week.

CHD 145 | 3 CREDITS
Teaching Art, Music, and Movement to Children
Focuses on children’s exploration, play, and creative expression in the areas of art, music, and movement. Emphasis will be on developing strategies for using various open-ended media representing a range of approaches in creative thinking. Addresses strategies for intervention and support for exceptional children and English Language Learners. Prerequisite: Placement into ENF 1. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 146 | 3 CREDITS
Math, Science, and Social Studies for Children
Provides experiences in content, methods, and materials for the development of math, science, and social studies skills in children. Emphasis will be on developing strategies for using various resources to facilitate children's construction of knowledge. Addresses strategies for intervention and support for children with special needs and English Language Learners. Prerequisite: Placement into ENF 1. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
CHD 164 | 3 CREDITS

Working with Infants and Toddlers in Inclusive Settings
Examines developmental and behavioral principles and practices and how these provide the most developmentally suitable curriculum and learning environment for very young children. Includes working with very young children with typical development, as well as those who are gifted, or have developmental delays or disabilities. Lecture 3 hours per week.

CHD 165 | 3 CREDITS

Observation and Participation in Early Childhood/Primary Settings
Focuses on observation as the primary method for gathering information about children in early childhood settings. Emphasizes development of skills in the implementation of a range of observation techniques. May be repeated for credit. Prerequisite: Placement into ENF 1. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CHD 166 | 3 CREDITS

Infant and Toddler Programs
Examines child growth and development from birth to 36 months. Focuses on development in the physical, cognitive, social, emotional, and language domains. Emphasizes the importance of the environment and relationships for healthy brain development during the child’s first three years of life. Investigates regulatory standards for infant/toddler care giving. Prerequisite: Placement into ENF 1. Lecture 3 hours per week.

CHD 205 | 3 CREDITS

Guiding the Behavior of Children
Explores the role of the early childhood educator in supporting emotional and social development of children, and in fostering a sense of community. Presents practical strategies for encouraging prosocial behavior, conflict resolution and problem solving. Emphasizes basic skills and techniques in child guidance. Prerequisite: Placement into ENF 1. Lecture 3 hours per week.

CHD 210 | 3 CREDITS

Introduction to Exceptional Children
Reviews the history of and legal requirements for providing intervention and educational services for young children with special needs. Studies the characteristics of children with a diverse array of needs and developmental abilities. Explores concepts of early intervention, inclusion, guiding behavior and adapting environments to meet children’s needs. Prerequisite: Placement into ENF 1. Lecture 3 hours per week.

CHD 215 | 3 CREDITS

Models of Early Childhood Education Programs
Studies and discusses the various models and theories of early childhood education programs including current trends and issues. Presents state licensing and staff requirements. Lecture 3 hours per week.

CHD 216 | 3 CREDITS

Early Childhood Programs, School, and Social Change
Explores methods of developing positive, effective relations with families to enhance their developmental goals for children. Considers culture and other diverse needs, perspectives, and abilities of families and educators. Emphasizes advocacy and public policy awareness as an important role of early childhood educators. Describes risk factors and identifies community resources. Prerequisite: Placement into ENF 1. Lecture 3 hours per week.

CHD 225 | 3 CREDITS

Curriculum Development for School-Age Child Care
Explores the creative activities, techniques, interactions, and program development that promote positive social and emotional growth in school-age children. Emphasizes positive development through everyday programming and experiences. Lecture 3 hours per week.

CHD 230 | 3 CREDITS

Behavior Management for School-Age Child Care
Discusses the development of social skills that school-age children need for self-management, including self-discipline, self-esteem, and coping with stress and anger. Explores ways to effectively guide and discipline school-age children, focusing on how adults can facilitate positive pro-social and self-management skills. Lecture 3 hours per week.

CHD 265 | 3 CREDITS

Advanced Observation and Participation in Early Childhood/Primary Settings
Focuses on implementation of activity planning and observation of children through participation in early childhood settings. Emphasizes responsive teaching practices and assessment of children’s development. Reviews legal and ethical implications of working with children. Prerequisite: Instructor permission. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CHD 270 | 3 CREDITS

Administration of Childcare Programs
Examines the skills needed for establishing and managing early childhood programs. Emphasizes professionalism and interpersonal skills, program planning, staff selection and development, creating policies, budgeting, and developing forms for record keeping. Lecture 3 hours per week.

CHI 101-102 | 5 CREDITS EACH

Beginning Chinese I-II
Introduces understanding, speaking, reading, and writing skills; emphasizes basic Chinese sentence structure. Prerequisite for CHI 102: CHI 101 or 2 years of high school Chinese. Lecture 5 hours per week.

CHI 201-202 | 4 CREDITS EACH

Conversational Chinese I-II
Offers intensive practice in comprehending and speaking Chinese, with emphasis on developing structure and fluency. Prerequisite for CHI 201: CHI 102 or 3 years of high school Chinese. Prerequisite for CHI 202: CHI 201 or 4 years of high school Chinese. Lecture 4 hours per week.

CIV 110 | 2 CREDITS

Introduction to Civil Engineering Technology
Introduces basic skills required for a career in civil engineering technology, focusing on the roles and responsibilities of the engineering team, professional ethics, problem solving with hand calculator and computer applications. Introduces civil engineering materials and analysis, standard laboratory procedures and reporting, and engineering graphics, including instruction in Computer-Aided Drafting. Instructs students in oral presentation preparations and delivery. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
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<th>Course Code</th>
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**Civil Engineering Drafting**

Introduces terminology and drafting procedures related to civil engineering. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**Construction Management and Estimating**

Teaches the equipment and methods used in construction. Includes principles and economics of construction, planning and management, and principles of estimating primarily using highway and building project examples. Lecture 3 hours per week.

**Concrete Laboratory**

Introduces the basic properties of Portland Cement concrete, soils and bituminous materials. Includes design and composition, placement, sampling and testing of concrete, soils, and asphalt cements used in civil engineering construction. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**Fluid Mechanics & Hydraulics Laboratory**

Provides problem-solving, data analysis, and technical writing experience. Explores fluid properties, hydrostatics, fluid dynamics, closed conduit flow, open channel flow, and flow measurement. Co-requisite: CIV 240 or instructor permission. Laboratory 2 hours. Total 2 hours per week.

**Fluid Mechanics and Hydraulics**

Introduces the principles of fluid flow and development of practical hydraulics resulting from study of fluid statics, flow of real fluid in pipes, multiple pipe lines, liquid flow in open channels, and fluid measurement techniques. Prerequisite: MEC 131. Lecture 3 hours per week.

**Global Positioning Systems for Land Surveying**

Introduces principles of satellite-based surveying and presents Global Positioning System (GPS) as it is utilized in land surveying and the various components of the GPS technology and the techniques through which the GPS technology may be used in land surveys. Utilizes field surveys using the GPS equipment as part of the laboratory activities. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**Mapping Standards, VA Rules and Statutes, and Surveying Law**

Presents both theory and practical mapping experience in the preparation of subdivision maps, records of surveys, topographic maps, route and rights-of-way maps. Covers the requirements of the Subdivision Map Act and the Land Surveyors Act. Presents techniques for the reduction of field survey notes and the preparation of improvement plans. Prepares students for areas of the Land Surveyors-in-Training and the State Land Surveyors examinations. Lecture 3 hours per week.

**Advanced Geomatics**

Teaches the art, science, and technologies used in the determination of position. Introduces survey statistics, coordinate systems and datums, principles of photogrammetry, mapping, map projections, boundary surveys, public land surveys, Global Positioning System (GPS), and Geographic Information System (GIS) concepts. Prepares students for applicable areas of the State Land Surveyor Examination and the Land Surveyors-in-Training Examination. Prerequisite: CIV 174. Lecture 3 hours per week.

**Advanced Geomatics Laboratory**

Provides the opportunity to use instrumentation to conduct topographic layout, curve, profile, property, boundary, and control surveys. Focuses on the use of level, total station, and GPS units. Prerequisite: CIV 175. Laboratory 3 hours per week.

**Introduction to Environmental Engineering**

Introduces the engineering elements of water and wastewater treatment, water distribution and wastewater collection systems, solid and hazardous waste, erosion control, and stormwater management. Lecture 3 hours per week.
COMMUNICATION STUDIES AND THEATRE

CST 100  |  3 CREDITS
Principles of Public Speaking
Applies theory and principles of public address with emphasis on preparation and delivery. Lecture 3 hours per week.

CST 110  |  3 CREDITS
Introduction to Communication
Examines the elements affecting speech communication at the individual, small group, and public communication levels with emphasis on practice of communication at each level. Lecture 3 hours per week.

CST 111  |  3 CREDITS
Voice and Diction I
 Enables students to improve pronunciation, articulation, and voice quality. Includes applied phonetics. Lecture 3 hours per week.

CST 126  |  3 CREDITS
Interpersonal Communication
Teaches interpersonal communication skills for both daily living and the world of work. Includes perception, self-concept, self-disclosure, listening and feedback, nonverbal communication, attitudes, assertiveness, and other interpersonal skills. Lecture 3 hours per week.

CST 130  |  3 CREDITS
Introduction to the Theatre
Surveys the principles of drama, the development of theatre production, and selected plays to acquaint the student with various types of theatrical presentations. Lecture 3 hours per week.

CST 131-132  |  3 CREDITS EACH
Acting I-II
Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CST 141  |  3 CREDITS
Theatre Appreciation I
Aims to increase knowledge and enjoyment of theatre. Considers process, style, organization, written drama, and performed drama. Lecture 3 hours per week.

CST 145  |  3 CREDITS
Stagecraft
Acquaints the student with fundamental methods, materials, and techniques of set construction for the stage. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CST 151  |  3 CREDITS
Film Appreciation I
Provides students with a critical understanding of film through the discussion and viewing of motion pictures with emphasis upon the study of film history and the forms and functions of film. Students will develop skills to analyze the shared social, cultural and historical influences of films and their contexts. Part I of II. Lecture 3 hours per week.

CST 152  |  3 CREDITS
Film Appreciation II
Provides students with a critical understanding of film through the discussion and viewing of motion pictures with emphasis upon the study of film history and the forms and functions of film. Students will develop skills to analyze the shared social, cultural and historical influences of films and their contexts. Part II of II. Lecture 3 hours per week.

CST 227  |  3 CREDITS
Business and Professional Communication
Emphasizes principles and practical application to effective professional oral communication behaviors to include speaking, listening, and relating, and rhetorical sensitivity within professional, business, and organizational contexts. Lecture 3 hours per week.

CST 229  |  3 CREDITS
Intercultural Communication
Emphasizes the influence of culture on the communication process including differences in values, message systems, and communication rules. Lecture 3 hours per week.

CST 233  |  3 CREDITS
Rehearsal and Performance I
Explores various aspects of the theatre through involvement in college theatre production. Part I of II. Variable hours per week.

CST 234  |  3 CREDITS
Rehearsal and Performance II
Explores various aspects of the theatre through involvement in college theatre production. Part II of II. Variable hours per week.

CST 241  |  3 CREDITS
Introduction to Directing I
Introduces theory and practice of stage direction through the study of directing methods as well as the execution and discussion of directing exercises. Prerequisites: CST 131 and CST 132 or divisional approval. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CST 251  |  3 CREDITS
Stage Lighting and Sound
Provides students with a basic understanding of the principles of stage lighting and sound. Instructs students in the fundamentals of stage lighting such as: functions of lighting, qualities of light, design, basic electricity, lighting instruments and equipment, board operation, and safety. Instructs students in the functions of sound, equipment, design, and sound operation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CST 266  |  3 CREDITS
Outdoor Drama
Enables students to study production techniques through participation as actors or technicians in outdoor drama. Prerequisite: Instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CST 290  |  3 CREDITS
Coordinated Internship in Speech/Drama
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week.

CST 290  |  3 CREDITS
Coordinated Internship in Professional Communication
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Students will explore and practice various aspects of professional communication through an internship in a marketing, public relations or training and development department in an organization. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week.
» COMPUTER SCIENCE

» CSC 110 | 3 CREDITS

Introduction to Computing
Introduces problem solving through computer applications and a
programming language. Examines development of computers, social
and ethical implications of computers, and properties of programming
languages. Covers input, storage, data manipulation, software, and
hardware. Prerequisite: Placement into MTH 173. Lecture 3 hours per
week.

» CSC 201 | 4 CREDITS

Computer Science I
Introduces algorithm and problem solving methods. Emphasizes
structured programming concepts, elementary data structures and the
study and use of a high level programming language. Prerequisite: CSC
110. Lecture 3 hours per week.

» CSC 205 | 3 CREDITS

Computer Organization
Examines the hierarchical structure of computer architecture. Focuses
on multi-level machine organization. Uses a simple assembler language
to complete programming projects. Includes processors, instruction,
execution, addressing techniques, data representation and digital logic.
Prerequisite: CSC 110. Lecture 4 hours per week.

» CSC 210 | 4 CREDITS

Programming with C++
Includes language syntax, problem-solving techniques, top-down
refinement, procedure definition, loop invariance, theory of numerical
errors and debugging. Covers the syntax of the C++ language.
Prerequisite: CSC 201 or EGR 125. Lecture 4 hours per week.

» CSC 215 | 3 CREDITS

Advanced Computer Organization
Examines advanced topics in Computer Science such as I/O methods,
virtual memory, disk management and operating systems. Prerequisite:
CSC 205. Lecture 3 hours per week.

» COMPUTER-AIDED DRAFTING AND DESIGN

» CAD 111 | 3 CREDITS

Technical Drafting I
Introduces technical drafting from the fundamentals through advanced
drafting practices. Teaches lettering, metric construction, technical
sketching, orthographic projection, sections, intersections, development, fasteners, theory and applications of dimensioning and
tolerances. Includes pictorial drawing, and preparation of working and
detailed drawings. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per
week.

» CAD 135 | 2 CREDITS

Electrical/Electronic Blueprint Reading
Presents an interpretation of basic shop drawings, conventional
systems, terminology, and principles used by the mechanical
draftsman. Explains common electrical and electronic symbols, wiring
diagrams, schematic drawings, and application of wiring diagrams.
Lecture 2 hours per week.

» CAD 140 | 3 CREDITS

Technical Drawing
Enhances the principles learned that are related directly to the field
of drafting and design. Gives a more in-depth exposure to detail and
working drawings, dimensioning, tolerancing and conventional drafting
practices. Teaches CAD modeling, may include parametric modeling.
(Credit will not be awarded for both CAD 140 and DRF 140.) Lecture 2
hours. Laboratory 2 hours. Total 4 hours per week.

» CAD 151-152 | 3 CREDITS EACH

Engineering Drawing Fundamentals I-II
Introduces technical drafting from the fundamentals through advanced
drafting practices. Includes lettering, geometric construction,
technical sketching, orthographic projection, sections, intersections,
development, and fasteners. Teaches theory and application of
dimensioning and tolerances, pictorial drawing, and preparation
of drawings. Prerequisite for CAD 152: CAD 151. Lecture 1 hour.
Laboratory 6 hours. Total 7 hours per week.

» CAD 160 | 3 CREDITS

Machine Blueprint Reading
Introduces interpretation of various blueprints and working drawings.
Applies basic principles and techniques such as visualization of an
object, orthographic projection, technical sketching and drafting
terminology. Requires outside preparation. Lecture 3 hours per week.

» CAD 165 | 3 CREDITS

Architectural Blueprint Reading
Emphasizes reading, understanding and interpreting standard types of
architectural drawings including plans, elevation, sections, and details.
Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

» CAD 201 | 4 CREDITS

Computer-Aided Drafting and Design I
Teaches computer-aided drafting concepts and equipment designed
to develop a general understanding of components of a typical CAD
system and its operation. Lecture 3 hours. Laboratory 2 hours. Total 5
hours per week.

» CAD 202 | 4 CREDITS

Computer-Aided Drafting and Design II
Teaches production drawings and advanced operations in computer-
aided drafting. Prerequisite: CAD 201. Lecture 3 hours. Laboratory 2
hours. Total 5 hours per week.

» CAD 211 | 3 CREDITS

Advanced Technical Drafting I
Teaches use of drafting equipment and applications, emphasizing
knowledge and skill required for industrial drafting. Includes piping,
gearing, geometric and positional tolerances and 2D/3D drawing layout.
Prerequisites: CAD 152 and CAD 201. Lecture 2 hours. Laboratory 3
hours. Total 5 hours per week.

» CAD 212 | 3 CREDITS

Advanced Technical Drafting II
Teaches concepts of sheet metal fabrication including radii, fillets
and tolerances, electrical and electronics symbols and drawing, and
advanced design drafting techniques. Prerequisites: CAD 201 and CAD
202. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» CAD 238-239 | 3 CREDITS EACH

Computer-Aided Modeling and Rendering I-II
Focuses on training students in the contemporary techniques of
3-D modeling, rendering, and animation on the personal computer.
Introduces the principles of visualization, sometimes known as photo-
realism, which enables the student to create presentation drawings
for both architectural and industrial product design. Uses computer
animation to produce walk-throughs that will bring the third dimension
to architectural designs. Lecture 2 hours. Laboratory 2 hours. Total 4
hours per week.
CAD 241-242 | 3 CREDITS EACH
Parametric Solid Modeling I-II
Focuses on teaching students the design of parts by parametric solid modeling. Topics covered will include, but not limited to, sketch profiles; geometric and dimensional constraints; 3-D features; model generation by extrusion, revolution and sweep; and the creation of 2-D drawing views that include sections, details, and auxiliary. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CAD 280 | 3 CREDITS
Design Capstone Project
Focuses on design projects developed independently and in consultation with the instructor. Topics covered, but not limited to, parametric modeling, civil, mechanical piping, architectural applications, structural, electro-mechanical, 3-D solids, exploration of application software, and the integration of CAD/CAM. Prerequisites: (ARC 122 and ARC 221) or (CAD 201 and CAD 211). Lecture 3 hours per week.

CAD 297 | 1-5 CREDITS
Cooperative Education in Computer-Aided Drafting and Design
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week.

CRF 101 | 3 CREDITS
Hand-Built Pottery
Introduces fundamental concepts and skills related to hand crafted hand-built pottery. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

CRF 102 | 3 CREDITS
Wheel-Thrown Pottery
Introduces fundamental concepts and skills related to hand crafted wheel-thrown pottery. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

CRF 105 | 3 CREDITS
Introduction to Pottery
Introduces art and design related to pottery. Teaches techniques of hand-building, throwing on the potter’s wheel, glaze techniques and experimental firing. Lecture 1 hour. Studio instruction 4 hours. Total 5 hours per week.

CRF 130 | 3 CREDITS
Glass Blowing I
Introduces a variety of techniques for manipulating molten “hot glass” into vessel or sculptural forms. Teaches studio safety, equipment operation, techniques of forming molten glass, annealing and cold working techniques. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CRF 131 | 3 CREDITS
Glass Blowing II
Introduces intermediate glass blowing techniques using progressively more complex forms. Emphasis on design and working from prepared drawings. Prerequisite: CRF 130. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CRF 151 | 3 CREDITS
Glass Fusing and Painting
Introduces basic glass fusing, slumping, and painting techniques used to make vessels, fused, and painted glass items. Progresses with more difficult assignments that develop skill and concepts. Discusses historical and contemporary glass techniques, designs, and applications and incorporates into student stained glass work. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CRF 230 | 3 CREDITS
Glass Blowing III
Introduces advanced techniques of producing blown glass pieces with multiple blown forms. Explores advanced design problems and the development of individual styles. Continues practice in color application, facility, and equipment maintenance and studio operation. Prerequisites: ART 131 and CRF 131. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

CRF 231 | 3 CREDITS
Glass Blowing IV
Explores advanced glass blowing techniques and color application with the development of a unified body of glass vessels and objects. Examines marketing, sales, studio operation, the process of show application, image, and resume preparation. Prerequisite: CRF 230. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

DEVELOPMENTAL MATHEMATICS

MTT 1 | 1 CREDIT
Developmental Mathematics (Technology-Based) I
Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of one developmental math unit prescribed by the student’s placement test results. Credits not applicable toward graduation. Prerequisite: Placement scores requiring the student to complete one developmental math unit at MTE 1 or higher. Lecture 1 hour per week.

MTT 2 | 2 CREDITS
Developmental Mathematics (Technology-Based) II
Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of any combination of two developmental math units prescribed by the student’s placement test results. Credits not applicable toward graduation. Prerequisite: Placement test scores requiring the student to complete two developmental math units at MTE 1 or higher. Lecture 2 hours per week.

MTT 3 | 3 CREDITS
Developmental Mathematics (Technology-Based) III
Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of any combination of three developmental math units prescribed by the student’s placement test results. Credits not applicable toward graduation. Prerequisite: Placement test scores requiring the student to complete three developmental math units at MTE 1 or higher. Lecture 3 hours per week.

MTT 4 | 4 CREDITS
Developmental Mathematics (Technology-Based) IV
Covers mathematics topics in a technology-based setting to prepare students for the study of college level mathematics courses and curricula. Designed for the study of any combination of four developmental math units prescribed by the student’s placement test results. Credits not applicable toward graduation. Prerequisite: Placement scores requiring the student to complete four developmental math units at MTE 1 or higher. Lecture 4 hours per week.
DIAGNOSTIC MEDICAL SONOGRAPHY

DMS 206 | 2 CREDITS
Introduction to Sonography
Introduces the diagnostic foundations of diagnostic medical sonography, including terminology, scan plane orientations, anatomical relationships, departmental administrative operations, hospital organization and basic patient care principles. Prerequisite: Admission into program or instructor permission. Lecture 2 hours per week.

DMS 207 | 2 CREDITS
Sectional Anatomy
Teaches normal sectional anatomy in the transverse, longitudinal and coronal planes, with correlated sonographic images. Emphasis will be placed on abdominopelvic organs and vasculature. Prerequisite: Admission into program or instructor permission. Lecture 2 hours per week.

DMS 208 | 3 CREDITS
Ultrasound Physics and Instrumentation I
Discusses and solves mathematical problems associated with human tissue, basic instrumentation and scanning technology. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

DMS 209 | 3 CREDITS
Ultrasound Physics and Instrumentation II
Focuses on the areas of ultrasonic, instrumentation, image artifacts, biologic effects, quality control, as well as Doppler principles and applications and basic types of equipment through lecture and laboratory exercises. Prerequisites: Admission into program and DMS 208 or instructor permission. Lecture 3 hours per week.

DMS 211 | 4 CREDITS
Abdominal Sonography
Examines the clinical applications within the specialty of abdominal sonography including interpretation of normal and abnormal sonographic patterns, pathology, related clinical signs and symptoms, normal variants and clinical laboratory tests. Includes laboratory sessions on basic scanning techniques and protocols. Prerequisite: Admission into program and DMS 210 or instructor permission. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

DMS 212 | 4 CREDITS
Obstetrical and Gynecological Sonography
Presents the clinical applications within the sonographic specialties of obstetrics and gynecology. Includes topics of discussion on normal and abnormal sonographic patterns, related clinical symptoms and associated laboratory tests. Includes laboratory sessions on basic scanning techniques. Prerequisite: Admission into program. Co-requisite: DMS 211 or instructor permission. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

DMS 221 | 3 CREDITS
Ultrasound Seminar I
Introduces the fundamentals of renal failure and transplantations, small parts sonography, basic echocardiography, neonatal neurosonography, and rare and interesting ultrasonic case presentations. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

DMS 222 | 3 CREDITS
Sonography Registry Review
Reviews material covered throughout the sonography program to prepare the student for the ultrasound registry examination. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

DMS 223 | 2 CREDITS
Introduction to Vascular Ultrasound
Discusses the principles of vascular ultrasound, the related anatomy and more common pathologies detected as well as the physiology and hemodynamics detected and evaluated with ultrasound. Prerequisites: Admission into program and DMS 211 or instructor permission. Lecture 2 hours per week.

DMS 231 | 2 CREDITS
Clinical Education I
Develops the student’s ultrasonic skills in a diagnostic environment; may include on-campus laboratories, private office settings, as well as hospital rotations. May include experiences in abdominal, pelvic, obstetrical, and small parts scanning, as well as echocardiography and vascular sonography. Prerequisite: Admission into program or instructor permission. Laboratory 10 hours per week.

DMS 232 | 4 CREDITS
Clinical Education II
Develops the student’s ultrasonic skills in a diagnostic environment; may include on-campus laboratories, private office settings, as well as hospital rotations. May include experiences in abdominal, pelvic, obstetrical, and small parts scanning, as well as echocardiography and vascular sonography. Prerequisites: Admission into program and DMS 231 or instructor permission. Laboratory 20 hours per week.

DMS 233 | 5 CREDITS
Clinical Education III
Develops the student’s ultrasonic skills in a diagnostic environment; may include on-campus laboratories, private office settings, as well as hospital rotations. Includes experience in abdominal, pelvic and obstetrical small parts scanning. Prerequisites: Admission into program and DMS 232 or instructor permission. Laboratory 25 hours per week.

DMS 234 | 6 CREDITS
Clinical Education IV
Develops the student’s ultrasonic skills in a diagnostic environment. Includes on-campus laboratories, private office settings, as well as hospital rotations. Includes additional experience in abdominal, pelvic, obstetrical and small parts scanning. Prerequisites: Admission into program and DMS 233 or instructor permission. Laboratory 30 hours per week.

DIESEL

DSL 135 | 3 CREDITS
Introduction to Diesel Technology
Introduces careers in the diesel repair industry, safety procedures, tools and equipment used in the industry, and component identification. Teaches preventative maintenance inspections (PMI), precision measuring, and the use of electronic databases for service and repair. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DSL 137 | 5 CREDITS
Basic Diesel Engine Systems
Introduces the theory of operation, design, and components of a modern diesel engine. Provides instruction on modern fuel system components and operation. Presents the design and operation of air induction, lubrication, and cooling systems. Demonstrates basic engine diagnostics. Provides preparation for the Automotive Service Excellence (ASE) T2 Engines certification examination. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.
DSL 143 | 4 CREDITS

Diesel Truck Electrical Systems
Studies the theory and operation of various truck and tractor electrical systems. Covers preheating, starting, generating, and lighting systems. Uses modern test equipment for measurement, adjustment, and troubleshooting. Prerequisite: AUT 149. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

DSL 145 | 3 CREDITS

Medium/Heavy Duty Truck Preventative Maintenance Inspection
Presents the process of implementing a preventive maintenance program, the various inspection procedures required by the original equipment manufacturers (OEM), federal regulations, and the process of related documentation. Provides preparation for the Automotive Service Excellence (ASE) T8 Preventative Maintenance Inspection certification examination. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DSL 210 | 5 CREDITS

Medium/Heavy Duty Truck Brake Systems
Presents the operation of air and hydraulic brake systems. Demonstrates diagnostic and repair procedures in accordance with Federal Motor Vehicle Safety Standards (FMVSS) 121. Presents diagnostic and repair procedures for anti-lock braking systems (ABS) and electronic braking systems (EBS). Provides preparation for the Automotive Service Excellence (ASE) T4 Brakes certification exam. Lecture 4 hours. Laboratory 3 hours. Total 7 hours per week.

DSL 212 | 5 CREDITS

Medium/Heavy Duty Truck Steering and Suspension
Presents steering and suspension components used on modern medium/heavy duty trucks, including the operation of each system and how it affects the overall operation of the truck. Teaches how to perform a multi axle alignment using industry standard equipment, standard industry techniques, and diagnostic procedures. Provides preparation for the Automotive Service Excellence (ASE) T5 Steering and Suspension certification examination. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

DSL 214 | 5 CREDITS

Heavy Duty Drive Train Systems
Presents modern heavy duty drive train overhaul procedures to include precision measuring and failure analysis. Covers transmission diagnosis and repair using industry standard diagnostic equipment. Demonstrates repair procedures on Power Take-Offs (PTO). Provides preparation for the Automotive Service Excellence (ASE) T3 Drive Train certification exam. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

DSL 237 | 5 CREDITS

Advanced Diesel Engine Systems
Presents modern diesel engine overhaul procedures to include precision measuring and failure analysis. Teaches advanced fuel system diagnosis and repair using industry standard diagnostic equipment. Provides preparation for the Automotive Service Excellence (ASE) T2 Diesel Engines certification exam. Prerequisite: DSL 137. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

DSL 297 | 1-5 CREDITS

Cooperative Education in Diesel Technology
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1.5 hours. Variable hours per week.

DIET 121 | 3 CREDITS

Nutrition I
Studies food composition, dietary guidelines, and nutrients essential to healthy human life. Analyzes nutrient function and metabolism. Lecture 3 hours per week.

DIET 125 | 3 CREDITS

Current Concepts in Diet and Nutrition
Studies the importance of diet to health and well-being in daily life. Addresses current controversies over food practices and information, food facts and fiction, fad diets, vegetarianism, diet and heart disease, and sound guidelines for maintaining good health with wise food choices. Applies computer technology for nutritional analysis. Intended especially for the non-dietetic major. Lecture 3 hours per week.

ECONOMICS

ECO 120 | 3 CREDITS

Survey of Economics
Presents a broad overview of economic theory, history, development, and application. Introduces terms, definitions, policies, and philosophies of market economies. Provides some comparison with other economic systems. Includes some degree of exposure to microeconomic and macroeconomic concepts. Lecture 3 hours per week.

ECO 201 | 3 CREDITS

Principles of Macroeconomics
Introduces macroeconomics including the study of Keynesian, classical, monetarist principles and theories, the study of national economic growth, inflation, recession, unemployment, financial markets, money and banking, the role of government spending and taxation, along with international trade and investments. Lecture 3 hours per week.

ECO 202 | 3 CREDITS

Principles of Microeconomics
Introduces the basic concepts of microeconomics. Explores the free market concepts with coverage of economic models and graphs, scarcity and choices, supply and demand, elasticities, marginal benefits and costs, profits, and production and distribution. Lecture 3 hours per week.

ECO 210 | 3 CREDITS

International Economics
Analyzes the nature, performance and problems of market and non-market economic systems with emphasis on post World War II experience. Prerequisite: ECO 120, ECO 201, or ECO 202. Lecture 3 hours per week.

EDU 200 | 3 CREDITS

Introduction to Teaching as a Profession
Provides an orientation to the teaching profession in Virginia, including historical perspectives, current issues, and future trends in education on the national and state levels. Emphasizes information about teacher licensure examinations, steps to certification, teacher preparation and induction programs, and attention to critical shortage areas in Virginia. Includes supervised field placement (recommended: 40 clock hours) in a K-12 school. Prerequisite: 24 credits of transfer courses, 15 of which must be completed prior to enrolling. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
EDU 250 | 4 CREDITS
Introduction to Developmental Disabilities
Prepresents an overview, history, and current philosophy of the developmental disabilities program. Provides descriptions and examines causes of developmental disabilities. Identifies intervention strategies, promotes social and legal advocacy, explores employment and career opportunities. Laboratory experiences include a minimum of ten hours of observation of work settings. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EDU 254 | 3 CREDITS
Teaching Basic Academic Skills to Exceptional Children
Develops competencies required to teach readiness and basic skills to children with special needs in private or public school settings. Includes the preparation of lesson plans, instructional units, and Individualized Education Programs (IEP’s). Includes child abuse recognition and intervention training. Emphasizes exceptionality for students ages 2-21 under Public Law 94-142. Familiarizes students with the indicators of effective teaching. Lecture 3 hours per week.

EDU 270 | 3 CREDITS
Introduction to Autism Spectrum Disorders
Explores the nature of autism and related developmental disorders. Details and discusses current evaluation and assessment measures in ASD. Discusses current intervention strategies and their implementation in the school setting. Lecture 3 hours per week.

EDU 127 | 3 CREDITS
Residential Wiring Methods
Studies wiring methods and standards used for residential dwellings. Provides practical experience in design, layout, construction, and testing of residential wiring systems by use of scaled mock-ups. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

EDU 131-132 | 4 CREDITS EACH
National Electrical Code I-II
Provides a comprehensive study of the purpose and interpretations of the National Electrical Code as well as familiarization and implementation of various charts, code rulings and wiring methods including state and local regulations. Prerequisite for ELE 132: ELE 131. Lecture 4 hours per week.

EDU 145 | 2 CREDITS
Transformer Connections and Circuits
Studies transformer theory, symbols, diagrams, connections, terminology and troubleshooting techniques. Prerequisite: ELE 150 or MAR 160. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

EDU 146 | 4 CREDITS
Electric Motor Control
Studies solid state devices with application and emphasis toward control of power. Includes diodes, SCR’s, photoelectric controls, timing, circuits, voltage regulation and three phase rectifiers. Prerequisite: ELE 150 or MAR 160. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 148 | 3 CREDITS
Power Distribution Systems
Introduces transmission and distribution of electrical power. Includes application of transformers, distribution and overhead current protection devices, substations, switchboards, feeders, busways, motor control centers, generators, motors, and troubleshooting techniques associated with these systems and devices. Prerequisite: ELE 150. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 149 | 3 CREDITS
Wiring Methods in Industry
Studies the fundamentals of industrial power distribution, circuits, switches, enclosures, panels, fuses, circuit breakers, transformers, and wiring methods using various charts and tables of the National Electrical Code. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ELE 150 | 3 CREDITS
A.C. and D.C. Circuit Fundamentals
Provides an intensive study of the fundamentals of direct and alternating current, resistance, magnetism, inductance and capacitance, with emphasis on practical applications. Focuses on electrical/machine applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 174 | 3 CREDITS
Fiber Optic Connections
Introduces construction of fiber optic cable connections to a quality acceptable in the industry today. Includes types of cabling, connectors and splices, installation techniques and hardware in fiber optic systems. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ELE 176 | 3 CREDITS
Introduction to Alternative Energy Including Hybrid Systems
Introduces Alternative Energy with an emphasis on solar photovoltaic systems, small wind turbines technology, the theory of PV technology, PV applications, solar energy terminology, system components, site analysis, PV system integration and PV system connections and small wind turbine technology site analysis. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ELE 178 | 4 CREDITS
Wind Turbine Technology
Introduces many facets of the wind industry. Introduces the history and development of the wind systems as well as the future of the wind industry as the desire for alternative energy grows. Presents the terminology used in the application of wind systems. Identifies the various types of wind energy turbines and other topics as appropriate. Includes safety training. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 179 | 3 CREDITS
Satellite Dish Installation
Introduces installation, testing, troubleshooting, and repair of satellite dish systems. Prepares students for the Electronics Technician Association Certified Satellite Installer (CSI) certification necessary to compete for entry-level positions in the satellite installation industry. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ELE 188 | 4 CREDITS
Geothermal Technology for Electricians
Provides an introduction to the use of geothermal energy as it applies to electricians. Introduces geothermal system design, installation, and maintenance. Focuses on site surveys, soil types, header design, loop types, pump sizing, flushing and purging. Introduces the feasibility of heat pump applications for local use on an individual basis. Includes safety training. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
**COURSE DESCRIPTIONS**

<table>
<thead>
<tr>
<th>ELE 189</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Data Cabling Communication</strong></td>
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<tr>
<td>Introduces construction, testing, troubleshooting, and repair of a variety of copper cables. Prepares students for the Electronics Technician Association Data Cable Installer Certification (DCIC) necessary to compete for entry-level positions in a wide range of networking, security and video companies. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
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<thead>
<tr>
<th>ELE 211</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Electrical Machines I</strong></td>
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<tr>
<td>Studies the construction, theory of operations and applications of DC and AC machines. Prerequisite: ETR 114 or ELE 150. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
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<thead>
<tr>
<th>ELE 217</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Electric Power Utilities</strong></td>
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<tr>
<td>Provides an introduction to the electric power utilities field. Examines the generation, transmission and distribution of electrical energy. Lecture 3 hours per week.</td>
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<tr>
<th>ELE 229</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Troubleshooting and Maintenance of Electrical Systems</strong></td>
<td></td>
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<tr>
<td>Introduces techniques of troubleshooting electrical systems and equipment such as motors, relays, power distribution, lighting, solenoids, and generators. Includes hands-on lab practices to develop and perform problem solving skills, repair and preventative maintenance of various types of electrical equipment using wiring diagrams, special meters, various troubleshooting procedures and safety practices. Prerequisites: ELE 146 and ELE 150. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.</td>
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<tr>
<th>ELE 233-234</th>
<th>3 CREDITS EACH</th>
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<tbody>
<tr>
<td><strong>Programmable Logic Controller Systems I-II</strong></td>
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<tr>
<td>Teaches operating and programming of programmable logic controllers. Covers analog and digital interfacing and communication schemes as they apply to systems. Prerequisite or co-requisite for ELE 233: ELE 146. Prerequisite for ELE 234: ELE 146. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
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<tr>
<th>ELE 239</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Programmable Controllers</strong></td>
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<tr>
<td>Examines installation, programming, interfacing, and concepts of troubleshooting programmable controllers. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.</td>
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<tr>
<th>ELE 246</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Industrial Robotics Programming</strong></td>
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<tr>
<td>Introduces industrial robotics and their programming for repetitive manufacturing systems. Includes the design of software that ensures safe operation and programming of both on- and off-line robot operations. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.</td>
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<tr>
<th>ELE 248</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Microcontroller Interfacing and Programming</strong></td>
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<tr>
<td>Explores issues and concerns related to the programming and interfacing of microcontrollers. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
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<tr>
<th>ELE 250</th>
<th>3 CREDITS</th>
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</thead>
<tbody>
<tr>
<td><strong>Fiber Optics Technology</strong></td>
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<tr>
<td>Introduces testing, troubleshooting, and repair of fiber optic systems. Prepares students for the Electronics Technician Association Fiber Optics Technician (FOT) certification necessary to compete for technician level positions in a wide range of networking, security and video companies. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
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**ELECTRONICS TECHNOLOGY**

<table>
<thead>
<tr>
<th>ETR 104</th>
<th>4 CREDITS</th>
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<tbody>
<tr>
<td><strong>Electronic Fundamentals with Computer Applications</strong></td>
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<tr>
<td>Provides an introduction to the fundamentals of D.C. and A.C. circuit analysis and computer applications. Includes the study of electrical units and components, series, parallels, series-parallel D.C. and A.C. circuits, inductive and capacitive reactance, impedance and use of circuit analysis software. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
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<tr>
<th>ETR 112</th>
<th>2 CREDITS</th>
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<tr>
<td><strong>Math Applications for ELE/ETR Analysis</strong></td>
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<tr>
<td>Presents mathematical applications for ELE/ETR students. Includes mathematical concepts and problems in algebra and trigonometry, and direct application to electronic analysis. Includes a survey of advanced mathematics to develop and reinforce electronic concepts. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.</td>
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<tr>
<th>ETR 113-114</th>
<th>4 CREDITS EACH</th>
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<tbody>
<tr>
<td><strong>D.C. and A.C. Fundamentals I-II</strong></td>
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<tr>
<td>Studies D.C. and A.C. circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Prerequisites for ETR 113: ETR 104 and MTH 164 or MTH 166. Prerequisite for ETR 114: ETR 113. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
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<tr>
<th>ETR 116</th>
<th>4 CREDITS</th>
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<tbody>
<tr>
<td><strong>D.C. and A.C. Circuit Analysis</strong></td>
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<tr>
<td>Covers background information required by the Electronics Engineering Technology program but not covered in military electronic schools. Includes D.C. and A.C. circuit analysis techniques such as Thelenin, Norton, Mesh, Nodal, branch current, three phase power, two port parameters, etc. Co-requisite: MTH 164 or MTH 166. Lecture 4 hours per week.</td>
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<tr>
<th>ETR 148</th>
<th>4 CREDITS</th>
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<tr>
<td><strong>Amplifiers and Integrated Circuits</strong></td>
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<tr>
<td>Studies devices and amplifiers with emphasis on analysis and design. May include summing and integrating amplifiers, choppers, modulators and other circuits. Prerequisite: ETR 113. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
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<tr>
<th>ETR 174</th>
<th>4 CREDITS</th>
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<tbody>
<tr>
<td><strong>Virtual Instrumentation</strong></td>
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<tr>
<td>Provides an introduction to virtual instrumentation, data acquisition, and instrument control using LabVIEW. Includes structures, arrays, clusters, charts, graphs, strings, file I/O, and data analysis. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
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<tr>
<th>ETR 193</th>
<th>4 CREDITS</th>
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<tbody>
<tr>
<td><strong>Introduction to LabVIEW</strong></td>
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<tr>
<td>An introductory course in virtual instrumentation, data acquisition, and instrument control, all using LabVIEW. Structures, arrays and clusters, charts and graphs, strings and file I/O, and data analysis will be introduced for student application programs. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
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<tr>
<th>ETR 203</th>
<th>3 CREDITS</th>
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<tbody>
<tr>
<td><strong>Electronic Devices I</strong></td>
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<tr>
<td>Studies active devices and circuits such as diodes, power supplies, transistors, amplifiers, and others. Prerequisite: ELE 150. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
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</table>
» EMS 120  |  4 CREDITS
EMS 115
Prepares student for certification as a Virginia and National Registry EMT-Basic. Focuses on all aspects of pre-hospital basic life support as defined by the Virginia Office of Emergency Medical Services curriculum for Emergency Medicine Technician. Prerequisite: CPR certification at the Health Care Provider level (provided first day of class.) Co-requisite: EMS 120. Lecture 5 hours. Laboratory 4 hours. Total 9 hours per week.

» EMS 159  |  3 CREDITS
ALS - Special Populations
Continues the Virginia Office of Emergency Medical Services Intermediate and/or Paramedic curricula. Focuses on the assessment and management of specialty patients including obstetrical, neonates, pediatric, and geriatrics. Prerequisites: EMS 151 and EMS 153. Prerequisite or co-requisite: EMS 155. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

» EMS 161  |  1 CREDIT
Basic Trauma Life Support (BTLS)
Offers instruction for students in current topics of care for trauma patients and offers certification as a Basic Trauma Life Support Provider (BTLS) as defined by the American College of Emergency Physicians. Prerequisite: Divisional approval. Lecture 1 hour per week.
COURSE DESCRIPTIONS | Tidewater Community College 2017/2018 Catalog

- **EMS 165 | 1 CREDIT**
  Advanced Cardiac Life Support (ACLS)
  Prepares for certification as an Advanced Cardiac Life provider. Follows course as defined by the American Heart Association. **Prerequisite:** EMS 153 or equivalent. Lecture 1 hour per week.

- **EMS 169 | 1 CREDIT**
  Pediatric Advanced Life Support (PALS)
  Prepares the student for certification as a pediatric advanced life support provider as defined by the American Heart Association. Covers primary assessment and emergency care of infants and children. Lecture 1 hour per week.

- **EMS 170 | 1 CREDIT**
  ALS Internship I
  Begins the first in a series of clinical experiences providing supervised direct patient contact in appropriate patient care facilities in and out of hospitals. Includes, but not limited to, patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma centers, and various advanced life support units. Laboratory 3 hours per week.

- **EMS 172 | 1 CREDIT**
  ALS Clinical Internship II
  Continues with the second in a series of clinical experiences providing supervised direct patient contact in appropriate patient care facilities in and out of hospitals. Includes, but not limited to, patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, and Trauma Centers. **Prerequisite:** EMS 151. Laboratory 3 hours per week.

- **EMS 173 | 1 CREDIT**
  ALS Field Internship II
  Continues with the second in a series of field experiences providing supervised direct patient care in out-of-hospital advanced life support units. Laboratory 3 hours per week.

- **EMS 201 | 3 CREDITS**
  EMS Professional Development
  Prepares students for Paramedic certification at the National Registry Level by fulfilling community activism, personal wellness, resource management, ethical considerations in leadership and research objectives in the Virginia Office of Emergency Medical Services Paramedic curriculum. **Prerequisite:** Divisional approval. Lecture 3 hours per week.

- **EMS 205 | 4 CREDITS**
  Advanced Pathophysiology
  Focuses on the pathological processes of disease with emphasis on the anatomical and physiological alterations of the human body by systems. Includes diagnosis and management appropriate to the advanced health care provider in and out of the hospital environment. **Prerequisite:** Current EMT/B certification. Lecture 4 hours per week.

- **EMS 207 | 3 CREDITS**
  Advanced Patient Assessment
  Focuses on the principles of normal and abnormal physical exam. Emphasizes the analysis and interpretation of physiological data to assist in patient assessment and management. Applies principles during the assessment and management of trauma, medical, and specialty patients in laboratory environment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

- **EMS 209 | 4 CREDITS**
  Advanced Pharmacology
  Focuses on the principles of pharmacokinetics, pharmacodynamics and drug administration. Includes drug legislation, techniques of medication administration, and principles of math calculations. Emphasizes drugs used to manage respiratory, cardiac, neurological, gastrointestinal, fluid and electrolyte and endocrine disorders and includes classification, mechanism of action, indications, contraindications, precautions, and patient education. Incorporates principles related to substance abuse and hazardous materials. Applies principles during the assessment and management of trauma, medical, and specialty patients in a laboratory environment. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

- **EMS 211 | 2 CREDITS**
  Operations
  Prepares the student in the theory and application of the following: medical incident command, rescue awareness and operations, hazardous materials incidents, and crime scene awareness. (Conforms to the current Virginia Office of Emergency Medical Services curriculum for EMT-Paramedics.) Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

- **EMS 216 | 1 CREDIT**
  Paramedic Review
  Provides the student with intensive review for the practical and written portions of the National Registry Paramedic exam. May be repeated once, for credit. Lecture 1 hour per week.

- **EMS 240 | 1 CREDIT**
  ALS Internship II
  Continues clinical and/or field experiences providing supervised direct patient contact in appropriate patient care facilities in and out of hospitals. Includes, but not limited to, patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma Centers and various advanced life support units. Laboratory 3 hours per week.

- **EMS 242 | 1 CREDIT**
  ALS Clinical Internship III
  Continues with the third in a series of clinical experiences providing supervised direct patient contact in appropriate patient care facilities in-and-out of hospitals. Includes, but not limited to, patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, Trauma Centers, and various advanced life support units. Laboratory 3 hours per week.

- **EMS 243 | 1 CREDIT**
  ALS Field Internship III
  Continues with the third in a series of field experiences providing supervised direct patient care in out-of-hospital advanced life support units. Laboratory 3 hours per week.

- **EMS 244 | 1 CREDIT**
  ALS Clinical Internship IV
  The fourth in a series of clinical experiences providing direct patient contact in appropriate patient care facilities in-and-out of hospitals. Includes, but not limited to, patient care units such as the Emergency Department, Critical Care units, Pediatric, Labor and Delivery, Operating Room, and Trauma Centers. May be repeated as necessary. Laboratory 3 hours per week.

- **EMS 245 | 1 CREDIT**
  ALS Field Internship IV
  Continues with the fourth in a series of field experiences providing supervised direct patient care in out-of-hospital advanced life support units. May be repeated as necessary. Laboratory 3 hours per week.
ENERGY TECHNOLOGY

**ENE 100 | 4 CREDITS**
Conventional and Alternate Energy Applications
Provides an overview of hydroelectric, coal, and nuclear energy production methods and renewable solar, geothermal, wind, and fuel cell technology. A complete system breakdown of conventional power production methods, efficiency, and sustainability when compared with solar, geothermal, wind, and fuel cell applications. Prerequisite: Instructor permission. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ENE 105 | 4 CREDITS**
Solar Thermal Active and Passive Technology
Provides a comprehensive study of thermal technology as it applies to collector types and ratings, open-loop versus closed-loop and system sizing. Introduces hydronics, hot water, and pool heating applications. Provides an introduction to fluid dynamics and chemistry as it applies to system installation and maintenance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ENE 110 | 4 CREDITS**
Solar Power Installations
Covers wiring, control, conversion, and ties to established power systems. Studies use of inverters, batteries, and charging systems. Prerequisite: ELE 150. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ENE 120 | 4 CREDITS**
Solar Power - Photovoltaic and Thermal
Studies the production and conversion of electrical energy from modular to grid power systems. Covers the storage of energy, thermal solar capture, and storage for residential and commercial applications. Covers energy conversion and storage equipment based on size and efficiency. Prerequisite: ELE 150. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ENE 225 | 4 CREDITS**
Commercial/Industrial Photovoltaic Design and Installation
Studies the design and construction of electrical energy from utility interactive grid-tied power systems. Covers the request for proposals, design stages, installation and management for commercial and industrial applications. Covers engineering principles for large scale renewable energy photovoltaic systems. Includes the installation, testing and troubleshooting of commercial/industrial power generation system. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ENGINEERING

**EGR 110 | 3 CREDITS**
Engineering Graphics
Presents theories and principles of orthographic projection. Studies multi-view, pictorial drawings and sketches, geometric construction, sectioning, lettering, tolerancing, dimensioning and auxiliary projections. Studies the analysis and graphic presentation of space relationships of fundamental geometric elements; points, lines, planes and solids. Includes instruction in Computer-Aided Drafting. Prerequisite: MTH 164, MTH 166 or placement into MTH 173. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**EGR 120 | 2 CREDITS**
Introduction to Engineering
Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem-solving techniques using computer software. Prerequisite: MTH 164, MTH 166 or placement into MTH 173. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**EGR 125 | 4 CREDITS**
Introduction to Engineering Methods
Applies problem-solving techniques to engineering problems utilizing computer programming and algorithms in a higher level computer language such as FORTRAN, PASCAL, or C++. Prerequisites: EGR 110 and EGR 120. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

**EGR 140 | 3 CREDITS**
Engineering Mechanics – Statics
Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two-force and multi-force members, and friction and internal forces. Prerequisite: EGR 120. Co-requisite: MTH 174. Lecture 3 hours per week.

**EGR 218 | 3 CREDITS**
Introduction to Modeling and Simulation
Introduces basic concepts in modeling, simulation, and visualization. Includes applications in various phases of product creation and development; use of software and hardware interfaces to improve use and understanding of simulations; and current topics and future directions in modeling, simulation, and visualization. Prerequisites: MTH 174 and EGR 125. Co-requisite: MTH 243. Lecture 3 hours per week.

**EGR 230 | 4 CREDITS**
Discrete Event Simulation
Introduces fundamentals of modeling and simulating discrete-state, event-driven systems. Includes basic simulation concepts and terms, queuing theory models for discrete event systems, structure of discrete event simulations, problem formulation and specification, input data representation, output data analysis, verification and validation, and the design of simulation experiments. Prerequisites: EGR 218 and MTH 243. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
EGR 245 | 3 CREDITS
Engineering Mechanics – Dynamics
Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Prerequisite: EGR 140. Lecture 3 hours per week.

EGR 246 | 3 CREDITS
Mechanics of Materials
Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis, and energy principles. Prerequisite: EGR 140. Lecture 3 hours per week.

EGR 262 | 2 CREDITS
Fundamental Circuits Laboratory
Covers topics including microprocessor hardware and programming, lab test equipment, lab safety, technical report writing, and using a microprocessor, such as the MicroStamp 11, to control basic electric circuits. Experiments include topics such as resistive circuits, analog-to-digital and digital-to-analog conversion, pulse width modulation, and the design of power supplies. Prerequisites: EGR 125 and EGR 271. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

EGR 270 | 4 CREDITS
Fundamentals of Computer Engineering
Covers the design and organization of digital systems, including number systems, Boolean algebra, logic gates, Karnaugh maps, combinational and sequential logic circuits, timing diagrams, and synchronous and asynchronous controllers. Introduces hardware description language (HDL) and assembly language programming. Prerequisite: EGR 125. Prerequisite or co-requisite: EGR 271. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EGR 271 | 3 CREDITS
Circuit Theory I
Teaches basic electrical concepts and laws, the formulation of network equations for resistive networks based on the use of graph theory and linear algebra, network theorems, and network reduction techniques. Prerequisites: EGR 110 and MTH 174. Lecture 3 hours per week.

EGR 272 | 3 CREDITS
Circuit Theory II
Introduces expansion of network equation formulation to include inductive and capacitive networks; network analysis using the differential equations, Laplace transforms, and phasor; transfer functions; frequency response; and mutual inductance. Prerequisites: EGR 271 and MTH 279. Lecture 3 hours per week.

ENG 111 | 3 CREDITS
College Composition I
Introduces students to critical thinking and the fundamentals of academic writing. Through the writing process, students refine topics; develop and support ideas; investigate, evaluate, and incorporate appropriate resources; edit for effective style and usage; and determine appropriate approaches for a variety of contexts, audiences, and purposes. Writing activities will include exposition and argumentation with at least one researched essay. Prerequisite: Qualifying Placement Test score or ENF 1, ENF 2 or equivalent. Lecture 3 hours per week.

ENG 112 | 3 CREDITS
College Composition II
Continues to develop college writing with increased emphasis on critical essays, argumentation, and research, developing these competencies through the examination of a range of texts about the human experience. Requires students to locate, evaluate, integrate, and document sources and effectively edit for style and usage. Prerequisites: ENG 111 or equivalent and ability to use word processing software. Lecture 3 hours per week.

ENG 115 | 3 CREDITS
Technical Writing
Develops ability in technical writing through extensive practice in composing technical reports and other documents. Guides students in achieving voice, tone, style, and content in formatting, editing, and graphics. Introduces students to technical discourse through selected reading. Prerequisite: Qualifying Placement Test score or ENF 1, ENF 2 or equivalent. Lecture 3 hours per week.

ENG 125 | 3 CREDITS
Introduction to Literature
Introduces students to a range of literary genres that may include poetry, fiction, drama, creative nonfiction, and other cultural texts, as it continues to develop college writing. Prerequisite: ENG 111. Lecture 3 hours per week.

ENG 131 | 3 CREDITS
Technical Report Writing I
Offers a review of organizational skills including paragraph writing and basic forms of technical communications, various forms of business correspondence, and basic procedures for research writing. Includes instruction and practice in oral communication skills. Prerequisite: ENG 111. Lecture 3 hours per week.

ENG 210 | 3 CREDITS
Advanced Composition
Helps students refine skills in writing non-fiction prose. Guides development of individual voice and style. Introduces procedures for publication. Prerequisite: ENG 112 or divisional approval. Lecture 3 hours per week.

ENG 211-212 | 3 CREDITS EACH
Creative Writing I-II
Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Prerequisite: ENG 112 or divisional approval. Lecture 3 hours per week.

ENG 236 | 3 CREDITS
Introduction to the Short Story
Examines selected short stories emphasizing the history of the genre. Involves critical reading and writing. Prerequisite: ENG 112 or divisional approval. Lecture 3 hours per week.
ESL 32 | 4 CREDITS
Reading I
Helps students improve their reading comprehension and vocabulary development. Improves students' reading proficiency to a level which would allow the student to function adequately in ESL 42 and other college classes. Prerequisite: Qualifying ESL Placement Test score or ESL 20. Lecture 4 hours per week.

ESL 33 | 4 CREDITS
Oral Communication I
Helps students practice and improve listening and speaking skills as needed for functioning successfully in academic, professional, and personal settings. Assesses students' oral skills and includes, as needed, practice with pronunciation, rhythm, stress and intonation. Provides exercises, practices, small and large group activities, and oral presentations to help students overcome problems in oral communication. Credits are not applicable toward graduation. Prerequisite: Qualifying ESL Placement Test score or ESL 20. Lecture 4 hours per week.

ESL 41 | 4 CREDITS
Composition II
Provides further instruction and practice in the writing process, and introduces advanced language patterns. Includes practice in developing and improving writing strategies. Credits are not applicable toward graduation. Prerequisite: Qualifying ESL Placement Test score or ESL 31. Lecture 4 hours per week.

ESL 42 | 4 CREDITS
Reading II
Improves students' reading proficiency to a level that would allow the student to function adequately in the ESL 52 reading class and other college courses. Courses are not applicable toward graduation. Prerequisite: Qualifying ESL Placement Test score or ESL 32. Lecture 4 hours per week.

ESL 43 | 4 CREDITS
Oral Communication II
Provides further instruction and practice in helping students to improve listening and speaking skills. Assesses students' oral skills and includes, as needed, practice with pronunciation, rhythm, stress, and intonation. Emphasizes the development of fluency through exercises, practices, small and large group activities, and formal and informal presentations. Prerequisite: Qualifying ESL Placement Test score or ESL 33. Lecture 4 hours per week.

ENF 1 | 8 CREDITS
Preparation for College English I
Provides integrated reading and writing instruction for students who require extensive preparation to succeed in college-level English courses. Upon successful completion and faculty recommendation, students will move into Preparing for College English II (if they require additional preparation) or into college-level English (if they require no additional preparation). Credit is not applicable toward graduation. Prerequisite: Qualifying Placement Test score. Lecture 8 hours per week.
**ENV 112 | 2 CREDITS**
Prepared for College English II

Provides integrated reading and writing instruction for students who require minimal preparation for college-level English but still need some preparation to succeed. Prerequisite: Qualifying Placement Test score or faculty recommendation. Co-requisite: ENG 111. Lecture 2 hours per week.

**ENV 122 | 4 CREDITS**
General Environmental Science II

Explores fundamental interactions between human populations and natural systems of the earth. Introduces the basic science concepts in the disciplines of biological, chemical, and earth sciences that are necessary to understand and address environmental issues. Lecture 3 hours. Recitation and Laboratory 3 hours. Total 6 hours per week.

**ENV 220 | 3 CREDITS**
Environmental Problems

Studies the relationship of man to his environment; ecological principles, population dynamics, topics of current importance including air, water, and noise pollution; poisoning and toxicity, radiation, conservation and management of natural resources. Lecture 3 hours per week.

**FIN 107 | 3 CREDITS**
Personal Finance

Presents a framework of personal money management concepts, including establishing values and goals, determining sources of income, managing income, preparing a budget, developing consumer buying ability, using credit, understanding savings and insurance, providing for adequate retirement, and estate planning. Lecture 3 hours per week.

**FIN 110 | 3 CREDITS**
Principles of Banking

Presents nearly every aspect of banking, providing a comprehensive introduction to the diversified services and operations of the banking industry. Focuses on new trends gaining attention in banking circles. Recommended for all banking students. Lecture 3 hours per week.

**FIN 115 | 2 CREDITS**
Personal Investments

Examines personal financial investments, money management and risk reward strategies. Covers most widely employed investment instruments, including current information on stocks, bonds, mutuals, real estate, limited partnerships and tax sheltering devices. Lecture 2 hours per week.

**FIN 215 | 3 CREDITS**
Financial Management

Introduces basic financial management topics including statement analysis, working capital, capital budgeting, and long-term financing. Focuses on Net Present Value and Internal Rate of Return techniques, lease vs. buy analysis, and Cost of Capital computations. Uses problems and cases to enhance skills in financial planning and decision making. Prerequisite: ACC 212. Lecture 3 hours per week.

**FIN 260 | 2 CREDITS**
Financial Management for Small Business

Provides the tools of financial planning for the small business owner. Includes areas such as financial statements, ratio analysis, forecasting profit, cash flow, pricing, and obtaining capital. Prerequisites: ACC 220 or ACC 211 and BUS 165. Lecture 2 hours per week.

**FIRE SCIENCE TECHNOLOGY**

**FST 100 | 3 CREDITS**
Principles of Emergency Services

Provides an overview to fire protection; career opportunities in fire protection and related fields; philosophy and history of fire protection/service; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; fire service nomenclature; specific fire protection functions; basic fire chemistry and physics; introduction to fire protection systems; introduction to fire strategy and tactics. Lecture 3 hours per week.

**FST 105 | 3 CREDITS**
Fire Suppression Operations

Introduces the fundamentals of fire suppression. Explores fire behavior and basis physical and chemical laws of fire dynamics. Prepares student to understand the need for quick operational decisions made on the fire ground including emergency management. Lecture 3 hours per week.

**FST 110 | 3 CREDITS**
Fire Behavior and Combustion

Explores the theories and fundamentals of how and why fires start, spread and how they are controlled. Lecture 3 hours per week.

**FST 112 | 3 CREDITS**
Hazardous Materials Chemistry

Provides basic fire chemistry relating to the categories of hazardous materials including problems of recognition, reactivity, and health encountered by firefighters. Lecture 3 hours per week.

**FST 115 | 3 CREDITS**
Fire Prevention

Provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education. Lecture 3 hours per week.

**FST 120 | 3 CREDITS**
Occupational Safety and Health for the Fire Service

Introduces the basic concepts of occupational health and safety as it relates to emergency service organizations. Includes risk evaluation and control procedures for fire stations, training sites, emergency vehicles, and emergency situations involving fire, EMS, hazardous materials, and technical rescue. Upon completion of this course, students should be able to establish and manage a safety program in an emergency service organization. Lecture 3 hours per week.
**FST 235 | 3 CREDITS**

**Strategy and Tactics**

Provides an in-depth analysis of the principles of fire control through utilization of personnel, equipment, and extinguishing agents on the fire ground. **Lecture 3 hours per week.**
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**FNS 111 | 3 CREDITS**
Theory of Embalming I
Introduces the purpose and historical background of embalming. Teaches the ethics and sanitary consideration in the handling of human remains, signs and tests of deaths, and postmortem changes in the body. Prerequisite: Admission into program or instructor permission. Co-requisite: FNS 113. Lecture 3 hours per week.

**FNS 112 | 3 CREDITS**
Theory of Embalming II
Presents pre-embalming diagnosis, positioning the body and posing the features, linear and anatomical guides for selected blood vessels, and factors that influence fluid distribution and blood drainage. Prerequisites: Admission into program, FNS 111 and FNS 113. Co-requisite: FNS 114. Lecture 3 hours per week.

**FNS 113 | 1 CREDIT**
Theory of Embalming Laboratory I
Teaches the basic procedures of embalming. Presents instruments, equipment, and the types of preservatives and disinfectant chemicals used in embalming. Prerequisite: Admission into program or instructor permission. Co-requisite: FNS 111. Laboratory 3 hours per week.

**FNS 114 | 1 CREDIT**
Theory of Embalming Laboratory II
Teaches through practice and demonstration of various embalming techniques. May include clinical experiences in area funeral homes. Prerequisites: Admission into program, FNS 111 and FNS 113. Co-requisite: FNS 112. Laboratory 3 hours per week.

**FNS 121 | 3 CREDITS**
Anatomy for Funeral Service I
Introduces anatomy and physiology and basic terminology. Presents information about wills, tissues, and organs. Discusses the reproductive, urinary, and endocrine body system. Lecture 3 hours per week.

**FNS 125 | 3 CREDITS**
Microbiology for Funeral Service
Focuses on microscopic forms of life from a morphological, cultural, and staining viewpoint. Studies in detail causative agents of disease and their importance to a scientific approach to sanitation. Stresses the need for scientific knowledge concerning disease and its cause. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

**FNS 126 | 3 CREDITS**
Pathology for Funeral Service
Introduces the general processes of disease, stressing their importance to the scientific embalmer and funeral director as health guardians. Studies diseases of specific organs and organ systems with emphasis on the significant structural changes involved and the embalming problems they present. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

**FNS 211 | 3 CREDITS**
Restorative Art I
Presents surface contour; the influence of the bone structure on facial form; and the effect of the facial muscles on the wrinkles, grooves, and folds of the face. Teaches the treatments and techniques for restorations. Introduces wax and non-wax treatments such as swellings, feature corrections, and hair restoration. Studies lip-waxing techniques and the modeling of various forms of the mouth and eyes. Teaches the rudiments of cosmetic knowledge and techniques through lectures, demonstrations, and student participation. Prerequisite: Admission into program or instructor permission. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**FNS 212 | 3 CREDITS**
Restorative Art II
Studies color principles and their application to funeral work and the funeral establishment. Teaches the basic principles employed in recreating the personalized form and dimensions of each facial feature when restoration is necessary. Focuses on problem cases which require illusory corrections, matching wax color skin, and the masking of small and extensive discolorations. Teaches feature construction with restorative wax through demonstrations and laboratory practice. Prerequisites: Admission into program and FNS 211. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**FNS 231 | 4 CREDITS**
Principles of Funeral Management I
Introduces the basic social, religious, ethical, and psychological factors that influence funeral service. Teaches telephone techniques and etiquette and acceptable funeral terminology. Studies the various types of religious, fraternal, and military funeral services. Prerequisite: Admission into program or instructor permission. Lecture 4 hours per week.

**FNS 232 | 4 CREDITS**
Principles of Funeral Management II
Teaches merchandising, the principles of buying and selling and the techniques of making funeral arrangements. Studies the construction and proper selection of casket, room arrangement, and Social Security and veterans’ benefits. Focuses on modern funeral establishment management techniques and procedures. Prerequisites: Admission into program and FNS 231. Lecture 4 hours per week.

**FNS 236 | 3 CREDITS**
Funeral Service Law
Focuses on the duties, rights, responsibilities, and liabilities of the funeral director and embalmer. Teaches building and zoning ordinances relating to the funeral establishment, tort liability, cemetery law, wills, and the administration of estates. May include the study of state laws as they pertain to funeral services. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

**FNS 270 | 3 CREDITS**
Funeral Service Review
Prepares the student for national and state licensing examination in funeral service. Reviews all materials that will be covered by funeral service licensing examinations. Teaches modern test-taking techniques. Requires the writing of a detailed outline of one funeral service subject which determines the final grade. This is a capstone course designed to prepare students for the National Board Examination (NBE). Completion of the NBE is a requirement for successful completion of this course. FEE: $350/$400 for National Board Exam. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

**GIS 101 | 3 CREDITS**
Introduction to Geospatial Technology I
Presents an introduction to the concepts of Geographic Information Systems (GIS), Global Positioning Systems, (GPS) and remote sensing components of Geospatial Technology. Teaches the introductory concepts of geographic location and problem solving by using GIS and GPS units in demonstrating solutions to cross-curricular applications of the technology. Lecture 3 hours per week.
GIS 230 | 3 CREDITS
GIS: Applications in Environmental Science
Introduces Global Positioning Systems (GPS) and Geographic Information Systems (GIS) hardware and software and applies the principles of GPS and GIS to Forest Science and Environmental Science. Includes: Natural Disasters, Pest Control, Water Quality, Prescribed Burning, and Identifying Sources of Pollution. (This course covers the same content as ENV 230. Credit will not be granted for both courses). Prerequisite: GIS 200. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

GIS 200 | 4 CREDITS
Geographical Information Systems I
Provides hands-on introduction to a dynamic desktop GIS (Geographic Information System). Introduces the components of a desktop GIS and their functionality. Emphasizes manipulation of data for the purpose of analysis, presentation, and decision-making. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

GIS 201 | 4 CREDITS
Geographical Information Systems II
Provides a continuation of GIS 200, with emphasis on advanced topics in problem solving, decision-making, modeling, programming, and data management. Covers map projections and data formats, and methods for solving the problems they create. Prerequisite: GIS 200. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

GIS 203 | 4 CREDITS
Cartography for GIS
Focuses on the fundamental cartographic concepts used in planning, designing, and creating effective maps. Provides the foundation to critically evaluate maps to produce accurate and visually pleasing cartographic displays that convey information in a manner that enables easy interpretation. Includes topics of map compilation, map design, map types, and critical evaluation of map content. Prerequisite: GIS 200. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

GIS 205 | 4 CREDITS
GIS 3-Dimensional Analysis
Introduces GIS 3D (three-dimensional) concepts and practices with a concentration on displaying, creating, and analyzing spatial GIS data using 3D. Covers 3D shape files, 3D data formats such as Tins, DEMs, grids, and controlling the perspective and scale of 3D data through rotating, panning, and zooming. Prerequisite: GIS 201. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

GIS 210 | 4 CREDITS
Understanding Geographic Data
Provides the student an introduction to geographic data and the principles behind their construction. Introduces the concepts for measuring locations and characteristics of entities in the real world. Exposes the student to the limitations and common characteristics of geographic data. Prerequisite: GIS 201. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

GIS 215 | 4 CREDITS
New GIS Software Platforms and Applications
Assists users with the transition to newer GIS software platforms and applications. Covers concepts and terminology needed to become proficient in the latest GIS software. Prerequisite: GIS 201. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

GIS 255 | 4 CREDITS
Exploring our Earth: Introduction to Remote Sensing
Introduces material to understand the fundamental physical and mathematical principles and techniques of Remote Sensing. Introduces how each part of the electromagnetic spectrum is used to gather data about Earth. Describes limitations imposed by satellites, aircraft, and sensors. Surveys various methods to access and apply Earth observation/Remote Sensing data. Teaches students to use Remote Sensing software to process and manipulate Landsat, SPOT, photographic, and other imagery in a hands-on approach to Remote Sensing analysis. Prerequisite: GIS 200. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

GIS 298 | 3 CREDITS
Seminar and Project in Geospatial Intelligence
Requires completion of a project or research report related to the student’s occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. Prerequisites: GIS 205 and GIS 255. Lecture 3 hours per week.

GEO 210 | 3 CREDITS
People and the Land: Introduction to Cultural Geography
Focusses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 220 | 3 CREDITS
World Regional Geography
Studies physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions, and examines the geographical background of those problems. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 221 | 3 CREDITS
Regions of the World I
Presents an overview of physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions. Studies the European cultural sphere including Europe, Soviet Union, the Americas and Australia and the emerging nations in Africa, Southwest Asia and the Orient. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GOL 105 | 4 CREDITS
Physical Geology
Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 106 | 4 CREDITS
Historical Geology
Traces the evolution of the earth and life through time. Presents scientific theories of the origin of the earth and life and interprets rock and fossil records. Prerequisite: GOL 105. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
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**GOL 110 | 4 CREDITS**

**Earth Science**
FOR NON-SCIENCE MAJORS. Examines the dynamics of the earth and its relation to the solar system. Applies the principles of geology, oceanography, meteorology and astronomy in a multi-disciplinary science environment. Stresses the effects of geologic processes on the environment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**GOL 111-112 | 4 CREDITS EACH**

**Oceanography I-II**
Examines the dynamics of the oceans and ocean basins. Applies the principles of physical, chemical, biological, and geological oceanography. Prerequisite for GOL 112: GOL 111. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**GER 101-102 | 4 CREDITS EACH**

**Beginning German I-II**
Introduces understanding, speaking, reading, and writing skills and emphasizes basic German sentence structure. Prerequisite for GER 102: GER 101 or 2 years of high school German. Lecture 4 hours per week. May include one additional hour oral practice per week.

**GER 201-202 | 3 CREDITS EACH**

**Intermediate German I-II**
Continues to develop understanding, speaking, reading, and writing skills. German is used in the classroom. Prerequisite for GER 201: GER 102 or 3 years of high school German. Prerequisite for GER 202: GER 201 or 4 years of high school German. Lecture 3 hours per week. May include one additional hour oral practice per week.

**HEALTH**

**HLT 100 | 3 CREDITS**

**First Aid and Cardiopulmonary Resuscitation**
Focuses on the principles and techniques of safety, first aid, and cardiopulmonary resuscitation. Lecture 3 hours per week.

**HLT 105 | 1 CREDIT**

**Cardiopulmonary Resuscitation**
Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life-threatening emergencies, and sudden illness. Lecture 1 hour per week.

**HLT 106 | 2 CREDITS**

**First Aid and Safety**
Focuses on the principles and techniques of safety and first aid. Lecture 2 hours per week.

**HLT 110 | 3 CREDITS**

**Concepts of Personal and Community Health**
Studies the concepts related to the maintenance of health, safety, and the prevention of illness at the personal and community level. Lecture 3 hours per week.

**HLT 116 | 3 CREDITS**

**Introduction to Personal Wellness Concepts**
Introduces students to the dimensions of wellness including the physical, emotional, environmental, spiritual, occupational, and social components. Lecture 3 hours per week.

**HLT 121 | 3 CREDITS**

**Introduction to Drug Use and Abuse**
Explores the use and abuse of drugs in contemporary society with emphasis upon sociological, physiological and psychological effects of drugs. Lecture 3 hours per week.

**HLT 125 | 3 CREDITS**

**Anatomy and Physiology for Exercise Science**
Presents basic principles of human anatomy and physiology including the body structure, systems and functions. The course provides a foundation to build and apply concepts in the study of Exercise Science, Group Fitness, Personal Training, and related fitness studies. Lecture 3 hours per week.

**HLT 130 | 1 CREDIT**

**Nutrition and Diet Therapy**
Studies nutrients, sources, functions, and requirements with an introduction to diet therapy. Lecture 1 hour per week.

**HLT 135 | 3 CREDITS**

**Child Health and Nutrition**
Focuses on the physical needs of the preschool child and the methods by which these are met. Emphasizes health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health, growth and development. Lecture 3 hours per week.

**HLT 138 | 2 CREDITS**

**Principles of Nutrition**
Studies nutrient components of food, including carbohydrates, fats, proteins, vitamins, minerals and water. Provides a behavioral approach to nutrient guidelines for the development, and maintenance of optimum wellness. Lecture 2 hours per week.

**HLT 141 | 2 CREDITS**

**Introduction to Medical Terminology**
Focuses on medical terminology for students preparing for careers in the health professions. Lecture 2 hours per week.

**HLT 143-144 | 3 CREDITS EACH**

**Medical Terminology I-II**
Provides an understanding of medical abbreviations and terms, includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology. Prerequisite for HLT 144: HLT 143. Lecture 3 hours per week.

**HLT 150 | 1 CREDIT**

**Cross Cultural Health and Wellness Practices**
Explores prevailing cultural values toward health and wellness and compares them with cultures around the world. Presents concepts related to communication, spirituality, family and gender roles, dietary restrictions, traditional practices, reaction to pain, and end-of-life decisions. Lecture 1 hour per week.

**HLT 155 | 2 CREDITS**

**Current Issues and Health Care**
Focuses on current issues in the health care industry. Prerequisite: Admission into program or instructor permission. Lecture 2 hours per week.

**HLT 160 | 3 CREDITS**

**Personal Health and Fitness**
Studies the relationships between health and fitness. Topics include nutrition, disease prevention, weight control, smoking and health, medical care, aerobic and anaerobic conditioning, and the relationship between physical and mental health. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
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**» HLT 200 | 3 CREDITS**

**Human Sexuality**
Provides a basic understanding of human sexuality. Includes anatomy, physiology, pregnancy, family planning, venereal diseases, and sexual variations. Lecture 3 hours per week.

**» HLT 204 | 3 CREDITS**

**Women's Health**
Explores current issues related to women’s health and wellness with an emphasis upon prevention of disease and optimum well-being. Takes a multi-ethnic approach to exploring the most up-to-date findings, diagnostic tools, and treatments for breast cancer, reproductive tract illness, heart, and other common diseases faced by women from puberty through menopause. Lecture 3 hours per week.

**» HLT 215 | 3 CREDITS**

**Personal Stress and Stress Management**
Provides a basic understanding of stress and its physical, psychological, and social effects. Includes the relationships between stress and change, self-evaluation, sources of stress, and current coping skills for handling stress. Lecture 3 hours per week.

**» HLT 250 | 3 CREDITS**

**General Pharmacology**
Emphasizes general pharmacology for the health-related professions covering general principles of drug actions/reactions, major drug classes, specific agent within each class, and routine mathematical calculations needed to determine desired dosages. Lecture 3 hours per week.

**» HLT 261 | 3 CREDITS**

**Basic Pharmacy I**
Explores the basics of general pharmacy, reading prescriptions, symbols, packages, pharmacy calculations. Teaches measuring compounds of drugs, dosage forms, drug laws, and drug classifications. Part I of II. Lecture 3 hours per week.

**» HLT 262 | 3 CREDITS**

**Basic Pharmacy II**
Explores the basics of general pharmacy, reading prescriptions, symbols, packages, pharmacy calculations. Teaches measuring compounds of drugs, dosage forms, drug laws, and drug classifications. Part II of II. Lecture 3 hours per week.

**» HLT 290 | 1-5 CREDITS**

**Coordinated Internship**
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. **Variable hours per week. Prerequisite: HLT 262.**

**» HLT 298 | 3 CREDITS**

**Seminar and Project in Health**
Requires completion of a project or research report related to the student’s occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. **Prerequisite: HLT 262. Lecture 3 hours per week.**

**HEALTH INFORMATION MANAGEMENT**

**» HIM 101 | 4 CREDITS**

**Health Information Technology I**
Introduces values, uses and content of the medical record. Defines numbering, filing and retention policies and practices. **Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.**

**» HIM 103 | 2 CREDITS**

**Health Information Technology II**
Introduces principles of data quality and validation types and uses of health databases. **Prerequisites: Admission into program and HIM 101. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.**

**» HIM 110 | 3 CREDITS**

**Introduction to Human Pathology**
Introduces the basic concepts, terminology, etiology and characteristics of pathological processes. **Prerequisites: Admission into program, BIO 141 and HLT 143. Lecture 3 hours per week.**

**» HIM 151 | 2 CREDITS**

**Reimbursement Issues in Medical Practice Management**
Introduces major reimbursement systems in the United States. Focuses on prospective payment systems, managed care, and documentation necessary for appropriate reimbursement. Emphasizes management of practice to avoid fraud. **Prerequisites: Admission into program and instructor permission. Lecture 2 hours per week.**

**» HIM 190 | 2 CREDITS**

**Coordinated Internship in Health Information Management**
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. **Clinical 10 hours per week. Prerequisites: Admission into program and instructor permission.**

**» HIM 215 | 5 CREDITS**

**Health Data Classification Systems**
Focuses on disease and procedure classification systems currently utilized for collecting health data for the purposes of statistical research and financial reporting. **Prerequisites: Admission into program and instructor permission. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.**

**» HIM 220 | 2 CREDITS**

**Health Statistics**
Introduces the student to basic statistical principles and calculations as applied in the health care environment, procedures for collection and reporting vital statistics, and quality control basics. **Prerequisite: Admission into program. Lecture 2 hours per week.**

**» HIM 226 | 2 CREDITS**

**Legal Aspects of Health Record Documentation**
Presents the legal requirements associated with health record documentation. Emphasizes the policies and procedures concerning the protection of the confidentiality of patient’s health records. **Prerequisite: Admission into program. Lecture 2 hours per week.**

**» HIM 229 | 2 CREDITS**

**Performance Improvement in Health Care Settings**
Focuses on concepts of facility wide performance improvement, resource management, and risk management. Applies tools for data collection and analysis. **Prerequisites: Admission into program and HIM 101. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.**

**» HIM 230 | 3 CREDITS**

**Information Systems and Technology in Health Care**
Explores computer technology and system application in health care. Introduces the information systems life cycle. **Prerequisites: Admission into program and instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.**
HEALTH INFORMATION TECHNOLOGY

HIT 230 | 3 CREDITS

Computer Applications in Health Care
Covers systems planning, acquisition, implementation, technology support, strategic planning and governance; as well as threats to security of health information. Covers the value and organization of health care information systems (IS) and the role of the Information Technology (IT) Department. Lecture 3 hours per week.

HIT 233 | 3 CREDITS

Working with Electronic Health Records
Provides an in-depth analysis of the electronic health record (EHR), explores the features of EHRs as they relate to practical deployment in the health care setting. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HIM 249 | 3 CREDITS

Supervision and Management Practices
Introduces supervision and management principles with emphasis on the application of these principles in the health information setting. Prerequisites: Admission into program and HIM 101. Lecture 3 hours per week.

HIM 253 | 4 CREDITS

Health Records Coding
Examines the development of coding classification systems. Introduces ICD-9-CM coding classification system, its format and conventions. Stresses basic coding steps and guidelines according to body systems. Provides actual coding exercises in relation to each system covered. Prerequisites: Admission into program and HIM 101. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

HIM 254 | 4 CREDITS

Advanced Coding and Reimbursement
Focuses on the applications and evaluation of advanced coding skills through practical exercises using actual healthcare data; while examining the components of DRGs, APCs and APGs and other prospective payment in the healthcare environment. Utilizes current coding standards in identifying payment methodologies, revenue cycle management and reimbursement. Prerequisites: Admission into program and instructor permission. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

HIM 260 | 2 CREDITS

Pharmacology for Health Information Technology
Emphasizes general pharmacology for Health Information professionals; covers general principles of drug actions/reactions, major drug classes, specific agents within each class, and routine mathematical calculation needed to determine desired dosages. Prerequisites: Admission into program, BIO 141 and HLT 143. Lecture 2 hours per week.

HIM 269 | 3 CREDITS

United States History Since World War II
Investigates United States history from 1945 to the present, studying both domestic developments and American involvement in international affairs. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 101-102 | 3 CREDITS EACH

History of Western Civilization I-II
Examines the development of western civilization from ancient times to the present. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 111-112 | 3 CREDITS EACH

History of World Civilization I-II
Surveys Asian, African, Latin American, and European civilizations from the ancient period to the present. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 121-122 | 3 CREDITS EACH

United States History I-II
Surveys United States history from its beginning to the present. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 141-142 | 3 CREDITS EACH

African-American History I-II
Surveys the history of black Americans from their African origins to the present. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 155 | 3 CREDITS

Life in Colonial Virginia
Studies life in Virginia before the American Revolution, including politics, economics, customs, culture, and the slave plantation system. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 262 | 3 CREDITS

United States History in Film
Examines selected topics in the United States history which shaped the American experience, presented in film. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 269 | 3 CREDITS

Civil War and Reconstruction
Studies factors that led to the division between the States. Examines the war, the home fronts, and the era of Reconstruction. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 276 | 3 CREDITS

United States History Since World War II
Investigates United States history from 1945 to the present, studying both domestic developments and American involvement in international affairs. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 280 | 3 CREDITS

American Foreign Policy Since 1890
Examines American foreign policy since 1890 with an emphasis on current events and diverse points of view. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HIS 281 | 3 CREDITS

History of Virginia I
Examines the cultural, political, and economic history of the Commonwealth from its beginning to the present. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

HISTORY

HRT 110 | 3 CREDITS

Principles of Horticulture
Introduces concepts of plant growth and development. Covers horticultural practices, crops and environmental factors affecting plant growth. Lecture 3 hours per week.
**HRT 115 | 3 CREDITS**

**Plant Propagation**
Teaches principles and practices of plant propagation. Examines commercial and home practices. Provides experience in techniques using seed-spores, cuttings, grafting, budding, layering, and division. **Prerequisite:** HRT 110. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 121-122 | 3 CREDITS EACH**

**Greenhouse Crop Production I-II**
Covers commercial practices related to production of floriculture crops. Considers production requirements, environmental control and management, and cultural techniques. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 125 | 3 CREDITS**

**Chemicals in Horticulture**
Emphasizes basic chemical principles and their application to horticulture. Introduces principles of inorganic and organic chemicals. Studies chemical activities of insecticides, fungicides, herbicides, fertilizers, and growth regulators. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 150 | 3 CREDITS**

**Theory of Landscape Design**
Presents the theoretical aspects of landscape planning and design. Uses theory to analyze and solve design problems. **Prerequisite:** HRT 235. Lecture 3 hours per week.

**HRT 155 | 3 CREDITS**

**Plants and Society**
Covers the relationship between plants and people and the uses of plants as sources of food, medicine, drugs, spices, beverages, poisons, fibers, oils and plants exudates. **Prerequisite:** HRT 110. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 201-202 | 3 CREDITS EACH**

**Landscape Plants I-II**
Studies landscape use of plants. Considers ornamental value, growth habit, identification, and limitations. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 207 | 3 CREDITS**

**Plant Pest Management**
Teaches principles of plant pest management. Covers morphology and life cycles of insects and other small animal pests and plant pathogens. **Laboratory stresses diagnosis, chemical and non-chemical control of specific pests, and pesticide safety. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 226 | 3 CREDITS**

**Greenhouse Management**
Discusses the theoretical and applied practices of managing a greenhouse facility. Emphasizes greenhouse construction and design, environmental control, energy conservation, and related topics. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 227 | 3 CREDITS**

**Professional Landscape Management**
Focuses on basic practices and techniques involving landscape management. Includes development of a year-round management calendar and preparation of bid and contract proposals. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 231 | 3 CREDITS**

**Planting Design I**
Applies landscape theory and principles of drawing to the planning of residential and small scale commercial landscape designs. **Prerequisites:** HRT 225 and HRT 201 or HRT 202. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 233 | 3 CREDITS**

**Landscape Drawing Applications**
Applies theories of landscape design and drawing to actual design projects and tasks. Emphasizes drawing techniques and use of advanced media in applications. Includes hard line, free-style, and computer-assisted landscape drawing in simple landscape drawing applications. **Prerequisites:** HRT 150 and HRT 235 and HRT 201 or HRT 202. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**HRT 235 | 3 CREDITS**

**Landscape Drawing**
Teaches students the use of drafting equipment. Emphasizes drawing techniques and use of media. Includes hard line and free-style landscape drawing. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 259 | 3 CREDITS**

**Arboriculture**
Studies the techniques of tree care. Covers surgery, pruning, insect and disease recognition and control, fertilization, cabling, and lightning rod installation. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 269 | 3 CREDITS**

**Professional Turf Care**
Covers turfgrass identification selection, culture, propagation, and pest control. Surveys commercial turf care operations and use of common equipment. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 275 | 3 CREDITS**

**Landscape Construction and Maintenance**
Examines practical applications of commercial landscape construction techniques and materials used. Covers construction, planting, and maintenance. **Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.**

**HRT 298 | 2 CREDITS**

**Seminar and Project**
Requires completion of a project or research report related to the student’s occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. **Prerequisite:** Instructor permission. Lecture 2 hours per week.

**HOTEL RESTAURANT INSTITUTIONAL MANAGEMENT**

**HRI 101-102 | 3 CREDITS EACH**

**Hotel-Restaurant Organization and Management I-II**
Introduces the history, opportunities, problems and trends of the hospitality industry. Covers the organization of the various sectors of the hospitality industry including human resources, general business considerations, and management theory. **Lecture 3 hours per week.**

**HRI 103 | 3 CREDITS**

**Introduction to Meeting Planning**
Focuses on basic aspects and skills involved in planning and managing meetings, exhibitions, events, and conventions. Covers the entire spectrum of the meetings industry, treating all aspects with a broad approach. Emphasizes types of meetings, meeting markets, industry suppliers and affiliates, budget and program planning, site selection and legal issues, registration and housing, and the development of timelines. **Lecture 3 hours per week.**
HRI 106-107 | 3 CREDITS EACH
Principles of Culinary Arts I-II
Introduces the fundamental principles of food preparation and basic culinary procedures. Stresses the use of proper culinary procedures combined with food science, proper sanitation, standards of quality for food items that are made, and proper use and care of kitchen equipment. Prerequisite for HRI 106: Placement into MTH 121 or higher. Prerequisite or co-requisite: HRI 158. Prerequisite for HRI 107: HRI 106 and HRI 158. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 119 | 3 CREDITS
Applied Nutrition for Food Service
Studies food composition, nutrition science, and application of nutrition principles by the food service professional. Provides the student with a basic understanding of human nutrition and application of nutrition in the service of commercially prepared meals. Lecture 3 hours per week.

HRI 128 | 3 CREDITS
Principles of Baking
Instructs the student in the preparation of breads, pastries, baked desserts, candies, frozen confections, and sugar work. Applies scientific principles and techniques of baking. Promotes the knowledge/skills required to prepare baked items, pastries and confections. Prerequisite: HRI 107. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 134 | 3 CREDITS
Food and Beverage Service Management
Provides a conceptual and technical framework for managing the service of meals in a variety of commercial settings. Studies the integration of production and service delivery, guest contact dynamics, reservations management and point-of-sale systems. Prerequisite: HRI 158. Lecture 3 hours per week.

HRI 145 | 3 CREDITS
Garde Manger
Studies garde manger, the art of decorative cold food preparation and presentation. Provides a detailed practical study of cold food preparation and artistic combination and display of cold foods. Prerequisite: HRI 207. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 150 | 3 CREDITS
Introduction to Hospitality Ownership
Presents growth, development, present status and trends of the food and lodging industry. Includes special problems of operating small and medium sized establishments. Introduces credit and accounting procedures, management of staff, marketing, advertising, and security, as well as personal attitudes, qualifications, and ethics. Prerequisite: MTH 121 or higher. Lecture 3 hours per week.

HRI 154 | 3 CREDITS
Principles of Hospitality Management
Presents basic understanding of the hospitality industry by tracing the industry’s growth and development, reviewing the organization and management of lodging, food, and beverage operations, and focusing on industry opportunities and future trends. Lecture 3 hours per week.

HRI 158 | 3 CREDITS
Sanitation and Safety
Covers the moral and legal responsibilities of management to insure a sanitary and safe environment in a food service operation. Emphasizes the causes and prevention of foodborne illnesses in conformity with federal, state and local guidelines. Focuses on OSHA standards in assuring safe working conditions. Lecture 3 hours per week.

HRI 159 | 4 CREDITS
Introduction to Hospitality Industry Computer Systems
Familiarizes students with computerized information technology to manage information, support decision-making and analysis, improve processes, increase productivity and enhance customer service in the hospitality industry. Prerequisites: Admission into program 775 or 775.02 and ITE 115; or admission into program 242, ITE 115 and HRI 158. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

HRI 160 | 3 CREDITS
Executive Housekeeping
Studies the housekeeping department with emphasis on organization, staffing and scheduling, staff development, work methods improvements, equipment, cleaning materials and cleaning procedures, maintenance and refurbishing, room design and safety engineering. Lecture 3 hours per week.

HRI 180 | 3 CREDITS
Convention Management and Service
Examines the scope and different segments that make up the convention market, explains what is required to meet individual needs, and explores methods and techniques for better service. Lecture 3 hours per week.

HRI 196 | 1 CREDIT
On-Site Training in Hospitality
Offers opportunities for career orientation and training without pay in selected businesses and industry. Supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hours. Prerequisite: Instructor permission. Laboratory 1 hour per week.

HRI 199 | 2 CREDITS
Supervised Study in Culinary Arts
Assigns problems for independent study outside the normal classroom setting under the guidance and direction of an instructor. Incorporates prior experience and instruction in the discipline. May be repeated for credit. Prerequisite: HRI 207 and permission by Culinary program head. Lecture 2 hours per week.

HRI 199 | 1 CREDIT
Supervised Study in Hospitality
Assigns problems for independent study outside the normal classroom setting under the guidance and direction of an instructor. Incorporates prior experience and instruction in the discipline. Prerequisite: Instructor permission. Laboratory 1 hour per week.

HRI 205 | 3 CREDITS
Fundamentals of Wine
Familiarizes the student with basic knowledge needed to make decisions relative to the purchase, storage, and service of wine, as well as decisions relative to the use of wine in the hospitality and food service industry. Lecture 3 hours per week.

HRI 206 | 3 CREDITS
International Cuisine
Introduces the concepts of cultural differences and similarities and the preparation of the food specialties of the major geographical areas of the world. Focuses on emerging cuisines as they become popular. Prerequisite: HRI 107. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 207 | 3 CREDITS
American Regional Cuisine
Studies the distinct regional cooking styles of America and its neighbors. Emphasizes the indigenous ingredients as well as the cultural aspect of each region’s cooking style. Includes the preparation of the various regional foods. Prerequisite: HRI 206. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.
HRI 215 | 3 CREDITS
Food Purchasing
Presents the method and procedures for purchasing food for hotels, restaurants and institutions. Deals with markets, federal and trade grades, governmental regulations, packaging, comparative versions price buying, yields and quality control. Prerequisite: Placement into MTH 121 or higher. Lecture 3 hours per week.

HRI 224 | 3 CREDITS
Recipe and Menu Management
Presents a comprehensive framework for creating and evaluating recipes and menus for commercial and noncommercial food service operations. Requires students to use microcomputer software to design recipes, recipe files, and menus. Teaches students menu engineering analysis and methods for optimizing menu contribution margin. Prerequisite: Placement into MTH 121 or higher. Lecture 3 hours per week.

HRI 235 | 3 CREDITS
Marketing of Hospitality Services
Studies principles and practices of marketing the services of the hotel and restaurant industry. Emphasizes the marketing concept with applications leading to customer satisfaction. Reviews methods of external and internal stimulation of sales. May include a practical sales/marketing exercise and computer applications. Lecture 3 hours per week.

HRI 241 | 3 CREDITS
Supervision in the Hospitality Industry
Provides a comprehensive review of considerations for preparing students to become effective supervisors in restaurants and lodging operations. Prerequisite: HRI 154. Lecture 3 hours per week.

HRI 251 | 3 CREDITS
Food and Beverage Cost Control I
Presents methods of pre-cost and pre-control as applied to the menu, purchasing, receiving, storing, issuing, production, sales and service which result in achievement of an operation’s profit potential. Emphasizes both manual and computerized approaches. Prerequisite: Placement into MTH 121 or higher. Lecture 3 hours per week.

HRI 255 | 3 CREDITS
Human Resource Management and Training for Hospitality and Tourism
Prepares the students for interviewing, training and developing employees. Covers management skills (technical, human, and conceptual) and leadership. Covers the establishment and use of effective training and evaluative tools to improve productivity. Emphasizes staff and customer relations. Lecture 3 hours per week.

HRI 256 | 3 CREDITS
Principles and Applications of Catering
Analyzes and compares the principles of on-premise and off-premise catering. Includes student presentations in a series of catered functions where they assume typical managerial/employee positions emphasizing planning, organizing, operating, managing and evaluating. Prerequisites: HRI 106, HRI 158 and MTH 121 or higher. Lecture 3 hours per week.

HRI 257 | 3 CREDITS
Catering Management
Studies special functions in the hospitality industry. Presents lecture and demonstration in banquet layout, menus, services, sales and supervision. Lecture 3 hours per week.

HRI 265 | 3 CREDITS
Hotel Front Office Operations
Analyzes hotel front office positions and the procedures involved in reservation registration, accounting for and checking out guests, and principles and practices of night auditing. Covers the complete guest operation in both traditional and computerized operations. Lecture 3 hours per week.

HRI 270 | 3 CREDITS
Strategic Lodging Management
Presents lodging management principles, focusing on strategic planning as the foundation for operational effectiveness. Synthesizes management practices which can be used by entry-level, mid-level, and executive management. Lecture 3 hours per week.

HRI 275 | 3 CREDITS
Hospitality Law
Studies legal principles governing hospitality operations. Includes applications of common law and statutory decisions, discussion of legal theory, and regulations governing management of hospitality enterprise. Lecture 3 hours per week.

HMS 290 | 1-5 CREDITS
Coordinated Internship in Hospitality Management Lodging Management or Food Services Management
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week.

HRI 297 | 1-5 CREDITS
Cooperative Education in Hotel-Restaurant-Institutional Management Culinary Arts
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week. Prerequisite: HRI 199 and program head permission.

HUMAN SERVICES

HMS 100 | 3 CREDITS
Introduction to Human Services
Introduces human service agencies, roles and careers. Presents an historical perspective of the field as it relates to human services today. Additional topics include values clarification and needs of target populations. Lecture 3 hours per week.

HMS 121 | 3 CREDITS
Basic Counseling Skills I
Develops skills needed to function in a helping relationship. Emphasizes skills in attending, listening and responding. Clarifies personal skill strengths, deficits and goals for skill improvement. Prerequisite: HMS 100 (or ART 183 for students in plan 532.05 - AAS Studio Arts: Specialization - Pre-Art Therapy). Lecture 3 hours per week.

HMS 141 | 3 CREDITS
Group Dynamics I
Examines the stages of group development, group dynamics, the role of the leader in a group, and recognition of the various types of group processes. Discusses models of group dynamics that occur as a result of group membership dynamics. Prerequisite: HMS 100. Lecture 3 hours per week.

HMS 226 | 3 CREDITS
Helping Across Cultures
Provides an historical overview of selected cultural and racial groups. Promotes understanding of group differences and the impact on counseling services. Lecture 3 hours per week.
HUM 227 | 3 CREDITS
The Helper as a Change Agent
Teaches the following skills for implementing alternative models of change and influence: action research, problem-solving, consultation, workshop development, and outreach and advocacy for diverse client populations. Lecture 3 hours per week.

HUM 236 | 3 CREDITS
Gerontology
Examines the process of aging: its implications in relation to health, recreation, education, transportation, meaningful work or activity, and to community resources. Emphasizes experiencing the aging process, facilitating retirement, and application of the helping relationship to work with older adults. Lecture 3 hours per week.

HUM 250 | 3 CREDITS
Principles of Case Management
Provides an overview of current case management theory and practice in the field of mental health. Prerequisite: HMS 100. Lecture 3 hours per week.

HUM 258 | 3 CREDITS
Case Management and Substance Abuse
Focuses on the process for interviewing substance abuse clients. Includes intake, assessment, handling denial, and ending the interview. Teaches skills for writing short-term goals and treatment plans with emphasis on accountability. Examines various reporting devices. Prerequisite: HMS 100. Lecture 3 hours per week.

HUM 290 | 1-5 CREDITS
Coordinated Internship in Human Services
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1.5 hours. May be repeated for credit. Variable hours per week. Prerequisite: HMS 100.

HUM 201 | 3 CREDITS
Survey of Western Culture I
Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Ancient and Classical, Early Christian and Byzantine, Medieval, and Early Renaissance. Lecture 3 hours per week.

HUM 202 | 3 CREDITS
Survey of Western Culture II
Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Renaissance, Baroque, Enlightenment, Romantic, and Modern. Lecture 3 hours per week.

HUM 220 | 3 CREDITS
Introduction to African-American Studies
Presents an interdisciplinary approach to the study of African-American life, history, and culture. Examines specific events, ideologies, and individuals that have shaped the contours of African-American life. Studies the history, sociology, economics, religion, politics, psychology, creative productions, and culture of African-Americans. Lecture 3 hours per week.

HUM 241 | 3 CREDITS
Interdisciplinary Principles of the Humanities I
Integrates unifying principles of the humanities and related fields of study. Emphasizes the expansion of student’s intellectual perspective and development of concepts enabling the integration of knowledge from diverse fields into a unified whole. Lecture 3 hours per week.

HUM 246 | 3 CREDITS
Creative Thinking
Examines and analyzes creative and effective thinking processes with applications in individual and group projects to solve business, scientific, environmental, and other practical problems. Lecture 3 hours per week.

HUM 247 | 3 CREDITS
Chronicles of the Sea
Studies the ocean and man’s relationship with it. Covers the study of selected readings about the sea from a literary, historical and social/ political perspective. May include field trips, reports, and a sea voyage. Lecture 3 hours per week.

HUM 256 | 3 CREDITS
Mythology in Literature and the Arts
Studies cultural expressions of mythology in literature and the arts. Considers several of the following mythologies, with emphasis on parallels and divergencies: Egyptian, Near Eastern, Greek, Roman, Celtic, Norse, Asian, and African. Lecture 3 hours per week.

HUM 260 | 3 CREDITS
Survey of Twentieth-Century Culture
Explores literature, visual arts, philosophy, music, and history of our time from an interdisciplinary perspective. Lecture 3 hours per week.

IND 101-102 | 3 CREDITS EACH
Quality Assurance Technology I-II
Studies principles and techniques of quality engineering for the management, design engineering economics, production, and assurance of quality. Emphasizes fundamentals of total quality assurance for product and process control. May include design review, fundamentals of statistics procurement control, sampling and control chart systems, quality reporting, process capability analysis, tool and gauge control, document control, or troubleshooting quality control. Prerequisite for IND 102: IND 101. Lecture 3 hours per week.

IND 105 | 3 CREDITS
Nondestructive Inspection (NDI) and Testing
Studies nondestructive inspection and testing methods as they relate to industry. May include radiographic (RT), ultrasonic (UT), eddy current (ET), magnetic particle (MT), and liquid penetrant (PT) or other methods of testing. Lecture 3 hours per week.

IND 106 | 3 CREDITS
Industrial Engineering Technology
Introduces basic skills required for a career in industrial engineering technology. Includes basic statistics for engineering technicians, the SI system, graphic analysis, and careers as an industrial engineering technician. Lecture 3 hours per week.

IND 113 | 3 CREDITS
Materials and Processes in Manufacturing I
Studies materials and processes for the manufacture of products. Investigates the nature of various materials. Examines the manufacturing processes of industry and their effects on materials. Lecture 3 hours per week.
IND 115 | 4 CREDITS
Materials and Processes of Industry
Studies materials and processes for the manufacture of products. Investigates the nature of various materials. Examines the manufacturing processes of industry and their effects on materials. Lecture 4 hours per week.

IND 121 | 3 CREDITS
Industrial Supervision I
Introduces the concept of the Supervisor as a Leader. Discusses the role of the Industrial Supervisor in the face of technology advances. Discusses the role of the Industrial Supervisor in leading organizational change and helping employees through transitions. Defines leadership styles and the selection of the appropriate style. Introduces the Industrial Supervisor as a motivator in terms of job satisfaction, morale, job design competition, communication, and promotions. Presents ethical behavior and dilemmas in organizations. Lecture 3 hours per week.

IND 122 | 3 CREDITS
Industrial Supervision II
Introduces the concept of the Supervisor as a Manager. Discusses the primary management functions and the differences between supervision and management. Discusses the planning process and scheduling techniques. Introduces concepts in organizing both formally and informally, accountability, span of control and delegation. Discusses the staffing process including legal considerations, forecasting, job analysis techniques, recruiting, interviewing and selection. Introduces the control process including what the Industrial Supervisor should control, control strategies, and how to control costs. Defines the decision-making process and how to use employees, information and creativity in decision making. Prerequisite: IND 121. Lecture 3 hours per week.

IND 135 | 3 CREDITS
Standards of Quality and Auditing
Presents general requirements of industrial, military and international quality standards. Reviews quality audit principles relative to products, processes and systems. Includes the design of an approach to the audit and audit standards, procedures, methods, facilities control, personnel, and reporting methods. Includes case studies and in-plant audits. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IND 137 | 3 CREDITS
Team Concepts and Problem Solving
Studies team concepts and problem solving techniques to assist project teams in improving quality and productivity. Provides knowledge of how to work as a team, plan and conduct good meetings, manage logistics and details, gather useful data, communicate the results and implement changes. Lecture 3 hours per week.

IND 142 | 3 CREDITS
Biometrics and Technology
Teaches the fundamentals of leading biometric technologies including an explanation of how various biometric technologies work, how they are most effectively deployed, and current association of biometrics within current technologies. Lecture 3 hours per week.

IND 145 | 3 CREDITS
Introduction to Metrology
Studies principles of measurement and calibration control, application of statistics to measurement processes, and standards of measurements in calibration. May include the use of gauges and instruments in modern production and dimensional control concepts. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IND 146 | 3 CREDITS
Statistical Quality Control
Studies essentials and application of statistics in quality control function. May include definitions and uses of averages, standard deviations, ranges, and sampling plans. May discuss dependent and independent variables and distribution probabilities. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IND 150 | 3 CREDITS
Industrial Management
Studies planning, organizing, directing, and influencing industrial activities. May include research, product design, methods and time management, quality assurance and current manufacturing methodologies. Lecture 3 hours per week.

IND 160 | 3 CREDITS
Introduction to Robotics
Studies evolution and history of robotics with an emphasis on automated and flexible manufacturing. Presents advantages and limitations of present robot systems. Lecture 3 hours per week.

IND 165 | 4 CREDITS
Principles of Industrial Technology I
Introduces principle concepts of technology involving mechanical, fluid, electrical, and thermal power as they relate to force, work, and rate. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

IND 166 | 4 CREDITS
Principles of Industrial Technology II
Introduces principle concepts of technology involving mechanical, fluid, electrical, and thermal power as they relate to resistance, energy, power, and force transformers. Places an emphasis on mechanical and advantage systems. Prerequisite: IND 165. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

IND 216 | 3 CREDITS
Plant Layout and Materials Handling
Examines arrangement and layout of physical facilities. Explains material handling and modern techniques for efficient utilization of space. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IND 236 | 3 CREDITS
Total Quality Concepts
Discusses the fundamentals of Total Quality. Compares and contrasts the philosophies of the recognized experts on the subject. Discusses cultural change, continuous process improvement, and strategic planning. Introduces team skills and concepts. Emphasizes the systems approach to Total Quality philosophy. Lecture 3 hours per week.

IND 237 | 3 CREDITS
Fundamentals of ISO 9000
Presents the basics of ISO 9000 standards. Focuses on the latest improvements of the standards and the redesigned quality concepts set forth by the International Organization for Standardization (ISO). Includes a historical overview of the evolution of quality systems and explains the purpose of ISO quality systems certification. Discusses implementation approaches. Lecture 3 hours per week.

IND 245 | 3 CREDITS
Time and Motion Study
Studies principles and applications of motion analysis, process, operations, and micro-motion study; methods improvement, work simplification, standardization, rating, allowance and analysis of time data. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
INFORMATION TECHNOLOGY DESIGN & DATABASE

ITD 110 | 4 CREDITS
Web Page Design I
Stresses a working knowledge of website designs, construction, and management using HTML or XHTML. Includes headings, lists, links, images, image maps, tables, forms, and frames. Lecture 4 hours per week.

ITD 112 | 4 CREDITS
Designing Web Page Graphics
Explores the creation of digital graphics for web design. Explores basic design elements such as color and layout utilizing a computer graphics program(s). Lecture 4 hours per week.

ITD 132 | 4 CREDITS
Structured Query Language
Covers an introduction to relational database theory and how to administer and query databases using multiple commercial database systems. Prerequisite: ITD 132. Lecture 4 hours per week.

ITD 134 | 4 CREDITS
PL/SQL Programming
Presents a working introduction to PL/SQL programming within the Oracle RDBMS environment. Includes PL/SQL fundamentals of block program structure, variables, cursors and exceptions, and creation of program units of procedures, functions, triggers and packages. Prerequisite: ITD 132. Lecture 4 hours per week.

ITD 136 | 4 CREDITS
Database Management Software
Covers an introduction to relational database theory and how to administer and query databases using multiple commercial database systems. Prerequisite: ITD 136. Lecture 4 hours per week.

ITD 152 | 4 CREDITS
Oracle Forms Developer
Provides a working introduction to building and testing interactive Oracle applications. Includes customizing forms with user input items such as check boxes, list items, and radio groups for use in a graphical user interface (GUI) environment. Includes modification of data access by creating event-related triggers. Prerequisite: ITD 134. Lecture 4 hours per week.

ITD 200 | 4 CREDITS
Database Architecture and Administration
Involves in-depth instruction about the underlying architecture of databases and the handling of database administration. Prerequisite: ITD 132. Lecture 4 hours per week.

ITD 251 | 3 CREDITS
Database System Development
Provides the student the opportunity to solve a business problem from identification of the problem through the logical design and implementation on a database. Makes use of the knowledge that was gained in the prerequisite courses. Prerequisites: ITD 250 and ITD 260. Lecture 3 hours per week.

ITD 252 | 3 CREDITS
Database Backup and Recovery
Concentrates instruction in the key tasks required to plan and implement a database backup and recovery strategy. Includes instruction in multiple strategies to recover from multiple types of failure. Prerequisite: ITD 250. Lecture 3 hours per week.

ITD 256 | 4 CREDITS
Advanced Database Management
Focuses in-depth instruction in the handling of critical tasks of planning and implementing large databases. Includes an introduction to concepts of advanced data warehousing and database configuration. Prerequisite: ITD 250. Lecture 4 hours per week.

ITD 258 | 4 CREDITS
Database Performance and Tuning
Emphasizes instruction to optimize the performance of a database management system. Includes methods for tuning data access and storage and discussions of resolving data performance problems. Prerequisite: ITD 250. Lecture 4 hours per week.

ITD 260 | 4 CREDITS
Data Modeling and Design
Introduces life cycle application development methodologies in a systematic approach to developing relational databases and designing applications. Presents content introducing functional and business process modeling, using modeling information to produce application designs, analyzing data requirements as entities, attributes, and relationships and map an entity relationship diagram to an initial database design. Identifies the available automated development tools and utilizes Oracle Developer software to perform practical applications of these concepts. Prerequisite or co-requisite: ITD 132. Lecture 4 hours per week.

INFORMATION TECHNOLOGY ESSENTIALS

ITE 101 | 2 CREDITS
Introduction to Microcomputers
Examines concepts and terminology related to microcomputers and introduces specific uses of microcomputers. Lecture 2 hours per week.

ITE 102 | 2 CREDITS
Computers and Information Systems
Introduces terminology, concepts and methods of using computers in information systems. This course teaches computer literacy, not intended for Information Technology majors. Focuses on the history and current status of health information technology in public health and private healthcare settings. Covers medical terminology that is relevant to electronic health records. Emphasizes use and management of electronic health records and information systems. Blackboard and Vista Electronic Health Records information systems are highlighted. Lecture 2 hours per week.
ITE 109 | 3 CREDITS  
Information Systems for Legal Assistants  
Presents terminology and concepts of computer-based systems, an introductory coverage of operating systems and business application software to conduct legal research for litigation and other application programs traditionally used in the practice of law. Lecture 3 hours per week.

ITE 115 | 4 CREDITS  
Introduction to Computer Applications and Concepts  
Covers computer concepts and internet skills and uses a software suite which includes word processing, spreadsheet, database, and presentation software to demonstrate skills. Lecture 4 hours per week.

ITE 119 | 3 CREDITS  
Information Literacy  
Presents the information literacy core competencies focusing on the use of information technology skills. Skills and knowledge will be developed in database searching, computer applications, information security and privacy, and intellectual property issues. Lecture 3 hours per week.

ITE 130 | 4 CREDITS  
Introduction to Internet Services  
Provides students with a working knowledge of internet terminology and services including email, www browsing, search engines, ftp, file compression, and other services using a variety of software packages. Provides instruction for basic web page construction. Lecture 4 hours per week.

ITE 131 | 1 CREDIT  
Survey of Internet Services  
Introduces students to basic Internet terminology and services including email, www browsing, search engines, ftp, telnet, and other services. Lecture 1 hour per week.

ITE 140 | 4 CREDITS  
Spreadsheet Software  
Covers the use of spreadsheet software to create spreadsheets with formatted cells and cell ranges, control pages, multiple sheets, charts, and macros. Topics include type and edit text in a cell, enter data on multiple worksheets, work with formulas and functions, create charts, pivot tables, and styles, insert headers and footers, and filter data. Lecture 4 hours per week.

ITE 141 | 1 CREDIT  
Microcomputer Software: Spreadsheets  
Provides first-time users sufficient information to make practical use of spreadsheet software using the basics of building spreadsheets. Lecture 1 hour per week.

ITE 150 | 4 CREDITS  
Desktop Database Software  
Incorporates instruction in planning, defining, and using a database; performing queries; producing reports; working with multiple files; and concepts of database programming. Includes database concepts, principles of table design and table relationships, entering data, creating and using forms, using data from different sources, filtering, creating mailing labels. Lecture 4 hours per week.

ITE 151 | 1 CREDIT  
Microcomputer Software: Database Management  
Presents first-time users with sufficient information to make practical use of database management software using the basics of building databases. Covers specific business applications. Lecture 1 hour per week.

ITE 200 | 3 CREDITS  
Technology for Teachers (TSIP)  
Provides K-12 classroom teachers with the knowledge and skills needed to fulfill the Commonwealth of Virginia’s Technology Standards for Instructional Personnel. Students will finish the course with a solid understanding of educational technology, including how to use computers, how to access information on the World Wide Web, and how to integrate computers and educational technology into classroom curriculum. Students will learn how to base technology integration decisions on contemporary learning theories. Lecture 3 hours per week.

ITE 215 | 4 CREDITS  
Advanced Computer Applications and Integration  
Incorporates advanced computer concepts including the integration of a software suite. Prerequisite: ITE 115 or AST 236. Lecture 4 hours per week.

INFORMATION TECHNOLOGY NETWORKING

ITN 101 | 4 CREDITS  
Introduction to Network Concepts  
Provides instruction in networking media, physical and logical topologies, common networking standards and popular networking protocols. Emphasizes the TCP/IP protocol suite and related IP addressing schemes, including CIDR. Includes selected topics in network implementation, support and LAN/WAN connectivity. Lecture 4 hours per week.

ITN 106 | 4 CREDITS  
Microcomputer Operating Systems  
Teaches use of operating system utilities and multiple-level directory structures, creation of batch files, and configuration of microcomputer environments. May include a study of graphical user interfaces. Lecture 4 hours per week.

ITN 107 | 4 CREDITS  
Personal Computer Hardware and Troubleshooting  
Includes specially designed instruction to give the student a basic knowledge of hardware and software configurations. Includes the installation of various peripheral devices as well as basic system hardware components. Lecture 4 hours per week.

ITN 109 | 4 CREDITS  
Internet and Network Foundations  
Provides a basic comprehension of Internet and network technologies including IT job roles, connection methods, TCP/IP functionality and DNS. Explores web server technologies with security and project management concepts. Introduces network creation, physical and logical topologies including media properties, server types, IP addressing schemes, including CIDR. Lecture 4 hours per week.

ITN 110 | 4 CREDITS  
Client Operating System (Windows 10)  
Covers installation, configuration, administration, management, maintenance, and troubleshooting of the desktop client operating system in a networked environment. Lecture 4 hours per week.

ITN 111 | 4 CREDITS  
Server Administration (Windows 2012)  
Covers installation, configuration, administration, management, maintenance, monitoring, and troubleshooting of a server in a networked environment. Lecture 4 hours per week.
ITN 112 | 4 CREDITS
Network Infrastructure (Windows 2012)
Covers planning, installation, configuration, administration, management, maintenance, monitoring, and troubleshooting of network infrastructure components. Prerequisite: ITN 111. Lecture 4 hours per week.

ITN 113 | 4 CREDITS
Active Directory (Windows 2012)
Covers planning, installation, configuration, administration, management, maintenance, monitoring, and troubleshooting of Active Directory (AD) and Domain Name Service (DNS) in a networked environment. Prerequisite: ITN 111. Lecture 4 hours per week.

ITN 154 | 4 CREDITS
Network Fundamentals, Router Basics, and Configuration (ICND1)
-- Cisco
Provides instruction in the fundamentals of networking environments, the basics of router operations, and basic router configuration. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

ITN 155 | 4 CREDITS
Switching, Wireless, and WAN Technologies (ICND2) -- Cisco
Provides the skills and knowledge to install, operate, and troubleshoot a small-to-medium sized branch office enterprise network, including configuring several switches and routers, configuring wireless devices, configuring VLANs, connecting to a WAN, and implementing network security. Prerequisite or co-requisite: ITN 154. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

ITN 170 | 4 CREDITS
Linux System Administration
Focuses instruction on the installation, configuration and administration of the Linux operating system and emphasizes the use of Linux as a network client and workstation. Prerequisite: ITN 171. Lecture 4 hours per week.

ITN 171 | 4 CREDITS
Unix I
Provides an introduction to UNIX operating systems. Teaches login procedures, file creation, UNIX file structure, input/output control, and the UNIX shell. Lecture 4 hours per week.

ITN 213 | 4 CREDITS
Information Storage and Management
Focuses on advanced storage systems, protocols, and architectures, including Storage Area Networks (SAN), Network Attached Storage (NAS), Fibre Channel Networks, Internet Protocol SANs (IPSAN), iSCSI, and Content Addressable Storage (CAS). Prerequisite: ITN 101. Lecture 4 hours per week.

ITN 218 | 4 CREDITS
Server Infrastructure Design and Implementation (Windows 2012)
Provides the skills and knowledge needed to plan, design, and deploy a physical and logical server environment with an Active Directory Domain Services (AD DS) infrastructure. Prerequisite: ITN 111. Lecture 4 hours per week.

ITN 219 | 4 CREDITS
Advanced Server Infrastructure Design and Implementation (Windows 2012)
Covers designing and implementation of advanced features in a server infrastructure. Prerequisite: ITN 111. Lecture 4 hours per week.

ITN 224 | 4 CREDITS
Web Server Management
Focuses on the Web Server as a workhorse of the World Wide Web (www). Teaches how to set up and maintain a Web server and provides in-depth instruction in Web server operations and provides hands-on experience in installation and maintenance of a Web server. Prerequisite: ITN 109. Lecture 4 hours per week.

ITN 231 | 4 CREDITS
Desktop Virtualization
Explores the concepts and capabilities of desktop and application virtualization with a focus on the installation, configuration, and management of the virtual desktop and application infrastructure. Prerequisite: ITN 254. Lecture 4 hours per week.

ITN 246 | 4 CREDITS
IP Routing (ROUTE) -- Cisco
Provides the skills and knowledge to implement, monitor, and maintain routing services in an enterprise network. Prerequisite: ITN 155. Lecture 4 hours per week.

ITN 247 | 4 CREDITS
IP Switched Networks (SWITCH) -- Cisco
Provides the skills and knowledge to implement, monitor, and maintain switching in the Cisco Enterprise Campus Architecture. Prerequisite: ITN 155. Lecture 4 hours per week.

ITN 248 | 4 CREDITS
IP Network Troubleshooting and Maintenance (TSHOOT) -- Cisco
Provides instruction to monitor, maintain, and troubleshoot a complex converged network. Prerequisites: ITN 246 and ITN 247. Lecture 4 hours per week.

ITN 254 | 4 CREDITS
Virtual Infrastructure: Installation and Configuration
Explores concepts and capabilities of virtual architecture with a focus on the installation, configuration, and management of a virtual infrastructure, ESX Server, and Virtual Center. Covers fundamentals of virtual network design and implementation, fundamentals of storage area networks, virtual switching, virtual system management, and engineering for high availability. Prerequisites: ITN 171 and ITN 260. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

ITN 255 | 4 CREDITS
Virtual Infrastructure: Deployment, Security, and Analysis
Focuses on the deployment, security, and analysis of the virtual infrastructure, including scripted installations, advanced virtual switching for security, server monitoring for health and resource management, high-availability management, system backups, and fault analysis. Prerequisite: ITN 254. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

ITN 257 | 4 CREDITS
Cloud Computing: Infrastructure and Services
Focuses on cloud infrastructure, deployment, security models, and the key considerations in migrating to cloud computing. Covers the technologies and processes required to build traditional, virtualized, and cloud data center environments, including computation, storage, networking, desktop and application virtualization, business continuity, security, and management. Prerequisite: ITN 260. Lecture 4 hours per week.
iTN 258 | 4 CREDITS
Cloud Computing: Back-up and Recovery
Focuses on backup and recovery concepts and technologies used in cloud computing and virtualized environments. Covers backup and recovery theory, methods, and planning, including replication, synchronization, snapshots, disaster recovery planning (DRP), and business continuity planning (BCP). Lecture 4 hours per week.

iTN 260 | 4 CREDITS
Network Security Basics
Provides instruction in the basics of network security in depth. Includes security objectives, security architecture, security models and security layers, risk management, network security policy, and security training. Includes the give security keys, confidentiality integrity, availability, accountability, and auditability. Prerequisite: ITN 101. Lecture 4 hours per week.

iTN 261 | 4 CREDITS
Network Attacks, Computer Crime and Hacking
Encompasses in-depth exploration of various methods for attacking and defending a network. Explores network security concepts from the viewpoint of hackers and their attack methodologies. Includes topics about hackers, attacks, Intrusion Detection Systems (IDS), malicious code, computer crime and industrial espionage. Prerequisite: ITN 260. Lecture 4 hours per week.

iTN 262 | 4 CREDITS
Network Communication, Security and Authentication
Covers an in-depth exploration of various communication protocols with a concentration on TCP/IP. Explores communication protocols from the point of view of the hacker in order to highlight protocol weaknesses. Includes Internet architecture, routing, addressing, topology, fragmentation and protocol analysis, and the use of various utilities to explore TCP/IP. Prerequisite: ITN 260. Lecture 4 hours per week.

iTN 263 | 4 CREDITS
Internet/Intranet Firewalls and E-Commerce Security

iTN 266 | 4 CREDITS
Network Security Layers
Provides an in-depth exploration of various security layers needed to protect the network. Explores network security from the viewpoint of the environment in which the network operates and the necessity to secure that environment to lower the security risk to the network. Includes physical security, personnel security, operating system security, software security and database security. Prerequisite: ITN 260. Lecture 4 hours per week.

iTN 267 | 3 CREDITS
Legal Topics in Network Security
Conveys an in-depth exploration of the civil and common law issues that apply to network security. Explores statutes, jurisdictional, and constitutional issues related to computer crimes and privacy. Includes rules of evidence, seizure and evidence handling, court presentation and computer privacy in the digital age. Prerequisite or co-requisite: ITN 260. Lecture 3 hours per week.

iTN 270 | 4 CREDITS
Advanced Linux Network Administration
Focuses instruction on the configuration and administration of the Linux operating system as a network server. Emphasizes the configuration of common network services such as routing, http, DNS, DHCP, ftp, telnet, SMB, NFS, and NIS. Prerequisite: ITN 170. Lecture 4 hours per week.

iTN 275 | 4 CREDITS
Incident Response and Computer Forensics
Prepares the student for a role on an organizational IT support staff where the need for resolving computer incidents is becoming increasingly common. Includes legal and ethical issues of search and seizure of computer and peripheral storage media leading to laboratory exercises examining computers configured with a mix of both simulated criminal and other activities which are not criminal in nature, but do violate scenario-driven organizational policy. Requires the student to make choices/recommendations for further pursuit of forensics evidence gathering and analysis. Students will select and gather the utilities and procedures necessary for a court-acceptable forensics toolkit which will then be used to gather and examine specially configured desktop computers. Students will then participate in a mock court proceeding using the collected evidence. Credit will be given to either ITN 275 or ITN 276 and ITN 277, but not all three courses. Prerequisite: ITN 260. Lecture 4 hours per week.

iTN 293 | 4 CREDITS
Studies in Infrastructure Security (CCNA Security)
This course focuses on security principles and technologies, using security products to provide hands-on examples. Using instructor-led discussions, extensive hands-on lab exercises, and supplemental materials, this course allows learners to understand common security concepts, and deploy basic security techniques utilizing a variety of popular security appliances within a “real-life” network infrastructure. Prerequisite: ITN 155. Lecture 4 hours per week.

Information Technology Programming

ITP 100 | 4 CREDITS
Software Design
Introduces principles and practices of software development. Includes instruction in critical thinking, problem solving skills, and essential programming logic in structured and object-oriented design using contemporary tools. Lecture 4 hours per week.

ITP 112 | 4 CREDITS
Visual Basic.NET I
Concentrates instruction in fundamentals of object-oriented programming using Visual Basic.NET and the .NET Framework. Emphasizes program construction, algorithm development, coding, debugging, and documentation of graphical user interface applications. Prerequisite: ITP 100. Lecture 4 hours per week.

ITP 120 | 4 CREDITS
Java Programming I
Entails instruction in fundamentals of object-oriented programming using Java. Emphasizes program construction, algorithm development, coding, debugging, and documentation of console and graphical user interface applications. Prerequisite: ITP 100. Lecture 4 hours per week.

ITP 132 | 4 CREDITS
C++ Programming I
Centers instruction in fundamentals of object-oriented programming and design using C++. Emphasizes program construction, algorithm development, coding, debugging, and documentation of C++ applications. Prerequisite: ITP 100. Lecture 4 hours per week.
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ITP 136 | 4 CREDITS
C# Programming I
Presents instruction in fundamentals of object-oriented programming and design using C#. Emphasizes program construction, algorithm development, coding, debugging, and documentation of applications within the .NET Framework. Prerequisite: ITP 100. Lecture 4 hours per week.

ITP 140 | 4 CREDITS
Client Side Scripting
Provides instruction in fundamentals of internet application design, development, and deployment using client side scripting language(s). Lecture 4 hours per week.

ITP 160 | 4 CREDITS
Introduction to Game Design and Development
Introduces object-oriented game design and development. Provides overview of the electronic game design and development process and underlines the historical context, content creation strategies, game careers, and future trends in the industry. Utilizes a game language environment to introduce game design, object-oriented paradigms, software design, software development and product testing. Teaches skills of writing a game design document and creating a game with several levels and objects. Integrates 2D animations, 3D models, sound effects, and background music as well as graphic backgrounds. Lecture 4 hours per week.

ITP 165 | 4 CREDITS
Gaming and Simulation
Introduces students to the concepts and applications of gaming and simulation through the use of gaming and simulation tools, as well as through basic programming skills. Lecture 4 hours per week.

ITP 170 | 4 CREDITS
Project Management
Introduces the concepts of project management as defined by the Project Management Institute, the accreditation body for project management. Lecture 4 hours per week.

ITP 193 | 4 CREDITS
Studies in Mobile Device Applications and Programming
Introduces the design and development of software for portable and handheld devices. Provides an overview of user-interface design for mobile devices and event handling. Examines differences between graphical user interfaces for the desktop environment and portable devices. Students will develop and write applications for mobile devices. Lecture 4 hours per week.

ITP 212 | 4 CREDITS
Visual Basic.NET II
Includes instruction in application of advanced event-driven techniques to application development. Emphasizes database connectivity, advanced controls, web forms, and web services using Visual Basic.NET. Prerequisite: ITP 112. Lecture 4 hours per week.

ITP 220 | 4 CREDITS
Java Programming II
Imparts instruction in application of advanced object-oriented techniques to application development using Java. Emphasizes database connectivity, inner classes, collection classes, networking, and threads. Prerequisite: ITP 120. Lecture 4 hours per week.

ITP 226 | 4 CREDITS
Mobile Java Android Development
Provides the necessary design and programming skills required for developing applications on mobile devices (smartphones, tablets, etc.). Utilize the Java-based Android Development Kit to create Android applications, from concept to business model to final product. Prerequisite: ITP 120. Lecture 4 hours per week.

ITP 232 | 4 CREDITS
C++ Programming II
Focuses instruction in advanced object-oriented techniques using C++ for application development. Emphasizes database connectivity and networking using the .NET Framework. Prerequisite: ITP 136. Lecture 4 hours per week.

ITP 240 | 4 CREDITS
Server Side Programming
Centers around instruction in fundamentals of internet application design, development, and deployment. Includes implementation of server component models, security, and database connectivity using server-side programming. Prerequisite: ITD 134, ITP 100, ITP 112, ITP 120, ITP 132 or ITP 136. Lecture 4 hours per week.

ITP 247 | 4 CREDITS
Native Mobile Programming (iOS)
Covers programming skills for creating native applications in iOS for wireless devices. Discusses the unique constraints for programming mobile apps and introduces the student to the key business and technology skills required to work in this field. Prerequisite: ITP 132. Lecture 4 hours per week.

ITP 251 | 3 CREDITS
Systems Analysis and Design
Focuses on application of information technologies (IT) to system life cycle methodology, systems analysis, systems design, and system implementation practices. Covers methodologies related to identification of information requirements, feasibility in the areas of economic, technical and social requirements, and related issues. Software applications may be used to enhance student skills. Prerequisite: ITP 100. Lecture 3 hours per week.

ITP 260 | 4 CREDITS
Concepts of Simulation
Expands the application of discrete event simulation and introduces continuous simulation. Develops object-oriented programming techniques. Presents distributed modeling and simulation network communication protocols. Explores the practical applications of distributed simulation in industry. Lecture 4 hours per week.

ITP 265 | 4 CREDITS
Applications of Modeling and Simulation
Expands understanding of Modeling and Simulation via the implementation of a capstone project. Continues to develop object-oriented programming skills. Expands three-dimensional visualization skills. Examines all aspects of the project lifecycle. Develops workplace readiness for the Modeling and Simulation industry. Lecture 4 hours per week.
**INSTRUMENTATION**

**IDS 120 | 3 CREDITS**

**Instrumentation I**

Presents the fundamental scientific principles of process control including temperature, pressure, level, and flow measurements. Topics include transducers, thermometers, and gauges are introduced along with calibration. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**IDS 116 | 3 CREDITS**

Process Control Integration

Presents computer automation including PLCs, SCADA, and PC-based systems to control processes. Topics such as PLC control and computer data acquisition are introduced where students will use existing systems or build systems and control these systems with PLCs and computer data acquisition systems. Assesses students through test and project evaluations and the course will be assessed by graduate feedback. Prerequisites: INS 230 and ELE 233. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**INTERIOR DESIGN**

**IDS 222 | 3 CREDITS**

**Staging for Interior Designers**

Introduces staging and its importance in preparing a private residence for sale. Focuses on market trends, competitive pricing strategies, and marketing techniques. Includes interior and exterior repairs, upgrades, and re-design techniques relevant to preparing a property for sale. Identifies simple re-design techniques to create buyer interest. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**IDS 130 | 3 CREDITS**

**Introduction to Kitchen and Bath Design Systems**

Introduces quality kitchen and bath design elements and National Kitchen and Bath Association (NKBA) Planning Guidelines. Presents basic components of kitchen and bath design, including assessment of existing conditions and construction systems, measurement, product selection, specification, and communication of the design. Teaches coordination of kitchen and bath design with existing structural, electrical, mechanical, plumbing, and ventilation systems. Lecture 3 hours per week.

**IDS 205 | 3 CREDITS**

**Materials and Sources**

Presents textiles, floor and wall coverings, and window treatments. Emphasizes construction, fiber, finish, and code applications. May use research and field trips to trade sources representing these elements. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**IDS 206 | 3 CREDITS**

**Lighting and Furnishings**

Provides instruction in lighting terminology and calculations and instructions in techniques of recognizing quality of construction in furnishings and related equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**IDS 215 | 3 CREDITS**

**Theory and Research in Commercial Design**

Teaches graphic standards and specifications in interior design. Explains handicap codes and fire codes for large scale spaces. Provides programming and space planning with emphasis on systems furniture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**IDS 217 | 3 CREDITS**

**Advanced Rendering and Presentation**

Gives advanced problems in rendering and visual presentation. Teaches methods of presentation and development of completed interior design projects with rendered perspectives and presentation boards of furnishings, fixtures, finishes, schedules, and related materials. Prerequisites: IDS 105 and IDS 106. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

**IDS 225 | 3 CREDITS**

**Business Procedures**

Provides instruction in preparation of contracts, purchase orders, specifications, and other business forms used in the interior design field. Lecture 3 hours per week.
IDS 235 | 3 CREDITS
Antiques
Involves process of research, authentication, and determining provenance. Covers examples of furnishings, fixtures, textiles, glass, and ceramics. May provide field trips, lectures, examination, and discussion to assist in determining age, condition, and other properties. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IDS 245 | 3 CREDITS
Computer-Aided Drafting for Interior Designers
Instructs in the use of the computer for drafting of floor plans, elevations, perspectives, shadowing, lighting, and color applications using AutoCAD software and the architectural and engineering software. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

IDS 246 | 3 CREDITS
Advanced CADD for Interior Designers
Introduces advanced methods of designing project spaces in a computer-aided design based program. Includes wire frame construction, skins, lighting the space, fly through, entourage, presentation in various oblique formats as well as one and two point perspective views. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 247 | 3 CREDITS
Kitchen and Bath Design Software
Introduces software used primarily for designing kitchens and bathrooms. Includes room design concepts and standard appliance and fixture layouts. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

IDS 250 | 3 CREDITS
Green Design for Interior Designers
Introduces interior design solutions that support the environment and can be utilized in new and existing structures. Includes the principles of green design and steps in producing design solutions using natural and toxin free materials. Covers material sources, interior finishes, furnishings and lighting and their applications. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 255 | 3 CREDITS
Green Design for Commercial Interiors
Presents green design techniques through the application of principles and practices of green design through a commercial design application. Introduces the building certification process and applies this process to interior designs. Applies the LEED rating system to designs to determine the level of LEED certification. Prerequisite: IDS 250. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 285 | 3 CREDITS
Portfolio and Resume Preparation for Interior Designers
Introduces the proper elements of a professional resume for employment in the field. Focuses on the preparation of portfolio content, recorded images, and construction methods. Introduces various methods of digital production of portfolio materials, as well as traditional formats. Includes detailed instruction on proper oral presentation skills, interview preparation and techniques, and professional dress and behaviors. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

IDS 290 | 1-5 CREDITS
Coordinated Internship in Interior Design
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week.

IDS 297 | 1-5 CREDITS
Cooperative Education in Interior Design
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week.

IDS 298 | 3 CREDITS
Seminar and Project in Interior Design
Requires completion of a project or research report related to the student’s occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

INTERPRETER EDUCATION

INT 105-106 | 3 CREDITS EACH
Interpreting Foundations I-II
Develops fundamental skills of interpreting, including cognitive processes and intralingual language development in English and ASL. Reviews Process Models of Interpreting, and uses one to analyze interpretations. Develops feedback skills essential to the team interpreting process. Prerequisite for INT 106: INT 105. Lecture 3 hours per week.

INT 107 | 3 CREDITS
Translation Skills
Further develops fundamental skills needed for the task of interpreting. Targets comprehending source language (either ASL or English), transferring content into memory store (breaking from original form), restructuring into target language, maintaining message equivalence, conveying implicit and inferred information, and applying appropriate discourse structure. Reviews Process Models of Interpreting, and uses it to analyze translations. Further develops feedback skills essential to the team interpreting process. Prerequisite: INT 105. Lecture 3 hours per week.

INT 130 | 3 CREDITS
Interpreting: An Introduction to the Profession
Introduces basic principles and practices of interpreting, focusing on the history of the profession, logistics of interpreting situations, regulatory and legislative issues, resources, and the Code of Ethics. Describes the state quality assurance screening and national certification exam systems, including test procedures. Lecture 3 hours per week.

INT 133 | 3 CREDITS
ASL-to-English Interpretation I
Begins consecutively interpreting monologues from the source language (ASL) to the target language (English). Watch entire ASL monologues, process them, analyze them, then choose appropriate English to match the message. Eventually interpret the monologue into English. Puts interpreting theory into practice in a lab environment. Conducts research in the field of interpretation. Interacts with consumers of ASL-English interpretation. Prerequisite: INT 107. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

INT 134 | 3 CREDITS
English-to-ASL Interpretation I
Begins consecutively interpreting monologues from the source language (English) to the target language (ASL). Listen to entire English monologues, process them, analyze them, then choose appropriate ASL to match the message. Puts interpreting theory into practice in a lab environment. Conducts research into the field of interpretation. Develops team interpreting techniques. Encourages interaction with consumers of ASL-English interpretation. Prerequisite: INT 107. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
INT 235   |   3 CREDITS
Interpreting in the Educational Setting
Examines the role, responsibilities, and communication techniques of the educational setting. Provides information on the nature and needs of the deaf student and methods used in working with students who are deaf and hard of hearing. Describes various communication systems used for a variety of educational environments. Prerequisites: ASL 102 and INT 130. Lecture 3 hours per week.

INT 236   |   3 CREDITS
Interpreting in Special Situations
Studies roles, responsibilities, and qualifications involved in interpreting in specific settings, such as medical, legal, conference, religious, and performing arts. Addresses specific linguistic and ethical concerns for each. Prerequisites: ASL 102 and INT 130. Lecture 3 hours per week.

INT 237   |   3 CREDITS
Interpreting ASL in Safe Settings
Studies roles, responsibilities, and experiences involved in interpreting American Sign Language (ASL) in community and educational settings, including ethical and business practices. Analyzes the specific linguistic needs of the clients, managing the environment, and resolving ethical concerns for interpreters. Prerequisites: INT 133 and INT 134. Lecture 3 hours per week.

INT 250   |   3 CREDITS
Dialogic Interpretation I

INT 290   |   1-5 CREDITS
Coordinated Internship in ASL/English Interpretation
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Instructor permission.

JPN 15-16   |   2 CREDITS EACH
Japanese for Business I-II
Introduces students with little or no prior instruction in the Japanese language to the basic vocabulary and conversation skills needed for various situations in business settings, including cultural mores and customs. Prerequisite for JPN 16: JPN 15 or previous experience with the language. Lecture 2 hours per week.

JAPANESE

JPN 15-16   |   2 CREDITS EACH
Japanese for Business I-II
Introduces students with little or no prior instruction in the Japanese language to the basic vocabulary and conversation skills needed for various situations in business settings, including cultural mores and customs. Prerequisite for JPN 16: JPN 15 or previous experience with the language. Lecture 2 hours per week.

LEGAL ADMINISTRATION (PARALEGAL STUDIES)

LGL 110   |   3 CREDITS
Introduction to Law and the Paralegal
Introduces various areas of law in which a paralegal may be employed. Includes study of the court system (Virginia and federal); a brief overview of criminal law, torts, family law, evidence, the U.C.C., contracts, and ethics; the role of the paralegal; and other areas of interest. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

LGL 115   |   3 CREDITS
Real Estate Law for Legal Assistants
Studies law of real property and gives in-depth survey of the more common types of real estate transactions and conveyances such as deeds, contracts, leases, and deeds of trust. Focuses on drafting these various instruments and studies the system of recording and search of public documents. Prerequisite or co-requisite: LGL 110. Lecture 3 hours per week.

LGL 117   |   3 CREDITS
Family Law
Studies elements of a valid marriage, grounds for divorce and annulment, separation, defenses, custody, support, adoptions, and applicable tax consequences. Includes property settlement agreements, pre- and ante-nuptial agreements, pleadings, and rules of procedure. May include specific federal and Virginia consumer laws. Prerequisite or co-requisite: LGL 110. Lecture 3 hours per week.

LGL 125   |   3 CREDITS
Legal Research
Provides an understanding of various components of a law library, and emphasizes research skills through the use of digests, encyclopedias, reporter systems, codes, citations, ALR, and other research tools. May include research through electronic databases, overview of computer applications, and writing projects. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 126   |   3 CREDITS
Legal Writing
Studies proper preparation of various legal documents, including legal memoranda, letters, and pleadings. Includes practical applications. May include case and appellate briefs. Prerequisite or co-Requisite: ENG 111. Prerequisite: LGL 125. Lecture 3 hours per week.

LGL 130   |   3 CREDITS
Law Office Administration and Management
Introduces management principles and systems applicable to law firms, including record keeping, disbursements, escrow accounts, billing, and purchasing. May include accounting methods and software packages applicable to law firms. Prerequisite or co-requisite: LGL 110. Lecture 3 hours per week.

LGL 200   |   1 CREDIT
Ethics for the Paralegal
Examines general principles of ethical conduct applicable to paralegals. Includes the application of rules of ethics to the practicing paralegal. Prerequisite or co-requisite: LGL 110. Lecture 1 hour per week.
COURSE DESCRIPTIONS

LGL 215 | 3 CREDITS
Torts
Studies fundamental principles of the law of torts and may include preparation and use of pleadings and other documents involved in the trial of a civil action. Emphasizes intentional torts, negligence, personal injury, products liability, and malpractice cases. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 216 | 3 CREDITS
Trial Preparation and Discovery Practice
Examines the trial process, including the preparation of a trial notebook, pretrial motions, and orders. May include preparation of interrogatories, depositions, and other discovery tools used in assembling evidence in preparation for the trial or an administrative hearing. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 218 | 3 CREDITS
Criminal Law
Focuses on major crimes, including their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasizes Virginia law. May include general principles of applicable constitutional law and criminal procedure. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 221 | 3 CREDITS
E-Practice
Prepares students to electronically file (e-file) in federal court, state court, and appropriate administrative agencies. Provides the student with the proper information on electronic discovery (e-discovery), including how data are requested, located, and searched in the course of litigation. Focuses on the proper process required to be in conformance with the appropriate laws. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 225 | 3 CREDITS
Estate Planning and Probate
Introduces various devices used to plan an estate, including wills, trusts, joint ownership and insurance. Considers various plans in light of family situations and estate objectives. Focuses on practices involving administration of an estate, including taxes and preparation of forms. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 226 | 3 CREDITS
Real Estate Abstracting
Reviews aspects of abstracting title to real estate, recordation of land transactions, liens, grantor-grantee indices, warranties, covenants, restrictions, and easements. Prerequisite: LGL 115. Lecture 3 hours per week.

LGL 230 | 3 CREDITS
Legal Transactions
Presents an in-depth study of general contract law, including formation, breach, enforcement, and remedies. May include an overview of UCC sales, commercial paper, and collections. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 235 | 3 CREDITS
Legal Aspects of Business Organizations
Studies fundamental principles of agency law and the formation of business organizations. Includes sole proprietorships, partnerships, corporations, limited liability companies, and other business entities. Reviews preparation of the documents necessary for the organization and operation of businesses. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 236 | 3 CREDITS
Elder Law
Explores the legal issues affecting the elderly population such as Social Security, Supplemental Security Income (SSI), Medicare, Medicaid, long-term care insurance, retirement housing and long-term care options, age discrimination, elder abuse and neglect, and estate and planning issues related to incapacity-guardianship, advanced medical directives, power of attorney, and end-of-life decisions. Prerequisite: LGL 110. Lecture 3 hours per week.

LGL 238 | 3 CREDITS
Bankruptcy
Provides a practical understanding of non-bankruptcy alternatives and the laws of bankruptcy including Chapters 7, 11, 12 and 13 of the Bankruptcy Code. Emphasis will be placed on preparing petitions, schedules, statements and other forms. Prerequisite or co-requisite: LGL 110. Lecture 3 hours per week.

LGL 297 | 1-5 CREDITS
Cooperative Education in Paralegal
Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week. Prerequisite: Instructor permission.

MAC 121 | 3 CREDITS
Numerical Control I
Focuses on numerical control techniques in metal forming and machine processes. Includes theory and practice in lathe and milling machine computer numerical control program writing, setup and operation. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MAC 122 | 3 CREDITS
Numerical Control II
Focuses on numerical control techniques in metal forming and machine processes. Includes theory and practice in lathe and milling machine computer numerical control program writing, setup and operation. Part II of II. Prerequisite: MAC 121. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MAC 126 | 3 CREDITS
Introductory CNC Programming
Introduces programming of computerized numerical control machines with hands-on programming and operation of CNC machines. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MAC 150 | 3 CREDITS
Introduction to Computer Aided Manufacturing
Introduces computer aided manufacturing (CAM) with emphasis on programming of numerical control machinery. Teaches program writing procedures using proper language and logic and a CAM programming system to produce numerical control code for machines. Teaches basic computer usage, 2.1/2D and 3D CAD-CAM integration, and code-to-machine transfer. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC 161</td>
<td>3</td>
<td>Machine Shop Practices I</td>
<td>Introduces safety procedures, bench work, hand tools, precision measuring instruments, drill presses, cut-off saws, engine lathes, manual surface grinders, and milling machines. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>MAC 162</td>
<td>3</td>
<td>Machine Shop Practices II</td>
<td>Introduces safety procedures, bench work, hand tools, precision measuring instruments, drill presses, cutoff saws, engine lathes, manual surface grinders, and milling machines. Part II of II. Prerequisite: MAC 161. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>MAC 163-164</td>
<td>3 Credits Each</td>
<td>Machine Shop Practices III-IV</td>
<td>Offers practice in the operation of the drill press, engine lathe, vertical milling machine, horizontal milling machine, and the surface grinder. Introduces practical heat treatment of directly hardenable steels commonly used in machine shops. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>MAC 209</td>
<td>3</td>
<td>Standards, Measurements and Calculations</td>
<td>Presents typical mathematical and mechanical problems requiring the use of reference standards such as the Machinery’s Handbook for solution. Presents use of the Coordinate Measuring Machine for solution. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>MAC 297</td>
<td>1-5</td>
<td>Cooperative Education</td>
<td>Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week. Prerequisite: Instructor permission.</td>
</tr>
<tr>
<td>MAR 120</td>
<td>3</td>
<td>Introduction to Ship Systems</td>
<td>Introduces basic aspects of shipboard work, including: shipboard jobs, shipboard safety, ship classes, knot tying, ships nomenclature, compartmentation, basic applied math skills, basic hand tools, and working in confined spaces. Provides introductory information regarding career options in the shipbuilding/repair industry with information on career pathways and registered apprenticeship opportunities in the region. Lecture 3 hours per week.</td>
</tr>
<tr>
<td>MAR 130</td>
<td>3</td>
<td>Marine Maintenance Mechanics</td>
<td>Introduces the various subjects comprising the study of mechanics to meet the unique requirements of marine practice. Includes basic nomenclature, construction and function of hulls, motive power principles, propellers, steering systems, controls, electrical equipment, instruments, and accessories. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>MAR 137</td>
<td>4</td>
<td>Basic Marine Electrical Circuits</td>
<td>Focuses on basic electrical circuits common to small boat operations. Includes fundamentals of generators, alternators and their regulators, storage batteries, lighting systems instruments, protective devices, and all other primary power circuits, and the proper methods of installation, testing, troubleshooting, and repair. Prerequisite or co-requisite: MAR 130. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
</tr>
<tr>
<td>MAR 140</td>
<td>4</td>
<td>Introduction to Hydraulics and Hydraulic Systems</td>
<td>Focuses on the fundamentals of basic symbols and diagrams of fluid power circuits. Includes control circuits from single motion to multiple interlocks, selection and use of common hydraulic components, operation and maintenance of shipboard pumps to include fuel transfer, raw water, fresh water, deck power, bilge and ballast, and sanitary electrical control of hydraulic circuits by switches, relays and solenoids. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
</tr>
<tr>
<td>MAR 157</td>
<td>4</td>
<td>Small Outboard Engine Service</td>
<td>Focuses on the construction, theory of operation, maintenance and repair of small outboard motors. Includes modern diagnostic and test procedures, trouble shooting and repair followed by actual test tank operation. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.</td>
</tr>
<tr>
<td>MAR 158</td>
<td>4</td>
<td>Inboard Engine Service</td>
<td>Focuses on maintenance, repair and overhaul of modern gasoline inboard engines, drive components and stern drives. Stresses water diagnosis and test procedures. Prerequisite: MAR 157. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.</td>
</tr>
<tr>
<td>MAR 159</td>
<td>4</td>
<td>Large Outboard Engine Service</td>
<td>Focuses on the construction, theory of operation, maintenance and repair of larger outboard motors. Includes conventional D.C. battery charging systems and alternator theory, operation and maintenance, conventional and capacitive discharge ignition system, hydraulic system, modern diagnostic and test procedures, troubleshooting and repair followed by actual test tank operation. Prerequisite: MAR 157. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.</td>
</tr>
<tr>
<td>MAR 160</td>
<td>3</td>
<td>Marine Electrical for Maritime Vessels</td>
<td>Focuses on basic electrical circuits common to maritime vessel electrical systems. Includes fundamentals of AC power plants, electrical and lighting circuits, protective devices, and all other primary power circuits, and the proper methods of installation, testing, troubleshooting, and repair. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.</td>
</tr>
<tr>
<td>MAR 165</td>
<td>4</td>
<td>Stern Drive Transmission Service</td>
<td>Teaches the fundamentals of stern drive marine propulsion units versus conventional shaft and propeller configurations. Stresses differences in shafting, bearings, lubrication, and steering. Includes proper methods of operation and maintenance; also minor and major repair operations to include complete disassembly, inspection and troubleshooting and repair. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.</td>
</tr>
<tr>
<td>MAR 210</td>
<td>4</td>
<td>Marine Electronics for Maritime Vessels</td>
<td>Focuses on theory of operation, service and repair of marine electronic systems. Includes control systems, navigation, radar, GPS, HF, VHF, satellite communications, lightning and corrosion protection systems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.</td>
</tr>
<tr>
<td>MAR 297</td>
<td>1-5</td>
<td>Cooperative Education in Maritime Technologies</td>
<td>Provides on-the-job training for pay in approved business, industrial and service firms. Applies to all career-technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. Variable hours per week.</td>
</tr>
</tbody>
</table>
MARKETING

MKT 100 | 3 CREDITS
Principles of Marketing
Presents principles, methods, and problems involved in marketing to consumers and organizational buyers. Discusses problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of marketing research, legal, social, ethical, e-commerce, and international considerations in marketing. Lecture 3 hours per week.

MKT 110 | 3 CREDITS
Principles of Selling
Presents a fundamental, skills-based approach to selling and relationship building. Emphasizes learning effective interpersonal communication skills in all areas of the sales process through skill-building activities. Examines entry-level sales careers in retailing, wholesaling, services and industrial selling. Lecture 3 hours per week.

MKT 160 | 3 CREDITS
Marketing for Small Business
Presents the development of the marketing mix for a small business. Includes areas such as product development, pricing, promotion, salesmanship, customer relations, and consumer behavior. Lecture 3 hours per week.

MKT 170 | 1-2 CREDITS
Customer Service
Introduces students to the concepts of marketing as they relate to customer service. Teaches development of customer service training and implementation of strategies to improve customer relations and service. Includes lecture, role-playing, and case studies. Lecture 1-2 hours per week.

MKT 215 | 3 CREDITS
Sales and Marketing Management
Emphasizes the relationship of professional sales skills and marketing management techniques. Demonstrates the use of the Internet to enhance marketing. Studies legal and ethical considerations. Lecture 3 hours per week.

MKT 216 | 3 CREDITS
Retail Organization and Management
Examines the organization of the retail establishment to accomplish its goals in an effective and efficient manner. Includes study of site location, internal layout, store operations, and security. Examines the retailing mix, the buying or procurement process, pricing, and selling. Studies retail advertising, promotion, and publicity as a coordinated effort to increase store traffic. Lecture 3 hours per week.

MKT 220 | 3 CREDITS
Principles of Advertising
Emphasizes the role of advertising in the marketing of goods, services, and ideas. Discusses the different uses of advertising; types of media; how advertising is created; agency functions; and legal, social, and economic aspects of the industry. Introduces advertising display, copy and art work preparation, printing and selection of media. Lecture 3 hours per week.

MKT 260 | 3 CREDITS
Customer Service Management
Examines the role of customer service in achieving a firm's long-term goals; discusses the basic principles of effective customer service; explores the tasks and responsibilities of a customer service manager. Includes such topics as purpose of customer service; establishment of customer service goals and policies; recruitment, selection and training of customer service employees; motivation techniques; empowering employees for better decision making; and evaluation of customer service employees and programs. Lecture 3 hours per week.

MKT 270 | 3 CREDITS
Consumer Behavior
Examines the various influences affecting consumer buying behavior before, during, and after product purchases. Describes personal, societal, cultural, environmental, group, and economic determinants on consumer buying. Lecture 3 hours per week.

MKT 276 | 3 CREDITS
International Marketing Management
Presents the process of marketing and management and applies it to the marketing of products within the global marketplace. Introduces the student to activities involving the gathering and analyzing of information in the development and implementation of an international marketing plan. Lecture 3 hours per week.

MKT 282 | 3 CREDITS
Principles of E-Commerce
Studies on-line business strategies, and the hardware and software tools necessary for Internet commerce. Includes the identification of appropriate target segments, the development of product opportunities, pricing structures, distribution channels and execution of marketing strategies. Lecture 3 hours per week.

MKT 284 | 3 CREDITS
Social Media Marketing
Surveys the use of social networks and online communities such as blogs, wikis and virtual events that allow companies to expand their interaction with customers and develop relationships with collaborative communities. Emphasizes the ongoing transformation of the way companies adjust their marketing plans to improve interaction with customers online. Lecture 3 hours per week.

MATH ESSENTIALS

MTE 1 | 1 CREDIT
Operations with Positive Fractions
Includes operations and problem solving with proper fractions, improper fractions, and mixed numbers without the use of a calculator. Emphasizes applications and includes U.S. customary units of measure. Credit is not applicable toward graduation. Prerequisite: Qualifying Placement Test score. Lecture 1 hour per week.

MTE 2 | 1 CREDIT
Operations with Positive Decimals and Percents
Includes operations and problem solving with positive decimals and percents. Emphasizes applications and includes U.S. customary and metric units of measure. Credit is not applicable toward graduation. Prerequisite: MTE 1 or qualifying Placement Test score. Lecture 1 hour per week.

MTE 3 | 1 CREDIT
Algebra Basics
Includes basic operations with algebraic expressions and solving simple algebraic equations using signed numbers with emphasis on applications. Credit is not applicable toward graduation. Prerequisite: MTE 2 or qualifying Placement Test score. Lecture 1 hour per week.

MTE 4 | 1 CREDIT
First Degree Equations and Inequalities in One Variable
Includes solving first degree equations and inequalities containing one variable, and using them to solve application problems. Emphasizes applications and problem solving. Credit is not applicable toward graduation. Prerequisite: MTH 1, MTE 1-3 or qualifying Placement Test score. Lecture 1 hour per week.
MTE 5  |  1 CREDIT
Linear Equations, Inequalities and Systems of Linear Equations in Two Variables
Includes finding the equation of a line, graphing linear equations and inequalities in two variables and solving systems of two linear equations. Emphasizes writing and graphing equations using the slope of the line and points on the line, and applications. Credit is not applicable toward graduation. Prerequisite: MTH 1 or MTE 1-3 and MTE 4, or qualifying Placement Test score. Lecture 1 hour per week.

MTE 6  |  1 CREDIT
Exponents, Factoring and Polynomial Equations
Includes techniques of factoring polynomials and using these techniques to solve polynomial equations. Emphasizes applications using polynomial equations solved by factoring. Credit is not applicable toward graduation. Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5; or qualifying Placement Test score. Lecture 1 hour per week.

MTE 7  |  1 CREDIT
Rational Expressions and Equations
Includes simplifying rational algebraic expressions, solving rational algebraic equations and solving applications that use rational algebraic equations. Credit is not applicable toward graduation. Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6; or qualifying Placement Test score. Lecture 1 hour per week.

MTE 8  |  1 CREDIT
Rational Exponents and Radicals
Includes simplifying radical expressions, using rational exponents, solving radical equations and solving applications using radical equations. Credit is not applicable toward graduation. Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6-7; or qualifying Placement Test score. Lecture 1 hour per week.

MTE 9  |  1 CREDIT
Functions, Quadratic Equations and Parabolas
Includes an introduction to functions in ordered pair, graph, and equation form. Also introduces quadratic functions, their properties and their graphs. Credit is not applicable toward graduation. Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6-8; or qualifying Placement Test score. Lecture 1 hour per week.

MATHEMATICS

MTH 1  |  3 CREDITS
Introduction to Algebra
Includes operations and problem solving with proper fractions, improper fractions, and mixed numbers. Covers applications and problem solving with decimals and percents. Emphasizes applications and includes U.S. customary and metric units of measure. Includes basic operations with algebraic expressions and solutions of simple algebraic equations. Prerequisite: Qualifying Placement Test score. Lecture 3 hours per week.

MTH 95  |  2 CREDITS
Linear Equations and Inequalities in One and Two Variables
Includes solving first degree equations and inequalities in one variable and using them to solve application problems. Also includes graphing linear equations and inequalities in two variables, solving systems of two linear equations, and finding the equation of a line with emphasis on using the slope and points on the line. Emphasizes applications and problem solving. Credit is not applicable toward graduation. Prerequisite: MTH 1, MTE 1-3 or qualifying Placement Test score. Lecture 2 hours per week.

MTH 103  |  3 CREDITS
Applied Technical Mathematics I
Presents a review of arithmetic, elements of algebra, geometry, and trigonometry. Directs applications to specialty areas. Prerequisite: MTH 1, MTE 1-3 or equivalent. Lecture 3 hours per week.

MTH 115  |  3 CREDITS
Technical Mathematics I
Presents algebra through exponential and logarithmic functions, trigonometry, vectors, analytic geometry, and complex numbers. Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6-9; or equivalent. Lecture 3 hours per week.

MTH 121  |  3 CREDITS
Fundamentals of Mathematics I
Covers concepts of numbers, fundamental operations with numbers, formulas and equations, graphical analysis, binary numbers, Boolean and matrix algebra, linear programming, and elementary concepts of statistics. Prerequisite: MTH 1, MTE 1-3 or equivalent. (Intended for occupational/technical programs.) Lecture 3 hours per week.

MTH 126  |  3 CREDITS
Mathematics for Allied Health
Presents scientific notation, precision and accuracy, decimals and percents, ratio and proportion, variation, simple equations, techniques of graphing, use of charts and tables, logarithms, and the metric system. Prerequisite: MTH 1 or MTE 1-3, and MTH 95 or MTE 4-5; or equivalent. Lecture 3 hours per week.

MTH 152  |  3 CREDITS
Mathematics for the Liberal Arts II
Presents topics in functions, combinatorics, probability, statistics and algebraic systems. Prerequisite: MTH 1 or MTE 1-3, and MTH 95 or MTE 4-5; or equivalent. Lecture 3 hours per week.

MTH 157  |  3 CREDITS
Elementary Statistics
Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression, and categorical data analysis. (Credit will not be awarded for both MTH 157 and MTH 240 or MTH 241.) Prerequisite: MTH 1 or MTE 1-3, and MTH 95 or MTE 4-5; or equivalent. Lecture 3 hours per week.

MTH 158  |  3 CREDITS
College Algebra
Covers the structure of complex number systems, polynomials, rational expressions, graphing, systems of equations and inequalities and functions, quadratic and rational equations and inequalities. Prerequisite: MTH 1 or MTE 1-3, and MTH 95 or MTE 4-5; or equivalent. Lecture 3 hours per week.

MTH 163  |  3 CREDITS
Precalculus I
Presents college algebra, matrices, and algebraic, exponential, and logarithmic functions. (Credit will not be awarded for both MTH 163 and MTH 166.) Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6-9; or equivalent. Lecture 3 hours per week.

MTH 164  |  3 CREDITS
Precalculus II
Presents trigonometry, analytic geometry, and sequences and series. (Credit will not be awarded for both MTH 164 and MTH 166.) Prerequisite: MTH 163 or equivalent. Lecture 3 hours per week.
MTH 285  |  5 CREDITS  
**Linear Algebra**  
Covers matrices, vector spaces, determinants, solutions of systems of linear equations, basis and dimension, eigen values, and eigen vectors. Designed for mathematical, physical and engineering science programs. Prerequisite: MTH 174 or equivalent. Lecture 3 hours per week.

MTH 279  |  4 CREDITS  
**Ordinary Differential Equations**  
Introduces ordinary differential equations. Includes first order differential equations, second and higher order ordinary differential equations with application. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 174 or equivalent. Lecture 4 hours per week.

MTH 277  |  4 CREDITS  
**Vector Calculus**  
Presents vector valued functions, partial derivatives, multiple integrals, and topics from the calculus of vectors. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 174 or equivalent. Lecture 4 hours per week.

MTH 270  |  3 CREDITS  
**Applied Calculus**  
Introduces limits, continuity, differentiation and integration of algebraic and transcendental functions, techniques of integration, and partial differentiation. (Credit will not be awarded for both MTH 270 and MTH 271.) Prerequisite: MTH 163, MTH 166 or equivalent. Lecture 3 hours per week.

MTH 243  |  3 CREDITS  
**Probability and Statistics I**  
Uses calculus to develop the theory of probability and statistics including discrete and continuous distribution theory, Poisson processes, moment generating functions, central limit theorem, hypothesis testing and estimation. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 174 or equivalent. Lecture 4 hours per week.

MTH 174  |  4 CREDITS  
**Calculus with Analytic Geometry II**  
Continues the study of analytic geometry and the calculus of algebraic and transcendental functions including the study of limits, derivatives, differentials, and introduction to integration along with their applications. Designed for mathematical, physical, and engineering science programs. (Credit will not be awarded for more than one of MTH 173, MTH 175 or MTH 273.) Prerequisite: Qualifying Placement Test score, MTH 164 or MTH 166. Lecture 5 hours per week.

MTH 173  |  5 CREDITS  
**Calculus with Analytic Geometry I**  
Presents analytic geometry and the calculus of algebraic and transcendental functions including the study of limits, derivatives, differentials, and introduction to integration along with their applications. Designed for mathematical, physical, and engineering science programs. (Credit will not be awarded for both MTH 163-164 and MTH 166.) Prerequisite: MTH 1 or MTE 1-3, MTH 95 or MTE 4-5, and MTE 6-9; or equivalent. Lecture 5 hours per week.

MEC 111  |  3 CREDITS  
**Materials for Industry**  
Studies the nature, structure, properties, and typical applications of metallic, polymeric, ceramic, and composite materials. Focuses on applications of materials as well as the behavior of materials subjected to external stresses. Addresses as required the earth's limited material resources, energy efficient materials, dependence on foreign sources of materials, material systems, thermal processing, and electronic-related materials. Lecture 3 hours per week.

MEC 120  |  3 CREDITS  
**Principles of Machine Technology**  
Studies fundamental machine operations and practices, including layout, measuring devices, hand tools, drilling, reaming, turning between centers, cutting tapers and threads, and milling; fabrication of mechanical parts on drill press, lathe and mill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 131  |  3 CREDITS  
**Mechanics I - Statics for Engineering Technology**  
Teaches Newton's laws, resultants and equilibrium of force systems, trusses and frames, determination of centroids, and distributed loads and moments of inertia. Introduces dry friction and force systems in space. Prerequisite: MTH 164 or MTH 166. Lecture 3 hours per week.

MEC 132  |  3 CREDITS  
**Mechanics II - Strength of Materials for Engineering Technology**  
Teaches the concepts of stress and strain. Provides an analysis of stresses and deformations in loaded members, connectors, shafts, beams, columns, and combined stress. Prerequisite: MEC 131. Lecture 3 hours per week.

MEC 135  |  1 CREDIT  
**Mechanics Laboratory**  
Analyzes tension, compression, torsion, bending, fatigue, impact strength, and hardness of materials. Addresses static and dynamic stresses and strains. Provides for statistical evaluation of data. Includes experiments and/or demonstrations. Prerequisites: MEC 131 and MTH 164. Co-Requisite: MEC 132. Laboratory 2 hours per week.

MEC 140  |  3 CREDITS  
**Introduction to Mechatronics**  
Presents foundational concepts in mechatronics including analog and digital electronics, sensors, actuators, microprocessors, and microprocessor interfacing to electromechanical systems. Surveys components and measurement equipment used in the design, installation, and repair of mechatronic equipment and circuits. Prerequisite: Divisional approval. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 148  |  3 CREDITS  
**Industrial Pipefitting**  
Covers the fundamentals of industrial piping installation, components, and layout. Considers the types of pipe and fabrication of piping systems, as well as the methods used to connect them. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 154  |  3 CREDITS  
**Mechanical Maintenance I**  
Provides an overview of basic maintenance techniques and processes for industrial mechanics and technicians who are installing and maintaining industrial mechanical and power transmission components. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
» MEC 155  |  3 CREDITS
Mechanisms
Studies the purpose and actions of cams, gear trains, levers, and other mechanical devices used to transmit control. Focuses on motions, linkages, velocities, and acceleration of points within a link mechanism; layout method for designing cams and gear trains. Requires preparation of weekly laboratory reports. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

» MEC 205  |  3 CREDITS
Piping and Auxiliary Systems
Studies threaded pipe, welded pipe, isometric pipe sketching and layout, gaskets, packing, industrial hoses and tubing, basic steam system operations, automatic and manual valves, and positive displacement pumps. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

» MEC 268  |  3 CREDITS
Fluid Power - Hydraulic Systems
Studies hydraulic components and their integration into complex systems including system analysis and troubleshooting. Introduces design considerations necessary for repair and modification. Covers closed-loop control and proportional valves with electronic control. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

» MEC 269  |  3 CREDITS
Fluid Power - Pneumatic Systems
Teaches pneumatic components, systems and trouble analysis. Introduces basic design for modification and repair. Covers open-loop control, fluidics, robotics and computer controls. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

» MEDICAL LABORATORY

» MDL 101  |  3 CREDITS
Introduction to Medical Laboratory Techniques
Introduces the basic techniques including design of the health care system, ethics, terminology, calculations, venipuncture and routine urinalysis. Prerequisite: Admission into program. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» MDL 105  |  3 CREDITS
Phlebotomy
Introduces basic medical terminology, anatomy, physiology, components of health care delivery and clinical laboratory structure. Teaches techniques of specimen collection, specimen handling, and patient interactions. Prerequisite: Instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week for 16 weeks; 10 hours per week for 8 weeks.

» MDL 106  |  4 CREDITS
Clinical Phlebotomy
Focuses on obtaining blood specimens, processing specimens, managing assignments, assisting with and/or performing specified tests, performing clerical duties and maintaining professional communication. Provides supervised learning in college laboratory and/or cooperating agencies. Prerequisite: Instructor permission. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week for 16 weeks; 16 hours per week for 8 weeks.

» MDL 125  |  3 CREDITS
Clinical Hematology I
Teaches the cellular elements of blood including blood cell formation, and routine hematological procedures. Prerequisite: Admission into program. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» MDL 190  |  1-5 CREDITS
Coordinated Internship
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program.

» MDL 210  |  2 CREDITS
Immunology and Serology
Teaches principles of basic immunology, physiology of the immune system, diseases involving the immune system, as well as serologic procedures. Prerequisite: Admission into program. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

» MDL 216  |  3 CREDITS
Blood Banking
Teaches fundamentals of blood grouping and typing, compatibility testing, antibody screening, component preparation, donor selection, and transfusion reactions and investigation. Prerequisite: Admission into program. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» MDL 225  |  3 CREDITS
Clinical Hematology II
Teaches advanced study of blood to include coagulation, abnormal bloody formation, and changes seen in various diseases. Prerequisite: Admission into program. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» MDL 251  |  3 CREDITS
Clinical Microbiology I
Teaches handling, isolation, and identification of pathogenic microorganisms. Emphasizes clinical techniques of bacteriology, mycology, parasitology and virology. Part I of II. Prerequisite: Admission into program. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» MDL 252  |  2 CREDITS
Clinical Microbiology II
Teaches handling, isolation, and identification of pathogenic microorganisms. Emphasizes clinical techniques of bacteriology, mycology, parasitology and virology. Part II of II. Prerequisite: Admission into program. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

» MDL 261  |  4 CREDITS
Clinical Chemistry and Instrumentation I
Introduces methods of performing biochemical analysis of clinical specimens. Teaches instrumentation involved in a clinical chemistry laboratory, quality control, and the ability to recognize technical problems. Part I of II. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

» MDL 265  |  2 CREDITS
Advanced Clinical Chemistry
Presents principles of current special chemistry techniques. Prerequisite: Admission into program. Lecture 2 hours per week.

» MDL 266  |  3 CREDITS
Clinical Chemistry Techniques
Includes performing of clinical chemistry methodologies and operation of typical instrumentation in a clinical laboratory or simulated laboratory setting. Prerequisite: Admission into program. Laboratory 9 hours per week.
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»MILITARY SCIENCES

»MDL 276  |  3 CREDITS
Clinical Hematology Techniques
Stresses performing hematological and coagulation methods and operation of typical instrumentation in a clinical laboratory or simulated laboratory setting. Prerequisite: Admission into program. Laboratory 9 hours per week.

»MDL 277  |  4 CREDITS
Clinical Blood Banking Techniques
Provides training in techniques, procedures, and interpretations in Blood Banking in a clinical laboratory or simulated laboratory setting. Prerequisite: Admission into program. Laboratory 12 hours per week.

»MDL 278  |  4 CREDITS
Clinical Microbiology Techniques II
Includes performing of techniques, procedures, and identification of microorganisms in a clinical laboratory or simulated laboratory setting. Prerequisite: Admission into program. Laboratory 12 hours per week.

»MDL 298  |  1 CREDIT
Seminar and Project
Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. Prerequisite: Admission into program. Lecture 1 hour per week.

»MUS 111  |  2 CREDITS
Introduction to Army ROTC
Covers the first year of general military science: organization of the Army and ROTC, U.S. Army and national security, individual weapons, marksmanship, and leadership laboratory. Courses offered only in cooperation with four-year colleges authorized to offer Army ROTC programs. Part I of II. Lecture 2 hours per week.

»MUS 112  |  2 CREDITS
Introduction to Leadership
Covers the first year of general military science: organization of the Army and ROTC, U.S. Army and national security, individual weapons, marksmanship, and leadership laboratory. Courses offered only in cooperation with four-year colleges authorized to offer Army ROTC programs. Part II of II. Lecture 2 hours per week.

»MUS 125  |  3 CREDITS
Sea Power and Maritime Affairs
Provides an in-depth assessment of the broad principles, concepts and elements of sea power with historical and modern applications to the United States and other world powers. Lecture 3 hours per week.

»MUS 130  |  3 CREDITS
Introduction to Naval Science
Provides an introduction for midshipmen to the organization of the naval service, the varied career opportunities available, the long-held customs and traditions of the service, basic leadership, ethics and character development, the duties of a junior officer and Navy policies on wellness issues. Prepares NROTC midshipmen for their first experience onboard a Navy ship by imparting basic information concerning shipboard procedures and safety. Lecture 3 hours per week.

»MUS 132  |  1 CREDIT
Naval Science Laboratory I
Introduces basic military formations, drill movements, commands, customs, courtesies, honors and inspections. Covers applications of naval service concepts and principles in cruise preparation, shipboard safety, security, equal opportunity and military justice. First year Naval Science students only. May be repeated for credit. Co-requisite: MSC 125 and/or MSC 130. Laboratory 2 hours per week.

»MUS 211  |  2 CREDITS
Leadership Skills
Focuses on the second year of general military science: American military history, introduction to operations and basic tactics, map and aerial photo reading, and leadership laboratory. Courses offered only in cooperation with four-year colleges authorized to offer Army ROTC programs. Part I of II. Lecture 2 hours per week.

»MUS 212  |  2 CREDITS
Foundations of the Military Profession
Focuses on the second year of general military science: American military history, introduction to operations and basic tactics, map and aerial photo reading, and leadership laboratory. Courses offered only in cooperation with four-year colleges authorized to offer Army ROTC programs. Part II of II. Lecture 2 hours per week.

»MUS 230  |  3 CREDITS
Naval Ship Systems I: Naval Engineering
Provides an understanding of the physical properties and laws of thermodynamic systems, shipboard auxiliary systems, main propulsion, and electrical theory of shipboard power generation and distribution systems. Examines the criteria of ship design for seaworthiness, structural integrity and operational employment, the principles of fluid dynamics and shipboard safety. Lecture 3 hours per week.

»MUS 231  |  3 CREDITS
Naval Ship Systems II: Weapons
Provides an in-depth understanding of Naval Weapons, their associated systems, and the integration of these weapon systems into the overall naval strategy. Lecture 3 hours per week.

»MUS 232  |  1 CREDIT
Naval Science Laboratory II
Builds on skills and knowledge of basic military formations, drill movements, commands, customs, courtesies, honors and inspections. Covers applications of naval service concepts and principles to ship design for seaworthiness, shipboard safety, systems administration, and naval strategy. Second year Naval Science students only. May be repeated for credit. Co-requisite: MSC 230 and/or MSC 231. Laboratory 2 hours per week.

»MUS 8  |  3 CREDITS
Fundamentals of Music
Teaches the beginner to read, write, and understand the symbols of music notation. Introduces both pitch and rhythmic notation symbols. Combines listening and visual exercises in order to develop performance skills and proficiency in the language of music. Re-registration permitted until course objectives are completed. Lecture 3 hours per week.

»MUS 111-112  |  4 CREDITS EACH
Music Theory I-II
Discusses elements of musical construction of scales, intervals, triads, and chord progressions. Develops ability to sing at sight and write from dictation. Introduces the analysis of the Bach chorale style. Expands facility with harmonic dictation and enables the student to use these techniques at the keyboard. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.
MUS 121-122 | 3 CREDITS EACH

Music Appreciation I-II

Increases the variety and depth of the student's interest, knowledge, and involvement in music and related cultural activities. Acquaints the student with traditional and twentieth century music literature, emphasizing the relationship music has as an art form with man and society. Increases the student's awareness of the composers and performers of all eras through listening and concert experiences.

Lecture 3 hours per week.

MUS 125 | 3 CREDITS

American Music

Presents the development of music in America from early colonists to the present, in light of philosophical, political, geographical, and sociological developments.

Lecture 3 hours per week.

MUS 131-132 | 2 CREDITS EACH

Class Voice I-II

Introduces the many aspects of singing from the physical act through the aesthetic experience. The course is designed for the beginning singer who desires vocal improvement, and for the voice major as an addition to and extension of skills and knowledge necessary for artistic development. Introduces appropriate repertoire. Prerequisite for MUS 132: MUS 131. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 135 | 1 CREDIT

Jazz Ensemble

Consists of performance from Standard Jazz and American Songbook Repertoires, including study of ensemble techniques, interpretation, and improvisation. Divisional approval required. May be repeated for credit. Laboratory 3 hours per week.

MUS 136 | 2 CREDITS

Applied Music – Voice

Teaches singing, proper breath control, diction, and development of tone. Studies the standard vocal repertoire. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 137 | 1 CREDIT

Chorus Ensemble

Ensemble consists of performance from the standard repertoires, including study of ensemble techniques and interpretation. May be repeated for credit. Laboratory 3 hours per week.

MUS 141-142 | 2 CREDITS EACH

Class Piano I-II

Offers the beginning piano student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of keyboard playing. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 145 | 2 CREDITS

Applied Music – Keyboard

Teaches piano, organ, harpsichord, or synthesizer. Studies the standard repertoire. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 146 | 1 CREDIT

Percussion Ensemble

Consists of performance on a variety of percussion instruments. Studies performance techniques of various percussion instruments and interpretation of percussion parts and scores. Divisional approval required. May be repeated for credit. Laboratory 3 hours per week.

MUS 148 | 1 CREDIT

Orchestra Ensemble

Ensemble consist of performance from the standard repertoires, including study of ensemble techniques and interpretation. Divisional approval required. May be repeated for credit. Laboratory 3 hours per week.

MUS 155 | 2 CREDITS

Applied Music – Woodwinds

Teaches fundamentals of the woodwind instruments. Studies the standard repertoire. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 163 | 3 CREDITS

Guitar Theory and Practice I

Studies the fundamentals of sound production, music theory, and harmony as they apply to guitar. Builds proficiency in both the techniques of playing the guitar and in the application of music fundamentals to these techniques. Presents different types of guitars and related instruments. Emphasizes music as entertainment and as a communication skill. Part I of II. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MUS 165 | 2 CREDITS

Applied Music - Strings

Teaches fundamentals of string instruments, harp or guitar. Studies the standard repertoire. May be repeatable for credit up to 8 hours with special permission. Laboratory 6 hours per week.

MUS 166 | 2 CREDITS

String Ensemble

Performs standard string ensemble repertoire. Studies ensemble techniques and interpretation. May be repeated for credit. Laboratory 6 hours per week.

MUS 175 | 2 CREDITS

Applied Music – Brass

Teaches fundamentals of brass instruments. Studies the standard repertoire. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 185 | 2 CREDITS

Applied Music – Percussion

Teaches fundamentals of percussion instruments. Studies the standard repertoire. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 211-212 | 4 CREDITS EACH

Advanced Music Theory I-II

Increases facility in the analysis and usage of diatonic and chromatic harmonies. Continues harmonic analysis of Bach style. Includes exercises in sight-singing, ear-training, and keyboard harmony. Prerequisites for MUS 211: MUS 111 and MUS 112 or equivalent. Prerequisite for MUS 212: MUS 211. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

MUS 221-222 | 3 CREDITS EACH

History of Music I-II

Presents the chronology of musical styles from antiquity to the present time. Relates the historical development of music to parallel movements in art, drama, and literature. Develops techniques for listening analytically and critically to music. Lecture 3 hours per week.
MUS 236  |  2 CREDITS
**Advanced Applied Music – Voice**
Continues MUS 136. May be repeatable for credit up to 8 hours with special permission. Prerequisite: Divisional approval. Two half-hour lessons per week. 4 hours practice required.

MUS 237  |  1 CREDIT
**Advanced Chorus Ensemble**
Ensemble consists of performance from the standard repertoires, including study of ensemble techniques and interpretation. May be repeated for credit. Continues MUS 137. Laboratory 3 hours per week.

MUS 239  |  1 CREDIT
**Advanced Jazz Ensemble**
Consists of performance from Standard Jazz and American Songbook Repertoires, including study of ensemble techniques, interpretation, and improvisation. May be repeated for credit. Prerequisite: Divisional approval and completion of Jazz Ensemble. Laboratory 3 hours per week.

MUS 245  |  2 CREDITS
**Advanced Applied Music – Keyboard**
Continues MUS 145. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 248  |  1 CREDIT
**Orchestra**
Ensemble consists of performance from the standard repertoires, including study of ensemble techniques and interpretation. Divisional approval required. May be repeated for credit. Continues MUS 148. Laboratory 3 hours per week.

MUS 255  |  1-2 CREDITS
**Advanced Applied Music – Woodwinds**
Continues Applied Music - Woodwinds MUS 155. Private lessons are available for either 1 or 2 hours of credit per semester. The length of the lessons will be 1/2 hour for 1 hour credit and 1 hour for 2 hours credit per semester. All courses in applied music may be repeated for a total of 8 hours for the major and 4 hours for the minor. Laboratory 4-8 hours per week.

MUS 265  |  2 CREDITS
**Advanced Applied Music – Strings**
Continues MUS 165. May be repeatable for credit up to 8 hours with special permission. Two half-hour lessons per week. 4 hours practice required.

MUS 266  |  2 CREDITS
**Advanced String Ensemble**
Performs standard string ensemble repertoire. Studies ensemble techniques and interpretation. May be repeated for credit. Prerequisite: MUS 166 or permission of instructor. Laboratory 6 hours per week.

MUS 275  |  1-2 CREDITS
**Advanced Applied Music – Brass**
Continues Applied Music Brass MUS 175. Private lessons are available for either 1 or 2 hours of credit per semester. The length of the lessons will be 1/2 hour for 1 hour credit and 1 hour for 2 hours credit per semester. All courses in applied music may be repeated for a total of 8 hours for the major and 4 hours for the minor. Prerequisite: Divisional approval. Laboratory 1-2 hours per week.

MUS 285  |  1-2 CREDITS
**Advanced Applied Music – Percussion**
Continues Applied Music - Percussion MUS 185. Private lessons are available for either 1 or 2 hours of credit per semester. The length of the lessons will be 1/2 hour for 1 hour credit and 1 hour for 2 hours credit per semester. All courses in applied music may be repeated for a total of 8 hours for the major and 4 hours for the minor. Prerequisite: Divisional approval. Laboratory 1-2 hours per week.

MUS 298  |  1 CREDIT
**Seminar and Project: Capstone Recital**
Requires completion of a project or research report related to the student’s occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours. Prerequisites or Co-requisites: MUS 236, 245, 255, 265, 275, or 285 (2 credits). Laboratory 1 hour per week.

**NATURAL SCIENCE**

NAS 2  |  2 CREDITS
**Foundations of Life Sciences**
Presents elementary biological and chemical principles for allied health students whose high school preparation is deficient in the biological sciences. Lecture 2 hours per week.

NAS 115  |  3 CREDITS
**Science in the Workplace**
Explores concepts of basic physical sciences as they apply to the workplace. Presents scientific methods, energy, heat, and temperature as related to various materials used in the workplace. Designed for trade workers that work with a variety of materials in many different applications. Assists workers with the physical properties of materials as they relate to various manufacturing methods. Lecture 3 hours per week.

NAS 120  |  3 CREDITS
**Introductory Meteorology**
Studies cloud formation, weather maps, forecasting, and wind systems with emphasis on local weather patterns. Lecture 3 hours per week.

NAS 125  |  4 CREDITS
**Meteorology**
Presents a non-technical survey of fundamentals meteorology. Focuses on the effects of weather and climate on humans and their activities. Serves for endorsement or recertification of earth science teachers. Lecture 3 hours. Recitation and laboratory 2 hours. Total 5 hours per week.

NAS 130  |  4 CREDITS
**Elements of Astronomy**
Covers history of astronomy and its recent developments. Stresses the use of astronomical instruments and measuring techniques and includes the study and observation of the solar system, stars, and galaxies. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NAS 131-132  |  4 CREDITS EACH
**Astronomy I-II**
Studies the major and minor bodies of the solar system, stars and nebulae of the Milky Way, and extragalactic objects. Examines life and death of stars, origin of the universe, history of astronomy, and instruments and techniques of observation. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.
NUR 108  |  6 CREDITS  
Nursing Principles and Concepts I  
Introduces principles of nursing, health and wellness concepts, and the nursing process. Identifies nursing strategies to meet the multidimensional needs of individuals. Includes math computational skills, basic computer instruction related to the delivery of nursing care, introduction to the profession of nursing, nursing process, documentation; basic needs related to integumentary system, teaching/learning, stress, psychosocial, safety, nutrition, elimination, oxygenation, circulation, rest, comfort, sensory, fluid and electrolyte and mobility needs in adult clients. Also includes care of the pre/post operative client. Provides supervised learning experience in college nursing laboratories and/or cooperating agencies. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

NUR 113  |  7 CREDITS  
First Level Nursing I  
Focuses on the assessment and nursing care of individuals across the lifespan experiencing common, well-defined, and predictable alterations along the health continuum. Includes math computational skills, basic computer instruction related to the delivery of nursing care; medication administration; communication techniques; introduction to child health; care of the perioperative client; and methods and techniques used in the assessment of the respiratory, cardiac, gastrointestinal and genitourinary systems. Lecture 3 hours. Laboratory 12 hours. Total 15 hours per week.

NUR 115  |  7 CREDITS  
LPN Transition  
Introduces the role of the registered nurse through concepts and skill development in the discipline of professional nursing. This course serves as a bridge course for licensed practical nurses and is based upon individualized articulation agreements, mobility exams, or other assessment criteria as they relate to local programs and service areas. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Prerequisite: Admission into program. Lecture 4 hours. Laboratory 9 hours. Total 13 hours per week.

NUR 130  |  3 CREDITS  
Physical Assessment and Basic Pharmacology  
Teaches a systematic approach to performing physical assessment skills and basic pharmacological concepts. Includes basic principles of data collection and basic analysis using skills of interviewing and techniques of inspection, palpation, percussion and auscultation. Principles of pharmacology include dosage calculations, major drug classifications, drug legislation, legal aspects of medication administration, drug action on specific body systems, and basic computer applications. Provides supervised learning experiences in a college laboratory. Prerequisites: Admission into program and NUR 108. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

NUR 136  |  1 CREDIT  
Principles of Pharmacology I  
Focuses on principles of medication administration which include dosage calculations, major drug classifications, drug legislation, legal aspects of medication administration, drug action on specific body systems, and basic computer applications. Lecture 1 hour per week.

NUR 170  |  4 CREDITS  
Essentials of Medical/Surgical Nursing  
Focuses on the care of individuals/families requiring medical or surgical treatment. Uses all components of the nursing process with increasing degrees of skill. Includes mathematical computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program, NUR 108 and NUR 130. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

NUR 180  |  4 CREDITS  
Essentials of Maternal/Newborn Nursing  
Utilizes the concepts of the nursing process in caring for families in the antepartum, intrapartum, and postpartum periods. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program and NUR 170. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.
NUR 201 | 4 CREDITS
Psychiatric Nursing
Focuses on the care of individuals/families requiring clinical treatment. Uses all components of the nursing process with increasing degrees of skill. Includes math computational skills and basic computer instruction related to the delivery of nursing care, alterations in behavior, eating disorders, mood disorders, anxiety, chemical dependency and dementias. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program and NUR 180. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

NUR 215 | 6 CREDITS
Transition to Nursing Practice
Focuses on the care of diverse patients with complex health issues. Incorporates communication, collaboration, caring, and critical thinking/clinical reasoning necessary for safe, patient-centered nursing care. Integrates evidence-based practice, quality improvement, professional standards, and legal and ethical responsibilities of the entry level nurse. Provides a precepted clinical experience to facilitate an effective transition from student to registered nurse. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

NUR 245 | 3 CREDITS
Maternal/Newborn Nursing
Develops nursing skills in caring for families in the antepartum, intrapartum, and post-partum periods. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

NUR 246 | 3 CREDITS
Parent/Child Nursing
Develops nursing skills in caring for both well and ill children in a variety of settings. Emphasizes theories of growth and development and the family as a unit. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

NUR 255 | 3 CREDITS
Nursing Organization and Management
Addresses management and organizational skills as they relate to nursing. Emphasizes group dynamics, resolution of conflicts, and leadership styles. Prerequisites: Admission into program and NUR 271. Lecture 3 hours per week.

NUR 270 | 4 CREDITS
Essential Nursing Concepts II
Focuses on complex nursing care of individuals, families and/or groups in various stages of development who are experiencing alterations related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Includes math computation skills, basic computer instruction related to the delivery of nursing care with patients having fluid and electrolyte imbalance related to inflammatory bowel disease, intestinal obstruction, peptic ulcer disease and cirrhosis; altered regulatory hormonal mechanism related to endocrine disorders; altered inflammatory process related to STD/AIDS, endocarditis, rheumatic fever/valvular disorders and pancreatitis. Provides supervised learning in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program and NUR 201. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

NUR 271 | 4 CREDITS
Essential Nursing Concepts III
Focuses on complex nursing care of individuals, families and/or groups in various stages of development who are experiencing alterations related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Includes math computation skills, basic computer instruction related to the delivery of nursing care with patients having altered transport to and from cells related to anemia, hemophilia, hypertension, coronary artery disease, heart failure, cystic fibrosis; abnormal proliferation and maturation of cells related to cancer. Provides supervised learning experience in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program and NUR 270. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

NUR 272 | 4 CREDITS
Essential Nursing Concepts IV
Focuses on complex nursing care of individuals, families and/or groups with multidimensional needs in a variety of settings. Uses all components of the nursing process with increasing degrees of skill. Includes math computation skills, basic computer instruction related to the delivery of nursing care with patients having altered transport to and from cells related to tuberculosis, chronic obstructive pulmonary disease, croup, congenital heart defects, peripheral vascular disease, brain attack, chest injuries; altered neural regulatory mechanisms related to meningitis, spinal cord injury, spina bifida, myelomeningocele, scoliosis, seizure disorder, Parkinson’s disease; altered sensory motor function related to multiple sclerosis. Provides supervised learning experience in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program and NUR 271. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

NUR 273 | 4 CREDITS
Essential Nursing Concepts V
Focuses on complex nursing care of individuals, families and/or groups with multidimensional needs in a variety of settings. Uses all components of the nursing process with increasing degrees of skill. Includes math computation skills, basic computer instruction related to the delivery of nursing care with patients having abnormal proliferation and maturation of cells related to cancer; altered fluid and electrolyte imbalance related to burns, renal failure, nephritic syndrome, glomerulonephritis; multi-system disorders. Provides supervised learning experience in college nursing laboratories and/or cooperating agencies. Prerequisites: Admission into program and NUR 272. Co-requisite: NUR 255. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

NUR 299 | 1 CREDIT
Supervised Study in Nursing Perspectives
Focuses on seminar discussions, selected clinical simulation, and independent study to enhance critical thinking in the nursing process. Promotes synthesis of simple to complex concepts gained throughout the program through use of the nursing process in care of clients across the lifespan. Laboratory 3 hours per week.

OCT 100 | 3 CREDITS
Introduction to Occupational Therapy
Introduces the concepts of occupational therapy as a means of directing a person’s participation in tasks selected to develop, maintain or restore skills in daily living. Examines the role of the assistant for each function of occupational therapy, and for various practice settings in relationship to various members of the health care team. Prerequisite: Admission into program. Lecture 3 hours per week.
OCT 190 | 1-5 CREDITS  
**Coordinated Internship in Occupational Therapy**
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program.

OCT 201 | 3 CREDITS  
**Occupational Therapy with Psychosocial Dysfunction**
Focuses on the theory and application of occupational therapy in the evaluation and treatment of psychosocial dysfunction. Includes a survey of conditions which cause emotional, mental, and social disability, as well as the role of the occupational therapy assistant in the assessment, planning and implementation of treatment programs. Prerequisite: Admission into program. Lecture 3 hours per week.

OCT 202 | 4 CREDITS  
**Occupational Therapy with Physical Disabilities**
Focuses on the theory and application of occupational therapy in the evaluation and treatment of physical dysfunction. Includes a survey of conditions which cause physical disability as well as the role of the occupational therapy assistant in assessment, planning and implementation of treatment programs. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

OCT 203 | 4 CREDITS  
**Occupational Therapy with Developmental Disabilities**
Focuses on the theory and application of occupational therapy in the evaluation and treatment of developmental dysfunction. Includes a survey of conditions which cause developmental disability across the life span, with particular emphasis on children and the elderly. Investigates the role of the occupational therapist in assessment, planning and implementation of treatment programs. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

OCT 205 | 2 CREDITS  
**Therapeutic Media**
Develops proficiency in various crafts used as treatment modalities in occupational therapy. Emphasizes how to analyze, adapt and teach selected activities as well as how to equip and maintain a safe working environment. Prerequisite: Admission into program. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

OCT 206 | 3 CREDITS  
**Dyadic and Group Dynamics**
Provides theory and activity to develop positive interpersonal relationships and effective communication ability. Includes non-verbal communication, listening, observation, interviewing and documentation. Covers group process and its application to occupational therapy, including types of therapeutic groups, group membership roles, leadership skills and forces which affect group function and decision making. Prerequisite: Admission into program. Lecture 3 hours per week.

OCT 207 | 4 CREDITS  
**Therapeutic Skills**
Presents techniques used in the treatment of a variety of conditions frequently seen across the life span. Emphasizes the activities of self-care, work, and leisure as they relate to the development/resumption of normal social role functioning. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

OCT 208 | 3 CREDITS  
**Occupational Therapy Service Management**
Presents principles and techniques of management appropriate to the occupational therapy assistant. Includes roles and functions of the supervisor and the supervisee, scheduling, billing, and quality improvement. Issues relevant to professional practice and patient care will be discussed with similarities and differences between various facilities highlighted. Prerequisite: Admission into program. Lecture 3 hours per week.

OCT 210 | 2 CREDITS  
**Assistive Technology in Occupational Therapy**
Explores the assistive technologies available for persons with physical, sensory and cognitive disabilities. Provides instruction in the process of assessment, selection adaptation and training of assistive technology to persons with a disability. Presents information on funding and maintenance of devices. Exposes students to technology in clinical practice and equipment companies. Prerequisite: Admission into program. Lecture 2 hours per week.

OCT 220 | 2 CREDITS  
**Occupational Therapy for the Adult**
Reviews normal changes related to aging and factors contributing to dysfunction. Analyzes intervention strategies for common problems, including wellness programs and home modifications. Reviews relevant legislation, continuum of care and caregiver issues. Prerequisite: Admission into program. Lecture 2 hours per week.

OCT 225 | 4 CREDITS  
**Neurological Concepts for Occupational Therapy Assistants**
Focuses on the workings of the human nervous system from the cellular level to the systems level with an emphasis on normal neurological function, the impact of neurological dysfunction, and how to use neurological rehabilitation techniques to facilitate the rehabilitation process across the lifespan. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

OCT 290 | 1-5 CREDITS  
**Coordinated Internship in Occupational Therapy**
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program.

PHILOSOPHY

**PHI 101-102 | 3 CREDITS EACH**  
**Introduction to Philosophy I-II**
Introduces a broad spectrum of philosophical problems and perspectives with an emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values. Lecture 3 hours per week.

**PHI 111 | 3 CREDITS**  
**Logic I**
Introduces inductive and deductive reasoning, with an emphasis on common errors and fallacies. Lecture 3 hours per week.

**PHI 115 | 3 CREDITS**  
**Practical Reasoning**
Studies informal logic and language techniques as they relate to reasoning and argument. Provides practice in analyzing arguments and constructing sound arguments. Lecture 3 hours per week.

**PHI 220 | 3 CREDITS**  
**Ethics**
Provides a systematic study of representative ethical systems. Lecture 3 hours per week.
PHI 226 | 3 CREDITS
Social Ethics
Provides a critical examination of moral problems and studies the application of ethical concepts and principles to decision-making. Topics may include abortion, capital punishment, euthanasia, man and the state, sexuality, war and peace, and selected issues of personal concern. Lecture 3 hours per week.

PHOTOGRAPHY

PHT 110 | 3 CREDITS
History of Photography
Surveys important photographers, processes, and historical influences of the nineteenth and twentieth centuries. Lecture 3 hours per week.

PHT 126 | 3 CREDITS
Introduction to Video Techniques
Concentrates on skills necessary to light, edit, and record on video tape. Covers situations such as weddings, meetings, and small corporate productions. Prerequisite: PHT 164. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 164 | 3 CREDITS
Introduction to Digital Photography
Teaches the fundamentals of photography including camera function, composition, and image production as they apply to digital imagery. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 171 | 3 CREDITS
Imaging and Concepts in Photographic Media Arts
Covers best practices in imaging workflows, concept building, ideation, and steps in the creative process. Introduces students to working with multiple images in a series and as sequence. Provides students the opportunity to create and manipulate digital images and examine property-rights issues. Exposes students to a variety of software used for image organization, archiving, image editing, compositing, layer masking, the application of special effects, and outsourcing. Prerequisite: PHT 164. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 201 | 3 CREDITS
Advanced Photography I
Provides weekly critiques of students’ work. Centers on specific problems found in critiques. Includes working procedures and critical skills in looking at photographs. Prerequisite: PHT 171. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 221 | 3 CREDITS
Studio Lighting I
Examines advanced lighting and camera techniques under controlled studio conditions. Includes view camera use, electronic flash, advanced lighting techniques, color temperature and filtration, and lighting ratios. Requires outside shooting. Prerequisite: PHT 171. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHYSICAL EDUCATION AND RECREATION

PED 100 | 2 CREDITS
Pilates
Provides a method of mind-body exercise and physical movement designed to stretch, strengthen, balance the body, and improve posture and core stabilization while increasing body awareness. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 101-102 | 2 CREDITS EACH
Fundamentals of Physical Activity I-II
Presents fundamental components of physical activity. Utilizes conditioning activities involving cardiovascular strength and endurance, respiratory efficiency, muscular strength, and flexibility. May include fitness assessment, nutrition and weight control information, and concepts of wellness. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 103 | 2 CREDITS
Aerobic Fitness I
Develops cardiovascular fitness through activities designed to elevate and sustain heart rates appropriate to age and physical condition. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 105 | 2 CREDITS
Aerobic Dance I
Focuses on physical fitness through dance exercises. Emphasizes the development of cardiovascular endurance, muscular endurance, and flexibility. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 107 | 1 CREDIT
Exercise and Nutrition I
Provides for the study and application of fitness and wellness and their relationship to a healthy lifestyle. Defines fitness and wellness, evaluates the student’s level of fitness and wellness. Students will incorporate physical fitness and wellness into the course and daily living. A personal fitness/wellness plan is required for the 2 credit course. Laboratory 2 hours per week.

PED 109 | 2 CREDITS
Yoga
Focuses on the forms of yoga training emphasizing flexibility. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 110 | 2 CREDITS
Zumba
Focuses on Latin rhythms, dance moves and techniques in Zumba. Includes physical activity, cardiovascular endurance, balance, coordination and flexibility as related to dance. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 111-112 | 2 CREDITS EACH
Weight Training I-II
Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 113 | 1 CREDIT
Lifetime Activities I
Presents lifetime sports and activities. Teaches skills and methods of lifetime sports and activities appropriate to the local season and facilities available. Laboratory 2 hours. Total 2 hours per week.

PED 116 | 2 CREDITS
Lifetime Fitness and Wellness
Provides a study of fitness and wellness and their relationship to a healthy lifestyle. Defines fitness and wellness, evaluates the student’s level of fitness and wellness, and motivates the student to incorporate physical fitness and wellness into daily living. A personal fitness/wellness plan is required for the 2-credit course. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
PED 117 | 1 CREDIT
Fitness Walking
Teaches content and skills needed to design, implement, and evaluate an individualized program of walking, based upon fitness level. Laboratory 2 hours per week.

PED 120 | 2 CREDITS
Yoga II
Focuses on the forms of yoga training emphasizing flexibility. Prerequisite: PED 109. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 123 | 2 CREDITS
Tennis I
Teaches tennis skills with emphasis on stroke development and strategies for individual and team play. Includes rules, scoring, terminology, and etiquette. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 129 | 2 CREDITS
Self Defense
Examines history, techniques, and movements associated with self-defense. Introduces the skills and methods of self-defense emphasizing mental and physical discipline. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 133-134 | 2 CREDITS EACH
Golf I-II
Teaches basic skills of golf, rules, etiquette, scoring, terminology, equipment selection and use, and strategy. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 135 | 2 CREDITS
Bowling I
Teaches basic bowling skills and techniques, scoring, rules, etiquette, and terminology. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 137 | 2 CREDITS
Martial Arts I
Emphasizes forms, styles, and techniques of body control, physical and mental discipline, and physical fitness. Presents a brief history of development of martial arts theory and practice. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 140 | 2 CREDITS
Water Aerobics
Focuses on cardiovascular endurance, muscular endurance, and flexibility using water resistance. Includes the principles and techniques of aerobic exercise. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 141 | 2 CREDITS
Swimming I
Introduces skills and methods of swimming strokes. Focuses on safety and physical conditioning. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 152 | 2 CREDITS
Basketball
Introduces basketball skills, techniques, rules, and strategies. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 168 | 3 CREDITS
Basic Personal Trainer Preparation
Introduces the skills and knowledge required to become a personal trainer. Includes the principles of individual weight management, personal wellness, and the skills necessary for the creation of a fitness program for potential clients. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

PED 170 | 2 CREDITS
Tai Chi I
Develops an understanding of the theories and practices of Tai Chi. Explores the energy of exercise that will tone muscles, improve circulation and increase flexibility and balance. Discusses history and philosophy of exercise and relaxation techniques for stress reduction. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 171-172 | 2 CREDITS EACH
Ballroom Dance I-II
Presents the basic step patterns, rhythmic patterns, and positions in ballroom dance. Includes techniques based upon traditional steps with basic choreographic patterns. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 190 | 1-5 CREDITS
Coordinated Internship
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. Variable hours per week. Co-requisite: PED 168.

PED 206 | 2 CREDITS
Sports Appreciation
Focuses on the history, trends, rules, methods, strategy, and terminology of selected sports activities. Provides student awareness as a spectator and/or participant. Lecture 2 hours per week.

PHYSICAL THERAPY ASSISTANT
PTH 105 | 3 CREDITS
Introduction to Physical Therapist Assisting
Introduces the physical therapist assistant student to the field of physical therapy practice and develops basic patient care skills for application in the initial physical therapy clinical experience. Prerequisite: Admission into program or instructor permission. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PTH 110 | 1 CREDIT
Medical Reporting
Emphasizes the principles of medical reporting, including the ability to abstract pertinent information from actual medical records. Includes the writing of patient progress notes in standardized formats and medical terminology. Prerequisites: Admission into program, PTH 105, PTH 121, PTH 151 and BIO 142 or instructor permission. Lecture 1 hour per week.

PTH 115 | 4 CREDITS
Kinesiology for the Physical Therapist Assistant
Focuses on the relationship of specific joint structure and function, the role of individual muscles and groups of muscles and neurologic principles in both normal and pathological movement. The course includes a review of basic physics and biomechanical principles applied to human movement. Includes specific posture and gait analysis. Prerequisites: Admission into program, PTH 105, PTH 121, PTH 151 and BIO 142 or instructor permission. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.
COURSE DESCRIPTIONS | Tidewater Community College 2017/2018 Catalog

PTH 212-122 | 5 CREDITS EACH

Therapeutic Procedures I-II
Prepares the students to properly and safely administer basic physical therapy procedures utilized by physical therapist assistants. The procedures include therapeutic modalities. Procedures may include therapeutic exercise, electrotherapy and cardiopulmonary rehabilitation. Prerequisite for PTH 212: Admission into program and MTH 1 or MTE 1-3, and MTH 95 or MTE 4-5; or equivalent; or instructor permission.

PTH 210 | 2 CREDITS

Clinical Education
Provides supervised instruction in the delivery of physical therapy in one of various clinical settings. Emphasizes the practice of all therapeutic skills learned in the first year, including direct patient care skills and all forms of communication. Prerequisite: Admission into program, PTH 105, PTH 115, PTH 122, and BIO 142 or instructor permission. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

PTH 151 | 5 CREDITS

Musculoskeletal Structure and Function
Studies the human musculoskeletal system. Covers terms of position and movement, location, and identification of specific bony landmarks, joint structure and design, ligaments, muscle origin, action and innervation, and emphasizes types of contraction. Prerequisite: Admission into program or instructor permission. Laboratory 10 hours per week.

PTH 210 | 2 CREDITS

Psychological Aspects of Therapy
Focuses on the psychological reactions and sociological impact of illness and injury in clients and their families, and among health caregivers who work with them. Examines individual self-identity and the nature of changing client/therapist relationships across the life span. Prerequisites: Admission into program, PTH 110, PTH 115, PTH 122, and PTH 131 or instructor permission. Lecture 2 hours per week.

PTH 225 | 5 CREDITS

Rehabilitation Procedures
Focuses on treatment techniques typical of long term rehabilitation, e.g., the rehabilitation of congenital, neurological, and disfigurement associated with chronic injury and disease. Prerequisites: Admission into program, PTH 210, PTH 226, and PTH 251 or instructor permission. Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 226 | 4 CREDITS

Therapeutic Exercise
Emphasizes the basic principles underlying different approaches to exercising including rationale for treatment and may include neurological treatments such as simple facilitation and inhibitory techniques and the teaching of home programs. Prerequisites: Admission into program, PTH 110, PTH 115, PTH 122, and PTH 131 or instructor permission. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

PTH 227 | 3 CREDITS

Pathological Conditions
Presents specific pathologic conditions commonly seen in physical therapy. Emphasizes musculoskeletal and neurological system conditions, and all major body systems are represented. Prerequisite: Admission into program or instructor permission. Co-requisites: PTH 210 and PTH 226. Lecture 3 hours per week.

PTH 251-252 | 3 CREDITS AND 4 CREDITS

Clinical Practicum I-II
Provides instruction in local health care facilities in the actual administration of physical therapy treatments under the supervision of licensed physical therapists. Provides experience in a variety of clinical settings. Prerequisites for PTH 251: Admission into program, PTH 110, PTH 115, PTH 122 and PTH 131 or instructor permission. Prerequisites for PTH 252: Admission into program, PTH 210, PTH 226 and PTH 251 or instructor permission. Laboratory 15-20 hours per week.

PTH 255 | 2 CREDITS

Seminar in Physical Therapy
Includes preparation for licensing examination, specialized lectures, and preparation of a student project. Prerequisites: Admission into program, PTH 210, PTH 226 and PTH 251 or instructor permission. Lecture 2 hours per week.

PHYSICS

PHY 100 | 4 CREDITS

Elements of Physics
Covers basic concepts of physics, including Newtonian mechanics, properties of matter, heat and sound, fundamental behavior of gases, ionizing radiation, and fundamentals of electricity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 201-202 | 4 CREDITS EACH

General College Physics I-II
Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Prerequisite for PHY 201: MTH 163. Prerequisites for PHY 202: PHY 201 and MTH 163. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 241-242 | 4 CREDITS EACH

University Physics I-II
Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, and nuclear physics. Prerequisite for PHY 241: MTH 173 or divisional approval. Prerequisites for PHY 242: PHY 241 and MTH 174 or divisional approval. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

POLITICAL SCIENCE

PLS 130 | 3 CREDITS

Basics of American Politics
Teaches basics of the operations of Congress, the presidency, and the federal court system. Includes civil liberties, citizenship, elections, political parties, and interest groups. Lecture 3 hours per week.

PLS 136 | 3 CREDITS

State and Local Politics
Teaches structure, powers and functions of state and local government in the United States. Lecture 3 hours per week.

PLS 211-212 | 3 CREDITS EACH

U.S. Government I-II
Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Lecture 3 hours per week.
PSYCHOLOGY

PSY 105 | 3 CREDITS
Psychology of Personal Adjustment
Introduces psychological principles that contribute to well-adjusted personality. Considers the effects of stress and coping with the problems of everyday life. Lecture 3 hours per week.

PSY 116 | 3 CREDITS
Psychology of Death and Dying
Focuses on psychological aspects of death and dying. Teaches the meaning of death and ways of handling its personal and social implications. Includes psychological, sociological, cultural, and religious views of death. Lecture 3 hours per week.

PSY 126 | 3 CREDITS
Psychology for Business and Industry
Focuses on the application of psychology to interpersonal relations and the working environment. Includes topics such as group dynamics, motivation, employee-employer relationship, and interpersonal communications. May include techniques for selection and supervision of personnel. Lecture 3 hours per week.

PSY 166 | 3 CREDITS
Psychology of Marriage
Analyzes personality interactions in marriage and other intimate relationships. Examines theories of personal development and types of relationships resulting from interactions. Lecture 3 hours per week.

PSY 200 | 3 CREDITS
Principles of Psychology
Surveys the basic concepts of psychology. Covers the scientific study of behavior and mental processes, research methods and measurement, theoretical perspectives, and application. Includes biological bases of behavior, learning, social interactions, memory, and personality; and other topics such as sensation, perception, consciousness, thinking, intelligence, language, motivation, emotion, health, development, psychological disorders, and therapy. Prerequisite: Placement into ENG 111. Lecture 3 hours per week.

PSY 201-202 | 3 CREDITS EACH
Introduction to Psychology I-II
Examines human and animal behavior, relating experimental studies to practical problems. Includes topics such as sensation/perception, learning, memory, motivation, emotion, stress, development, intelligence, personality, psychopathology, therapy, and social psychology. Lecture 3 hours per week.

PSY 215 | 3 CREDITS
Abnormal Psychology
Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Prerequisite: PSY 200, PSY 201 or PSY 202. Lecture 3 hours per week.

PSY 216 | 3 CREDITS
Social Psychology
Examines individuals in social contexts, their social roles, group processes and intergroup relations. Includes topics such as small group behavior, social behavior, social cognition, conformity, attitudes, and motivation. Prerequisite: PSY 200, PSY 201 or PSY 202. Lecture 3 hours per week.

PSY 230 | 3 CREDITS
Developmental Psychology
Studies the development of the individual from conception to death. Follows a life-span perspective on the development of the person's physical, cognitive, and psychosocial growth. Lecture 3 hours per week.

PSY 231-232 | 3 CREDITS EACH
Life Span Human Development I-II
Investigates human behavior through the life cycle. Describes physical, cognitive, and psychosocial aspects of human development from conception to death. Lecture 3 hours per week.

PSY 235 | 3 CREDITS
Child Psychology
Studies development of the child from conception to adolescence. Investigates physical, intellectual, social, and emotional factors involved in the child's growth. Lecture 3 hours per week.

PSY 236 | 3 CREDITS
Adolescent Psychology
Studies development of the adolescent. Investigates physical, intellectual, social, and emotional factors of the individual from late childhood to early adulthood. Lecture 3 hours per week.

PSY 255 | 3 CREDITS
Psychological Aspects of Criminal Behavior
Studies psychology of criminal behavior. Includes topics such as violent and non-violent crime, sexual offenses, insanity, addiction, white collar crime, and other deviant behaviors. Provides a background for law enforcement occupations. Prerequisite: PSY 125, PSY 200, PSY 201, PSY 202 or divisional approval. Lecture 3 hours per week.

PSY 270 | 3 CREDITS
Psychology of Human Sexuality
Focuses on scientific investigation of human sexuality and psychological and social implications of such research. Considers sociocultural influences, the physiology and psychology of sexual response patterns, sexual dysfunctions, and development of relationships. Prerequisite: PSY 200, PSY 201 or PSY 202. Lecture 3 hours per week.
RADIOGRAPHY

RAD 120 | 3 CREDITS
Medical Care Procedures & Safety in Radiology
Teaches the fundamentals of radiation safety, body mechanics and medical legal considerations in Radiology. Presents techniques in infection control, patient care safety, and response to emergency situations. Introduces pharmacology, contrast media, and treatment of adverse reactions. Students acquire skills in vital sign assessment, sterile technique, venipuncture, and other medical care procedures. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 121 | 4 CREDITS
Radiographic Procedures I
Introduces procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the chest, abdomen, extremities, and axial skeleton. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 131-132 | 3 CREDITS EACH
Elementary Clinical Procedures I-II
Develops advanced technical skills in fundamental radiographic procedures. Focuses on manipulation of equipment, patient care, osseous studies, skull procedures, and contrast studies. Provides clinical experience in cooperating health agencies. Prerequisite: Admission into program. Clinical 15 hours per week.

RAD 141-142 | 4 CREDITS EACH
Principles of Radiographic Quality I-II
Presents factors that control and influence radiographic quality, as well as various technical conversion factors useful in radiography. Discusses automatic film processing, sensitometry, and quality assurance testing. Prerequisite: Admission into program. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 190 | 1-5 CREDITS
Coordinated Internship in Radiography
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program.

RAD 205 | 3 CREDITS
Radiation Protection and Radiobiology
Studies methods and devices used for protection from ionizing radiation. Teaches theories of biological effects, cell and organism sensitivity, and the somatic and genetic effects of ionizing radiation. Presents current radiation protection philosophy for protecting the patient and technologist. Prerequisite: Admission into program. Lecture 3 hours per week.
**RELIGION**

**REL 200 | 3 CREDITS**  
Survey of the Old Testament  
Surveys books of the Old Testament, with emphasis on prophetic historical books. Examines the historical and geographical setting and place of the Israelites in the ancient Middle East as background to the writings. Lecture 3 hours per week.

**REL 210 | 3 CREDITS**  
Survey of the New Testament  
Surveys books of the New Testament, with special attention upon placing the writings within their historical and geographical setting. Lecture 3 hours per week.

**REL 215 | 3 CREDITS**  
New Testament and Early Christianity  
Surveys the history, literature, and theology of early Christianity in the light of the New Testament. Lecture 3 hours per week.

**REL 216 | 3 CREDITS**  
Life and Teachings of Jesus  
Studies the major themes in the teachings of Jesus of Nazareth as recorded in the Gospels, and examines the events of his life in light of modern biblical and historical scholarship. Lecture 3 hours per week.

**REL 217 | 3 CREDITS**  
Life and Letters of Paul  
Studies the journeys and religious thought of the apostle Paul. Lecture 3 hours per week.

**REL 218 | 3 CREDITS**  
Recent LDS Thought and Scholarship  
Examines recent developments in the study of the scriptures, and issues of interpretation and historical context. Lecture 3 hours per week.

**RESPIRATORY THERAPY**

**RTH 102 | 3 CREDITS**  
Integrated Sciences for Respiratory Care II  
Integrates the concepts of mathematics, chemistry, physics, microbiology, and computer technology as these sciences apply to the practice of respiratory care. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

**RTH 120 | 2 CREDITS**  
Fundamental Theory for Respiratory Care  
Presents the theory of patient assessment and functional medical terminology. Prerequisite: Admission into program or instructor permission. Lecture 2 hours per week.

**RTH 121 | 3 CREDITS**  
Cardiopulmonary Science I  
Focuses on pathophysiology, assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary and neuromuscular physiology and patho-physiology. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

**RTH 131-132 | 4 CREDITS EACH**  
Respiratory Care Theory and Procedures I-II  
Prerequisite: Admission into program or instructor permission. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**RTH 145 | 1 CREDIT**  
Pharmacology for Respiratory Care I  
Presents selection criteria for the use of and detailed information on pharmacologic agents used in pulmonary care. Prerequisite: Admission into program or instructor permission. Lecture 1 hour per week.

**RTH 190 | 1-5 CREDITS**  
Coordinated Internship in Respiratory Therapy  
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program or instructor permission.

**RTH 217 | 2 CREDITS**  
Pulmonary Rehabilitation, Home Care and Health Promotion  
Focuses on purpose and implementation of a comprehensive pulmonary rehabilitation program. Explores procedures and approaches used in pulmonary home care. Identifies and discusses major health and wellness programs applied to cardiopulmonary patients. Prerequisite: Admission into program or instructor permission. Lecture 2 hours per week.
COURSE DESCRIPTIONS

RUSSIAN

» RTH 222  |  3 CREDITS
Cardiopulmonary Science II
Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal and neuromuscular physiology, and pathophysiology. Prerequisite: Admission into program or instructor permission. Lecture 3 hours per week.

» RTH 223  |  2 CREDITS
Cardiopulmonary Science III
Continues the exploration of topics discussed in RTH 121 and 222. Prerequisite: Admission into program or instructor permission. Lecture 2 hours per week.

» RTH 225  |  3 CREDITS
Neonatal and Pediatric Respiratory Procedures
Focuses on the cardiopulmonary physiology, pathology and application of therapeutic procedures in the management of the newborn and pediatric patient. Prerequisite: Admission into program or instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» RTH 235  |  3 CREDITS
Diagnostic and Therapeutic Procedures II
Presents the use of multiple diagnostic and therapeutic techniques used in ambulatory and critical care patients. Prerequisite: Admission into program or instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» RTH 236  |  3 CREDITS
Critical Care Monitoring
Focuses on techniques and theory necessary for the evaluation and treatment of the critical care patient, especially arterial blood gases and hemodynamic measurements. Explores physiologic effects of advanced mechanical ventilation. Prerequisite: Admission into program or instructor permission. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

» RTH 290  |  1-5 CREDITS
Coordinated Internship in Respiratory Therapy
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program or instructor permission.

» RTH 298  |  1 CREDIT
Seminar and Project in Respiratory Therapy
Requires completion of a project or research report related to the student’s occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours per week. Prerequisite: Admission into program or instructor permission.

» RUS 101-102  |  4 CREDITS EACH
Beginning Russian I-II
Develops the understanding, speaking, reading, and writing of Russian, and emphasizes the structure of the language. May include oral drill and practice. Prerequisite for RUS 102: RUS 101 or 2 years of high school Russian. Lecture 4 hours per week. May include one additional hour of oral practice per week.

» RUS 201-202  |  3 CREDITS EACH
Intermediate Russian I-II
Continues the development of the skills of understanding, speaking, reading, and writing of Russian. Class conducted in Russian. Prerequisite for RUS 201: RUS 102 or 3 years of high school Russian. Prerequisite for RUS 202: RUS 201 or 4 years of high school Russian. Lecture 3 hours per week.

SAFETY

» SAF 120  |  3 CREDITS
Safety and Health Standards: Regulations and Codes
Teaches development of safety standards, the Occupational Safety and Health Act (OSHA), its rules and regulations; penalties for non-compliance, and methods of compliance. Includes an examination of Government Regulatory Codes and appraisal of consensus, advisory, and proprietary standards. Lecture 3 hours per week.

» SAF 126  |  3 CREDITS
Principles of Industrial Safety
Teaches principles and practices of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion. Lecture 3 hours per week.

» SAF 127  |  2 CREDITS
Industrial Safety
Provides basic understanding of safety and health in an industrial situation. Includes hazardous materials, substances, conditions, activities and habits as well as the prescribed methods and equipment needed for the apprentice to protect himself/herself and others. Lecture 2 hours per week.

» SAF 130  |  1 CREDIT
Industrial Safety - OSHA 10
Presents an introduction to occupational health and safety and its application in the workplace. Emphasizes safety standards and the Occupational Safety and Health Act (OSHA), its rules and regulations (OSHA 10). Lecture 1 hour per week.

» SAF 135  |  3 CREDITS
Safety Program Organization and Administration
Introduces techniques of organizing and administering practical safety programs. Emphasizes safety as a management function. Includes an examination of history, occupational safety and health regulations, and a survey of current laws, codes and standards. Lecture 3 hours per week.

» SAF 205  |  3 CREDITS
Human Factors and Safety Psychology
Studies stresses on the human system, both physiological and psychological, that contribute to the severity of industrial accidents. Includes the interrelationship of industrial medicine and industrial hygiene and a study of the various occupational illnesses. Lecture 3 hours per week.

» SAF 246  |  3 CREDITS
Hazardous Chemicals, Materials, and Waste in the Workplace
Introduces the rules and regulations governing use, exposure to, and disposal of hazardous chemicals, materials and waste by-products. Discusses OSHA “Right to Know Laws,” EPA and RCRA regulations. Provides the techniques to interpret and understand the code of Federal Regulations. Emphasizes management mandates, strategies, and options to comply with these regulations. Lecture 3 hours per week.
COURSE DESCRIPTIONS

SOCIAL SCIENCE

SOC 210  |  3 CREDITS
Introduction to Women's Studies
Introduces interdisciplinary and cross-cultural theories that explore
gender, race, and class issues relating to women's lives, past and
present. Prerequisite: ENG 111. Lecture 3 hours per week.

SOC 200  |  3 CREDITS
Principles of Sociology
Introduces fundamentals of social life. Presents significant research
and theory in areas such as culture, social structure, socialization,
deviance, social stratification, and social institutions. Lecture 3 hours
per week.

SOC 201-202  |  3 CREDITS EACH
Introduction to Sociology I-II
Introduces basic concepts and methods of sociology. Presents
significant research and theory in areas such as socialization, group
dynamics, gender roles, minority group relations, stratification,
deviance, culture, and community studies. Includes population, social
change, and social institutions (family, education, religion, political
system, economic system). Lecture 3 hours per week.

SOC 211  |  3 CREDITS
Principles of Anthropology I
Inquires into the origins, development, and diversification of human
biology and human cultures. Includes fossil records, physical origins
of human development, human population genetics, linguistics, cultures'
origins and variation, and historical and contemporary analysis of
human societies. Lecture 3 hours per week.

SOC 215  |  3 CREDITS
Sociology of the Family
Studies topics such as marriage and family in social and cultural
context. Addresses the singles scene, dating and marriage styles,
child-rearing, husband and wife interaction, single parent families,
and alternative lifestyles. Lecture 3 hours per week.

SOC 225  |  3 CREDITS
Sociology of Gender
Analyzes influence of major social institutions and socialization in
shaping and changing sex roles in contemporary society. Examines
differential access to positions of public power and authority for men
and women. Prerequisite: Placement into ENG 111. Lecture 3 hours
per week.

SOC 246  |  3 CREDITS
Death and Society
Analyzes death and its relationship to social behavior and social
institutions. Focuses attention on types of death, bereavement,
funerals, estate planning/inheritance, and the student's own responses
to these issues. Lecture 3 hours per week.

SOC 266  |  3 CREDITS
Race and Ethnicity
Considers race and ethnicity as social constructs that deeply affect
our personal experience and our social institutions. Examines the
relationships of racial and ethnic groups with each other and with the
larger society, and the ways in which these relationships are constantly
changing. Explores the experience of different groups and examines
ideas of racial justice and equality. Introduces significant theoretical
approaches to the study of race and ethnicity. Prerequisite: Placement
into ENG 111. Lecture 3 hours per week.

SOC 268  |  3 CREDITS
Social Problems
Applies sociological concepts and methods to analysis of current
social problems. Includes delinquency and crime, mental illness, drug
addiction, alcoholism, sexual behavior, population crisis, race relations,
family and community disorganization, poverty, automation, wars, and
disarmament. Lecture 3 hours per week.

SPANISH

SPA 101-102  |  4 CREDITS EACH
Beginning Spanish I-II
Introduces understanding, speaking, reading, and writing skills
and emphasizes basic Spanish sentence structure. May include an
additional hour of oral drill and practice per week. Prerequisite for SPA
102: SPA 101 or 2 years of high school Spanish. Lecture 4 hours per
week.

SPA 160  |  3 CREDITS
Spanish for the Green Industry I
Introduces basic conversation skills in Spanish to those working in the
“Green” industry. Emphasizes the use of vocabulary and expressions
needed for communication in horticulture, landscaping, nursery/
greenhouse, and turf management. Addresses cultural aspects of
working with Spanish speaking populations. Lecture 3 hours per week.

SPA 163  |  3 CREDITS
Spanish for Health Professionals I
Introduces Spanish to those in the health sciences. Emphasizes oral
communication and practical medical vocabulary. May include oral drill
and practice. Lecture 3 hours per week.

SPA 203-204  |  3 CREDITS EACH
Intermediate Spanish I-II
Continues to develop understanding, speaking, reading, and writing
skills. Classes conducted in Spanish. Prerequisite for SPA 203: SPA
102 or 3 years of high school Spanish. Prerequisite for SPA 204:
SPA 203 or 4 years of high school Spanish. May include oral drill and
practice. Lecture 3 hours per week.

STUDENT DEVELOPMENT

SDV 100  |  1 CREDIT
College Success Skills
Assists students in transition to college. Provides overviews of college
policies, procedures, and curricular offerings. Encourages contacts
with other students and staff. Assists students toward college
success through information regarding effective study habits, career
and academic planning, and other college resources available to
students. May include English and Math placement testing. Strongly
recommended for beginning students. Required for graduation. Lecture
1 hour per week.
TRUCKING

TRK 101 | 1 CREDIT
Orientation to (Specific Disciplines)
Introduces students to the skills which are necessary to achieve their academic goals, to the services offered at the college, and to the discipline in which they are enrolled. Covers topics such as services offered at the college, including the learning resources center; counseling and advising; listening, test taking, and study skills; and topical areas which are applicable to their particular discipline. Lecture 1 hour per week.

TRK 102 | 1 CREDIT
Preventive Maintenance for Truck Drivers
Focuses on the fundamentals of preventive maintenance and inspection procedures for gasoline and diesel powered tractor trailers. Includes drivelines, brake systems, electrical system and accessories encountered by the professional truck driver. Lecture 1 hour per week.

TRK 103 | 9 CREDITS
Tractor Trailer Driving
Prepares the prospective driver to operate a motor vehicle in a safe and responsible manner. Provides practical training in over-the-road and city driving, including backing skills, and pre-trip inspection. Emphasizes defensive driving. Lecture 3 hours. Laboratory 12 hours. Total 15 hours per week.

TRK 110 | 3 CREDITS
Survey of the Trucking Industry
Provides an overview of the trucking industry and the characteristics of the professional truck driver. Emphasizes the uses of technology in the trucking industry, including simulators, mobile information management and communication, and electronic mapping techniques. Provides an introduction to the transportation of hazardous materials and environmental issues. Lecture 3 hours per week.

VETERINARY ASSISTANT

VET 100 | 4 CREDITS
Introduction to Animal Science
Surveys the common breeds of small and large domestic animals, including identification, management, and restraint. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

VET 101 | 3 CREDITS
Introduction to Veterinary Assisting
Presents basic information about assisting the veterinarian. Includes information about companion animals, primarily dogs and cats. Lecture 3 hours per week.

VET 102 | 3 CREDITS
Care and Maintenance of Small Domestic Animals
Presents basic information about general and veterinary management of small domestic animals, especially dogs and cats. Provides information concerning animal and human safety, animal restraint, nutrition, common diseases, medical terminology, medical history, and other topics related to the care and maintenance of small animals. Lecture 3 hours per week.

VET 103 | 3 CREDITS
Veterinary Office Assisting
Presents basic information about common business procedures used in veterinary practice. Includes client and staff relationships and veterinary regulations. Lecture 3 hours per week.

VET 190 | 1-5 CREDITS
Coordinated Internship in Veterinary Assisting
Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/ practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours per week. Prerequisite: Instructor permission.

WELDING

WEL 100 | 3 CREDITS
Fundamentals of Welding
Introduces arc and oxyfuel welding and cutting. Provides fundamental principles of joining ferrous and non-ferrous metals, welding and cutting processes, equipment operation, and safety procedures with emphasis upon welding and cutting procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 117 | 3 CREDITS
Oxyfuel Welding and Cutting
Introduces history of oxyacetylene welding, principles of welding and cutting, nomenclature of the equipment, development of the puddle, running flat beads, and butt welding in different positions. Explains silver brazing, silver and soft soldering, and safety procedures in the use of tools and equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 123 | 3 CREDITS
Shielded Metal Arc Welding (Basic)
Teaches operation of AC and DC power sources, welding polarities, heats and electrodes for use in joining various metal alloys by the arc welding process. Deals with running beads, butt, and fillet welds in all positions. Emphasizes safety procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.
WEL 124 | 3 CREDITS
Shielded Metal Arc Welding (Advanced)
Continues instruction on operation of AC and DC power sources, welding polarities, heats and electrodes for use in joining various metal alloys by the arc welding process. Deals with running beads, butt, and fillet welds in all positions. Emphasizes safety procedures. Prerequisite: WEL 123. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 126 | 3 CREDITS
Pipe Welding I
Teaches metal arc welding processes including the welding of pressure piping in the horizontal, vertical, and horizontal-fixed positions in accordance with section IX of the ASME Code. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 127 | 3 CREDITS
Pipe Welding II
Provides practice in the welding of pressure piping in the horizontal, vertical, and fixed positions. Laboratory 9 hours per week.

WEL 129 | 3 CREDITS
Pipefitting and Fabrication
Reviews basic mathematical skills necessary for the pipefitting trade. Teaches basic methods for fabricating piping offsets, miter-turn fittings, tees, odd angle elbows, 90 degree elbows, and the use of pipefitting and layout tools. May be taken with WEL 126. Lecture 3 hours per week.

WEL 130 | 3 CREDITS
Inert Gas Welding
Introduces practical operations in the uses of inert-gas-shield arc welding. Discusses equipment, safety operations, welding practice in the various positions, process applications, and manual and semi-automatic welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 135 | 2 CREDITS
Inert Gas Welding
Introduces practical operations in the use of inert gas shielded arc welding. Studies equipment operation, setup, safety and practice of GMAW (MIG) and GTAW (TIG). Prerequisite: WEL 124. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 136 | 2 CREDITS
Welding III (Inert Gas)
Studies Tungsten and metallic inert gas procedures and practices including principles of operation, shielding gasses, filler rods, process variations and applications, manual and automatic welding, equipment and safety. Prerequisite: WEL 117. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 138 | 2 CREDITS
Pipe and Tube Welding
Develops entry level skills for the inert gas tungsten welding process (TIG) with emphasis upon thin and thick wall carbon and stainless piping and tubing. Prerequisite: WEL 136. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 141-142 | 3 CREDITS EACH
Welder Qualification Test I-II
Studies techniques and practices of testing welded joints through destructive and non-destructive testing. Prerequisite for WEL 142: WEL 141. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 150 | 2 CREDITS
Welding Drawing and Interpretation
Teaches fundamentals required for successful drafting as applied to the welding industry. Includes blueprint reading, geometric principles of drafting and freehand sketching, basic principles of orthographic projection, preparation of drawings and interpretation of symbols. Lecture 2 hours per week.

WEL 165 | 2 CREDITS
Introduction to Maritime Welding
Teaches general welding terms, symbols, and joint designs used by maritime industries. Develops skills to recognize weld defects, develops familiarization of drawings and workmanship specifications used for welding applications in the maritime industry, and certifies the student as a Maritime Industrial Fire Watch. Lecture 2 hours per week.

WEL 170 | 3 CREDITS
Maritime Shielded Metal Arc Fillet Welding (SMAW I)
Provides an introduction to Maritime Shielded Metal Arc Fillet Welding (SMAW). Focuses on equipment setup, adjustment and maintenance, safety, and electrode selection. Includes preparation of labs to develop welding skills on carbon steels using small and large diameter covered electrodes in all positions on fillet welds. Provides an introduction to specific types of electrodes and base materials used in SMAW I welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 171 | 3 CREDITS
Maritime Shielded Metal Arc Groove Welding (SMAW II)
Provides an introduction to Maritime Shielded Metal Arc Groove Welding and covers equipment setup, adjustment and maintenance, safety, and electrode selection. Includes preparation of labs to develop welding skills on carbon steels using small and large diameter covered electrodes in all positions on groove welds. Provides an introduction to specific types of electrodes and base materials used in SMAW II welding. Prerequisite: WEL 170. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 210 | 3 CREDITS
Maritime Flux Core Arc Fillet Welding (FCAW)
Provides an introduction to Maritime Flux Core Arc Fillet Welding and covers equipment setup, adjustment and maintenance, safety, electrode selection, training to develop welding skills on carbon steels using small and large diameter flux-cored electrodes in all positions on fillet and groove welds. Provides an introduction to specific types of electrodes and base materials used in FCAW welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 220 | 3 CREDITS
Maritime Gas Metal Arc Fillet Welding (GMAW)
Provides an introduction to Maritime Gas Metal Arc Fillet Welding and covers equipment setup, adjustment and maintenance, safety, electrode selection, training to develop welding skills on carbon steels using small and large diameter bare wire electrodes in all positions on fillet welds. Provides an introduction to specific types of electrodes and base materials used in GMAW. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 230 | 2 CREDITS
Maritime Gas Tungsten Arc Fillet Welding (GTAW)
Provides an introduction to Maritime Gas Tungsten Arc Fillet Welding and covers equipment setup, adjustment and maintenance, safety, electrode selection, training to develop welding skills on carbon steels using small and large diameter bare wire electrodes in all positions on fillet welds. Provides an introduction to specific types of electrodes and base materials used in GTAW welding. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.
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M.S.Ed., Old Dominion University

ELIZABETH C. FOUSHEE
GRANTS COORDINATOR
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M.P.A., Old Dominion University

BATANYA M. GIPSON
PROJECT COORDINATOR: MILITARY CONTRACT PROGRAMS
B.A., Georgetown University
M.Ed., Pennsylvania State University

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INSTRUCTIONAL DESIGNER
B.S., James Madison University
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M.A., University of South Florida
Ph.D., Louisiana State University

ALEXANDRA C. RICE
DEVELOPMENT OFFICER
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M.A., Old Dominion University

RANDALL BRENT RICE, SR.
DIRECTOR:
MILITARY ACADEMIC PROGRAMS
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M.S., Old Dominion University

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DIRECTOR:
MILITARY CONTRACT PROGRAMS
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ASSOCIATE VICE PRESIDENT: ACADEMICS
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M.A.Ed., Virginia Polytechnic Institute and State University
Ph.D., Old Dominion University

LAURA R. SOULSBY
ASSOCIATE DIRECTOR:
CENTER FOR INTERCULTURAL LEARNING
B.A., Longwood University
M.A., Old Dominion University

FREDERICK E. STEMPEL, JR.
ASSOCIATE VICE PRESIDENT:
FACULTY PROFESSIONAL DEVELOPMENT
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M.S., Old Dominion University

G. ERIC STYLES
ASSISTANT COORDINATOR:
STUDENT SUPPORT SERVICES PROGRAM
B.A., University of South Florida
M.A., University of South Florida

HEATHER H. TAYLOR
ASSOCIATE VICE PRESIDENT: FINANCE
B.S., Park College
M.S., University of Maryland University College

JAMES P. TOSCANO
VICE PRESIDENT:
PUBLIC AFFAIRS & COMMUNICATIONS
B.S., Old Dominion University
M.Sc., University of London
D.L.P., Northeastern University

IRIS H. WANG
COORDINATOR:
LEARNING MANAGEMENT AND SYSTEM SERVICES
B.S., Dalian University
M.S., Dalian University
M.S., Concordia University

KAY M. WILLIAMS
DIRECTOR:
STUDENT SUPPORT SERVICES PROJECT
B.A., Hampton University
M.S., Stevens Institute of Technology

VIRGINIA K. ZILLOES
DEAN:
ELEARNING
B.A., University of Wisconsin
M.A., Regent University

→ CHESAPEAKE CAMPUS

LISA B. RHINE
PROVOST
Certificate, Sinclair Community College
B.S., Wright State University
M.S.Ed., University of Dayton
Ph.D., Capella University

ABBIE J. BASILE
COORDINATOR:
LIBRARY SERVICES
B.A., Buffalo State College
M.L.S., University of Buffalo

KYNDRA F. BROWN
DEVELOPMENTAL EDUCATION MANAGER
B.S., Old Dominion University
M.Ed., America InterContinental University

JOHNNIE M. COLEMAN-YATES
DIRECTOR:
RETENTION AND STUDENT SUCCESS
B.S., James Madison University
M.P.A., Troy State University

JEFFERY L. DUNBAR
STUDENT CENTER DIRECTOR
B.S.B. Ad., West Virginia University
M.B.A., Eastern Oregon University

JAMES E. EDWARDS
DEAN:
STUDENT SERVICES
B.S., James Madison University
M.Ed., James Madison University
Ed.D., Nova Southeastern University

VINCENT GARY
STUDENT CENTER ASSOCIATE DIRECTOR
B.S., Old Dominion University
M.S., Old Dominion University

KELLY T. GILLERLAIN
DIRECTOR:
BUSINESS, PUBLIC SERVICES, AND TECHNOLOGIES
B.A., American University
M.B.A., Troy State University
Ph.D., Regent University

JEANETTA L. HOLLINS
COORDINATOR:
FINANCIAL SUPPORT SERVICES
B.S., Indiana University of Pennsylvania
M.Ed., University of Pittsburgh
Ph.D., Old Dominion University

CONSTANCE V. KING
BUSINESS MANAGER
B.S., Ramapo College
M.B.A., Rutgers University

KEVIN MCCARTHY
COORDINATOR:
FIRST-YEAR SUCCESS
B.S., Old Dominion University
M.S.Ed., Old Dominion University

BENO RUBIN
DIRECTOR:
REGIONAL AUTOMOTIVE CENTER
A.A.S., State University of New York at Westchester Community College
B.S., City University of New York at Lehman College
M.S., Nova Southeastern University
Ph.D., Old Dominion University

DIANE N. RYAN
DEAN:
HUMANITIES AND SOCIAL SCIENCES
B.A., Western Illinois University
M.A., Western Illinois University

THOMAS B. STOUT
DEAN:
SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS
A.S., Tidewater Community College
B.S.E.T., Old Dominion University
M.S., Norfolk State University

→ NORFOLK CAMPUS

JEFFERY S. BOYD
PROVOST
A.A., San Joaquin Delta College
B.A., Judson University
M.A., University of Phoenix
Ed.D., National Louis University

TERRENCE L. BOWERS
STUDENT CENTER ASSOCIATE DIRECTOR
A.A.S., Paul D. Camp Community College
B.S., Christopher Newport University
M.A., Norfolk State University
Ed.D., NOVA Southeastern University

THOMAS E. CHATMAN
COORDINATOR:
FIRST-YEAR SUCCESS
B.S., Elizabeth City State University
M.A., University of Minnesota

M.B.A., Eastern Oregon University

→ NORFOLK CAMPUS

JAMES E. EDWARDS
DEAN:
STUDENT SERVICES
B.S., James Madison University
M.Ed., James Madison University
Ed.D., Nova Southeastern University

VINCENT GARY
STUDENT CENTER ASSOCIATE DIRECTOR
B.S., Old Dominion University
M.S., Old Dominion University

KELLY T. GILLERLAIN
DIRECTOR:
BUSINESS, PUBLIC SERVICES, AND TECHNOLOGIES
B.A., American University
M.B.A., Troy State University
Ph.D., Regent University

JEANETTA L. HOLLINS
COORDINATOR:
FINANCIAL SUPPORT SERVICES
B.S., Indiana University of Pennsylvania
M.Ed., University of Pittsburgh
Ph.D., Old Dominion University

CONSTANCE V. KING
BUSINESS MANAGER
B.S., Ramapo College
M.B.A., Rutgers University

KEVIN MCCARTHY
COORDINATOR:
FIRST-YEAR SUCCESS
B.S., Old Dominion University
M.S.Ed., Old Dominion University

BENO RUBIN
DIRECTOR:
REGIONAL AUTOMOTIVE CENTER
A.A.S., State University of New York at Westchester Community College
B.S., City University of New York at Lehman College
M.S., Nova Southeastern University
Ph.D., Old Dominion University

DIANE N. RYAN
DEAN:
HUMANITIES AND SOCIAL SCIENCES
B.A., Western Illinois University
M.A., Western Illinois University

THOMAS B. STOUT
DEAN:
SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS
A.S., Tidewater Community College
B.S.E.T., Old Dominion University
M.S., Norfolk State University

→ NORFOLK CAMPUS

JEFFERY S. BOYD
PROVOST
A.A., San Joaquin Delta College
B.A., Judson University
M.A., University of Phoenix
Ed.D., National Louis University

TERRENCE L. BOWERS
STUDENT CENTER ASSOCIATE DIRECTOR
A.A.S., Paul D. Camp Community College
B.S., Christopher Newport University
M.A., Norfolk State University
Ed.D., NOVA Southeastern University

THOMAS E. CHATMAN
COORDINATOR:
FIRST-YEAR SUCCESS
B.S., Elizabeth City State University
M.A., University of Minnesota

M.B.A., Eastern Oregon University
EMANUEL CHESTNUT  
DEAN: STUDENT SERVICES  
A.A., Saint Leo University  
B.A., Saint Leo University  
M.A., Norfolk State University

BLAIR A. ELLIS  
DIRECTOR: STUDENT CENTER & STUDENT SUCCESS INITIATIVES  
B.A., George Mason University  
M.S., Old Dominion University

SONYA R. FITCHETT  
COORDINATOR: FINANCIAL AID SERVICES  
B.S., Old Dominion University  
M.A., Old Dominion University

JOHNNA C. HARRELL  
DEAN: BUSINESS, SOCIAL SCIENCES AND PUBLIC SERVICES  
B.S., Virginia Commonwealth University  
M.B.A., Averett University

OSIRIS J. MARTINEZ  
BUSINESS MANAGER  
B.S., Old Dominion University  
M.B.A., Strayer University

MEREDITH E. POLLARD  
COUNSELOR: STUDENT SERVICES  
B.S., Old Dominion University  
M.S.Ed. Old Dominion University

KERRY M. RAGNO  
DEAN: LANGUAGES, MATHEMATICS, AND SCIENCES  
B.A., California State University at Chico  
M.A., San Jose State University  
Ed.D., Fielding Graduate University

VIRGINIA L. SOJDEHEI  
COORDINATOR: LIBRARY SERVICES  
B.S., Indiana University  
M.L.S., Indiana University

MICHIELLE W. WOODHOUSE  
PROVOST  
B.S., Virginia Commonwealth University  
M.A., Norfolk State University  
Ed.D., Nova Southeastern University

PETER T. AGBAKPE  
INTERIM DEAN: BUSINESS, PUBLIC SERVICES, AND TECHNOLOGIES  
B.S., University of Sciences & Technology, Kumasi, Ghana  
M.S., Hampton University  
Ph.D., Hampton University

KATINA T. BARNES  
COORDINATOR: DUAL ENROLLMENT ACADEMICS / ACADEMIC ADVISOR  
A.A., Art Institute of Atlanta  
B.S.W., Norfolk State University  
M.A., Norfolk State University

RITA T. BOUCHARD  
COORDINATOR: NURSING PATHWAYS PROGRAM  
B.S., Mount St. Mary’s College  
M.S.N., University of California at Los Angeles

OKEMA S. BOWERS  
COORDINATOR: FIRST-YEAR SUCCESS  
B.S., Norfolk State University  
M.S., George Washington University  
Ed.D., Regent University

AMANDA K. BURBAGE  
FACULTY PROFESSIONAL DEVELOPMENT MANAGER  
B.S., Old Dominion University  
M.S., Old Dominion University

KIMBERLY A. CURRY-LOURENCO  
COORDINATOR: INSTRUCTION & TECHNOLOGY, BEAZLEY SCHOOL OF NURSING  
B.S.N., Old Dominion University  
M.S.N., Old Dominion University  
M.Ed., Old Dominion University  
Ph.D., Duquesne University

PHYLIS M. EATON  
DEAN: BEAZLEY SCHOOL OF NURSING  
B.S.N., DePaul University  
M.S., Hampton University  
Ph.D., Hampton University

MARY S. GLANZER  
COORDINATOR: LIBRARY SERVICES  
B.S., Longwood University  
M.S.L.S., University of Kentucky

NICOLE A. KING HARVEY  
DEVELOPMENTAL EDUCATION MANAGER  
B.A., Bennett College  
M.A., National University

ALICIA L. PHILLIPS  
ASSOCIATE DIRECTOR: STUDENT CENTER  
B.A., Hampton University  
M.A., Old Dominion University

DANA M. SINGLETON  
DEAN: STUDENT SERVICES  
B.S., Norfolk State University  
M.Ed., Regent University

JENEFER D. SNYDER  
DEAN: LANGUAGES, MATHEMATICS, AND SCIENCES  
B.S., Virginia Polytechnic Institute and State University  
M.S.Ed. Old Dominion University  
Ed. D., Fielding Graduate University

JOHN H. THORNBURG  
BUSINESS MANAGER  
B.S., Old Dominion University  
B.A., Old Dominion University

MICHAEL D. SUMMERS  
PROVOST  
B.S., University of Illinois  
M.Ed., Western Illinois University  
Ed.D., University of Illinois

JASON AMBROSE  
COORDINATOR: EMERGENCY MEDICAL SERVICES PROGRAM  
B.S., Bellevue University  
M.P.A., Bellevue University

MARCANNE ANDERSEN  
DEAN: HUMANITIES  
B.S., University of Wisconsin  
M.A., Minnesota State University

MICHELE C. BARNES  
COORDINATOR: SUPPORT SERVICES  
A.A., Florida Community College  
B.S., Southern Illinois University  
M.A., Webster University

THOMAS G. CALOGRIDES, JR.  
DEAN: HEALTH PROFESSIONS  
Certificate, Tidewater Community College  
B.S., Old Dominion University  
M.S.Ed., Old Dominion University

WILLIAM CLEMENT  
DEAN: INFORMATION, TECHNOLOGY AND BUSINESS  
B.S., State University of New York at Oswego  
M.S.Ed., Old Dominion University

TERRI M. EUSEBIO III  
COORDINATOR: ADMISSIONS  
B.S., Old Dominion University  
M.S., Old Dominion University

SARAH E. FALLS  
DIRECTOR: JOINT USE LIBRARY  
B.A., Old Dominion University  
M.A., Rutgers, The State University of New Jersey  
M.S.L.S., University of North Carolina at Chapel Hill

JOSEPH J. FAIRCCHILD  
DEAN: SOCIAL SCIENCES AND PUBLIC SERVICES  
A.S., Mattatuck Community College  
B.S., Western Connecticut State University  
J.D., University of Bridgeport School of Law

GREGORY P. FRANK  
DEAN: NATURAL SCIENCES  
B.S., Virginia Polytechnic Institute and State University  
M.S., Virginia Polytechnic Institute and State University

EMILY R. HARTMAN  
CO-DIRECTOR: STUDENT ACTIVITIES/OPERATIONS & STUDENT LEADERSHIP  
B.A., Thiel College  
M.B.A., Capella University

TAWANA A. HILL  
COORDINATOR: FINANCIAL SERVICES  
B.S., Old Dominion University  
M.P.A., Old Dominion University

MARILYN R. HODGE  
DEAN: STUDENT SERVICES  
B.A., Brooklyn College, CUNY  
M.A., New York University  
M.A., Columbia University  
Ed.D. Columbia University

BRENTON P. HORN  
COORDINATOR: LIBRARY ACADEMIC SERVICES  
B.A., Old Dominion University  
M.S.L.S., University of Maryland

THOMAS H. LEE  
FACULTY PROFESSIONAL DEVELOPMENT COORDINATOR  
B.S., Old Dominion University  
M.S.Ed., Old Dominion University

MARILYN L. MEDLEY  
COORDINATOR: ENROLLMENT SERVICES  
B.S., Old Dominion University  
M.S.Ed., Capella University
LORI W. REIMANN  
BUSINESS MANAGER  
A.A., Prince George's Community College  
B.S., University of Maryland

VICKIE WHIDBEE  
DEVELOPMENTAL EDUCATION MANAGER  
B.A., Elizabeth City State University  
M.S.A., Elizabeth City State University

PROFESSORS AND CLASSIFIED STAFF EMERITI  
(YEARS OF TCC SERVICE)

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DEAN OF BUSINESS, PUBLIC SERVICES & TECHNOLOGIES  
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DEAN OF ACADEMICS, NORFOLK CAMPUS  
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WILMA S. ROBINSON  
PROFESSOR OF ADMINISTRATIVE SUPPORT TECHNOLOGY  
(1973–1999)

LISA S. KLEIMAN  
DIRECTOR OF INSTITUTIONAL EFFECTIVENESS  
(1980–2010)

HELENA M. KROHN  
ASSOCIATE PROFESSOR OF HISTORY  
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A. JOHN MASSEY  
DIRECTOR OF FACILITIES PLANNING & DEVELOPMENT  
(1973–2012)

CAROLYN E. MCLELLAN  
DEAN OF INFORMATION TECHNOLOGY & BUSINESS  
(1999–2015)

JUDY B. MCMILLAN  
DEAN OF STUDENT SERVICES, CHESAPEAKE CAMPUS  
(1994–2013)

CHRISTINE L. MEDLIN  
PROFESSOR OF DIETETICS  
(1992–2013)

JAMES P. O'BRIEN  
PROFESSOR OF PSYCHOLOGY  
(1972–2015)

REGINALD L. OSBY  
GENERAL ADMINISTRATION MANAGER I  

MARY B. THOMAS  
Librarian  
(1980–2007)

FRANKLIN T. DUNN  
EXECUTIVE VICE PRESIDENT  
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MARGARET A. DUTTON  
ADMINISTRATIVE & OFFICE SPECIALIST III  
(1979–2013)

WILLIAM A. FITTON, JR.  
PROFESSOR OF INFORMATION SYSTEMS TECHNOLOGY  

ROGER A. FULLER  
LIBRARIAN  
(1973–2011)

NANCY S. M. GUARNIERI  
PROFESSOR OF EARLY CHILDHOOD EDUCATION  
(1973–2006)

SANDRA H. HARRIS  
ASSOCIATE PROFESSOR OF ENGLISH  
(1973–2007)

AUBREY E. HARTMAN  
ASSOCIATE PROFESSOR OF PHYSICS  
(1969–2014)

BETTY K. HICKS  
ADMINISTRATIVE & OFFICE SPECIALIST III  
(1999–2011)

ETTA LOUISE HILLIER  
ASSOCIATE PROFESSOR OF ACCOUNTING  
(1978–2005)

CATHERINE N. HOLLOWAY  
ASSOCIATE PROFESSOR OF INFORMATION SYSTEMS TECHNOLOGY  

REBECCA S. HUBIAK  
ASSOCIATE PROFESSOR OF MATHEMATICS  
(1972–2008)

BARBARA J. HUND  
PROFESSOR OF ENGLISH/SPEECH  
(1980–1999)

ANNE S. IOTT  
DIRECTOR OF VISUAL ARTS CENTER  
(1971–2002)

BARBARA T. JOHNSON  
ASSOCIATE PROFESSOR OF SOCIOLOGY  

JANICE S. JOHNSON  
COORDINATOR OF LIBRARY SERVICES, VIRGINIA BEACH CAMPUS  
(1975–2009)

CONSTANCE M. JONES  
ASSOCIATE PROFESSOR OF HISTORY  

TERRY L. JONES  
PROVOST, PORTSMOUTH CAMPUS  
(1971–2013)

GERALD L. KERR  
PROFESSOR OF LEGAL ASSISTING  
TEACHING AND PROFESSIONAL FACULTY

THE LOCATIONS OF PRINCIPAL ASSIGNMENT ARE
INDICATED AS FOLLOWS: CHESAPEAKE CAMPUS (C),
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(C-RAC), NORFOLK CAMPUS (N), PORTSMOUTH CAMPUS
(P), PORTSMOUTH CAMPUS: VISUAL ARTS CENTER
(P-VAC), AND VIRGINIA BEACH CAMPUS (V).
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAVID L. BRANDT</td>
<td>Instructor: Mathematics</td>
<td>B.S., Virginia Polytechnic Institute and State University M.S., Old Dominion University</td>
</tr>
<tr>
<td>DIANA W. BRANTON</td>
<td>Instructor: Mathematics</td>
<td>A.S., Tidewater Community College B.S., Old Dominion University M.S., Texas A &amp; M University</td>
</tr>
<tr>
<td>LYNNETTE F. BRASH</td>
<td>Instructor: English</td>
<td>B.A., James Madison University M.A., University College Dublin</td>
</tr>
<tr>
<td>ROBIN C. BREVARD</td>
<td>Associate Professor: Certified Nurse Aide</td>
<td>A.A.S., Tidewater Community College B.S.N., Troy University</td>
</tr>
<tr>
<td>ELIZABETH A. BRIGGS</td>
<td>Instructor: Speech</td>
<td>B.S., Liberty University M.S., Liberty University</td>
</tr>
<tr>
<td>JENNIFER L. BRIGGS</td>
<td>Instructor: Respiratory Therapy</td>
<td>A.A.S., Tidewater Community College B.S., Old Dominion University</td>
</tr>
<tr>
<td>B. K. BRINKLEY</td>
<td>Associate Professor: Mathematics</td>
<td>B.S., Virginia Polytechnic Institute and State University M.S., Virginia Polytechnic Institute and State University</td>
</tr>
<tr>
<td>KENNETH O. BROWN, JR.</td>
<td>Associate Professor: Mathematics</td>
<td>B.S., Old Dominion University M.S., Old Dominion University</td>
</tr>
<tr>
<td>ROBYN S. BROWDER</td>
<td>Associate Professor: English</td>
<td>B.A., Frederick College M.S.Ed., Old Dominion University</td>
</tr>
<tr>
<td>SANDRA R. BRYANT</td>
<td>Instructor: Speech</td>
<td>B.S., Old Dominion University M.U.S., Old Dominion University</td>
</tr>
<tr>
<td>KATHERINE D. BUHRER</td>
<td>Assistant Professor: Biology</td>
<td>B.S., Old Dominion University M.S., Old Dominion University</td>
</tr>
<tr>
<td>WENDY D. BUIE</td>
<td>Associate Professor: Counselor</td>
<td>B.A., University of North Carolina at Asheville M.S., North Carolina A&amp;T State University</td>
</tr>
<tr>
<td>AMIE H. BURNS</td>
<td>Instructor: Culinary Arts</td>
<td>A.S., Johnson &amp; Wales University B.S., Radford University</td>
</tr>
<tr>
<td>MAUREEN A. CAHILL</td>
<td>Professor: Reading</td>
<td>B.S., Norfolk State University M.S., Old Dominion University Ed.D., Nova Southeastern University</td>
</tr>
<tr>
<td>CARLOS H. CAJARES</td>
<td>Associate Professor: Emergency Medical Services</td>
<td>Certificate, Tidewater Community College B.S., Hampton University M.P.A., Old Dominion University</td>
</tr>
<tr>
<td>APRIL M. CAMPBELL</td>
<td>Instructor: English</td>
<td>B.A., Florida State University M.A., Florida State University</td>
</tr>
<tr>
<td>CARLA A. CANNON</td>
<td>Associate Professor: Biology</td>
<td>B.S., Tennessee State University M.A., Hampton University</td>
</tr>
<tr>
<td>SCOTT N. CARLSON</td>
<td>Associate Professor: Accounting</td>
<td>B.S., Loyola Marymount University M.S., Golden Gate University</td>
</tr>
<tr>
<td>LISA D. CARTER</td>
<td>Professor: Information Systems Technology</td>
<td>CPA License</td>
</tr>
<tr>
<td>CHRISTOPHER W. CARTWRIGHT</td>
<td>Associate Professor: Civil Engineering</td>
<td>A.S., Tidewater Community College B.S., Virginia Polytechnic Institute and State University</td>
</tr>
<tr>
<td>ROY D. CARTWRIGHT</td>
<td>Associate Professor: Early Childhood Education</td>
<td>B.S., James Madison University M.S.Ed., Old Dominion University</td>
</tr>
<tr>
<td>K. M. CHOKSHI</td>
<td>Assistant Professor: Engineering</td>
<td>B.S., Government Engineering College M.S., The Maharaja Sayapirao University Ph.D., Old Dominion University</td>
</tr>
<tr>
<td>SHEILA CHONG</td>
<td>Assistant Professor: Diagnostic Medical Sonography</td>
<td>A.S., Midwestern State University B.S., St. Joseph's College M.B.A., Colorado Technical University</td>
</tr>
<tr>
<td>GABRIELA J. CHRISTIE TOLETTI</td>
<td>Professor: Spanish</td>
<td>B.S., University of Uruguay E.S.L., Alianza Cultural, Uruguay</td>
</tr>
<tr>
<td>ROY D. CLAYTON</td>
<td>Associate Professor: Geophysical Sciences</td>
<td>A.S., Tidewater Community College B.S., Old Dominion University M.S., Old Dominion University</td>
</tr>
<tr>
<td>CASEY L. CLEMENTS</td>
<td>Assistant Professor: Chemistry</td>
<td>B.S., Grove City College M.S., University of Pittsburgh</td>
</tr>
<tr>
<td>JAMES F. COBLE</td>
<td>Professor: Geophysical Sciences</td>
<td>B.S., Western Carolina University M.S., East Carolina University Ph.D., University of Kentucky</td>
</tr>
<tr>
<td>FREDERICK B. COLE</td>
<td>Instructor: Automotive Technology</td>
<td>A.A.S., Tidewater Community College</td>
</tr>
<tr>
<td>WILLIAM D. CONNER</td>
<td>Associate Professor: Accounting</td>
<td>B.S., Christopher Newport University M.A., Miami University of Ohio</td>
</tr>
<tr>
<td>EVELYN Y. COUTEE</td>
<td>Assistant Professor: Nursing</td>
<td>B.S. Old Dominion University M.S.N., Old Dominion University</td>
</tr>
<tr>
<td>GARY L. CROSS</td>
<td>Assistant Professor: Respiratory Therapy</td>
<td>A.A.S., Tidewater Community College B.S., Old Dominion University</td>
</tr>
<tr>
<td>ROBERT W. CRUMPLER</td>
<td>Assistant Professor: Mathematics</td>
<td>B.S., Old Dominion University M.S., Old Dominion University</td>
</tr>
<tr>
<td>PAMELA M. DALE</td>
<td>Assistant Professor: Mathematics</td>
<td>B.S., Elizabeth City State University M.Ed., Cambridge College</td>
</tr>
<tr>
<td>CATINA L. DAVIS</td>
<td>Instructor: Biology</td>
<td>B.S., University of Texas at El Paso M.S., University of Texas at El Paso</td>
</tr>
<tr>
<td>SCOTT C. DAVIS</td>
<td>Instructor: Computer Science</td>
<td>A.S., Dutchess Community College B.A., University of Rochester M.S., Binghamton University</td>
</tr>
<tr>
<td>JEFFREY A. DECASTILLIA</td>
<td>Assistant Professor: Electromechanical Controls Technology</td>
<td>A.A.S., Tidewater Community College B.A., Saint Leo University M.A., Regent University</td>
</tr>
<tr>
<td>D. STEPHAN DELONG</td>
<td>Assistant Professor: Mathematics</td>
<td>B.S., Northern Illinois University M.S., Lehigh University</td>
</tr>
<tr>
<td>MARK R. DENISON</td>
<td>Instructor: Music</td>
<td>B.M., Central Washington University M.M., Central Washington University</td>
</tr>
<tr>
<td>STACEY E. DEPUTY</td>
<td>Instructor: Biology</td>
<td>B.S., Randolph-Macon Woman’s College M.S., Old Dominion University</td>
</tr>
<tr>
<td>JACQUELYN A. DESSINO</td>
<td>Associate Professor: Librarian</td>
<td>B.A., Shippensburg State College B.S., Nichols State University M.S.L.S., Louisiana State University M.A., Old Dominion University</td>
</tr>
<tr>
<td>DANIEL J. DESTEFANO</td>
<td>Instructor: Emergency Medical Services</td>
<td>A.A.S., Tidewater Community College B.S., Old Dominion University</td>
</tr>
</tbody>
</table>
SARAH E. DICALOGERO  
ASSISTANT PROFESSOR: MATHEMATICS (V)  
B.S., University of Virginia  
M.S., University of Virginia

RICHARD A. DIENST  
ASSOCIATE PROFESSOR: FIRE SCIENCE (V)  
A.S., Community College of the Air Force  
A.A., Tidewater Community College  
B.S., Southern Illinois University  
M.P.A., Governors State University

KATHLEEN DISANTO  
ASSOCIATE PROFESSOR: PHYSICAL THERAPIST ASSISTANT (V)  
B.S., Virginia Polytechnic Institute and State University  
D.P.T., Old Dominion University

JENNIFER DIXON-MCKNIGHT  
ASSISTANT PROFESSOR: HISTORY (N)  
B.A., University of North Carolina of Chapel Hill  
M.A., North Carolina Central University  
Ph.D., University of North Carolina of Chapel Hill

SERGEI DOLGALEV  
PROFESSOR: DRAFTING (V)  
B.A., Moscow Architectural Institute  
Ph.D., Central Research and Design Institute

JENNY E. DOZIER  
INSTRUCTOR: PSYCHOLOGY (C)  
B.S., Old Dominion University  
M.S., Old Dominion University

SUSAN N. DOZIER  
PROFESSOR: INFORMATION SYSTEM TECHNOLOGY (V)  
B.S., Virginia Polytechnic Institute and State University  
M.S.Ed., Old Dominion University

LORENZ N. C. DRAKE  
PROFESSOR: DRAFTING (P)  
B.S., University of Maryland  
M.S.Ed., Virginia Polytechnic Institute and State University  
C.A.G.S., Virginia Polytechnic Institute and State University  
Certificate Tidewater Community College

DEBRA L. DUFFY  
ASSOCIATE PROFESSOR: GEOLOGY (M)  
B.S., Old Dominion University  
M.S., Old Dominion University  
Ph.D., Old Dominion University

WALTER LEE DUKE, JR.  
INSTRUCTOR: WELDING (P)  
Diploma, Roanoke-Chowan Community College

RICHARD B. DUNCAN  
ASSOCIATE PROFESSOR: MATHEMATICS (P)  
A.B., East Carolina University  
M.A., East Carolina University

SAMUEL L. DUNCAN  
ASSOCIATE PROFESSOR: PHILOSOPHY (V)  
B.A., University of Virginia  
M.A., University of Chicago  
Ph.D., University of Virginia

GILLIAN L. DURHAM  
INSTRUCTOR: ENGLISH AS A SECOND LANGUAGE (V)  
B.A., Elon University  
M.A., Old Dominion University

DEBORAH M. EDSON  
PROFESSOR: SPANISH (H)  
B.A., Texas Tech University  
M.A., Texas Tech University

THOMAS I. ELLIS  
PROFESSOR: ENGLISH (N)  
B.A., Ohio Wesleyan University  
M.A., University of Oregon  
Ph.D., University of Oregon

FAITH A. EMMONS  
INSTRUCTOR: ENGLISH (P)  
B.A., University of Virginia  
M.Ed., University of Virginia

PAUL G. ENGLISH  
PROFESSOR: BUSINESS MANAGEMENT AND ADMINISTRATION (G)  
B.S., University of Richmond  
B.A., University of Richmond  
M.B.A., Old Dominion University  
M.A., Old Dominion University

CHRISTOPHER S. FAIRBANKS  
INSTRUCTOR: AIR CONDITIONING AND REFRIGERATION (P)  
A.A.S., Tidewater Community College

NATASHA FILIPSKI  
ASSISTANT PROFESSOR: MATHEMATICS (N)  
B.A., University of Houston  
M.S., University of Houston  
B.A., University of Houston

BETTY FITTE  
LECTURER: BUSINESS ADMINISTRATION (C)  
M.B.A., Wake Forest University

HEATHER L. FITZGERALD  
INSTRUCTOR: LIBRARIAN (V)  
A.S., Tidewater Community College  
B.A., Old Dominion University  
M.I.S., Florida State University

MARK W. FLANDERS  
INSTRUCTOR: COUNSELOR (N)  
B.S., Western Carolina University  
M.Ed., Old Dominion University

STACI B. FORGEY  
ASSISTANT PROFESSOR: BIOLOGY (P)  
B.S., Niagara University  
M.S., Old Dominion University

MILDRED J. FOWLER  
ASSOCIATE PROFESSOR: BIOLOGY (W)  
B.S., Old Dominion University  
M.S.Ed., Old Dominion University  
Certificate, Eastern Virginia Medical School

GLENN E. FOX, JR.  
PROFESSOR: PSYCHOLOGY (C)  
B.S., Virginia Polytechnic Institute and State University  
M.A., Radford University  
Ph.D., Virginia Polytechnic Institute and State University

ROGER D. FRAMPTON  
PROFESSOR: CHEMISTRY (P)  
B.S., University of Durham U.K.  
Ph.D., University of East Anglia, Norwich, U.K.

EDWARD B. FRANCIS  
PROFESSOR: ART (P-VAC)  
B.S., Southern Connecticut State University  
M.F.A., Kent State University

MARK FREDERICK  
ASSOCIATE PROFESSOR: SPEECH (N)  
B.A., Gordon College  
M.A., Wheaton College  
Ph.D., Regent University

DAVID J. FRENCH  
ASSOCIATE PROFESSOR: MATHEMATICS (C)  
B.S., Bluefield College  
M.A., Marshall University

DEANNA E. FRERIDGE  
INSTRUCTOR: CULINARY ARTS (N)  
A.A.S., Tidewater Community College

MARY A. FRONCILLO  
ASSISTANT PROFESSOR: MATHEMATICS (V)  
B.A., Pensacola Junior College  
B.A., University of West Florida  
M.S., Old Dominion University

HENG R. FU  
ASSOCIATE PROFESSOR: MATHEMATICS (H)  
B.S., Old Dominion University  
M.S., Old Dominion University

LAURA E. FULLER  
ASSOCIATE PROFESSOR: ENGLISH (V)  
B.A., Union University  
M.Ed., Memphis State University  
M.A., Old Dominion University

MARY H. GABLE  
INSTRUCTOR: INFORMATION SYSTEMS TECHNOLOGY (V)  
B.S., Old Dominion University  
M.S., United States Military Academy  
M.S., George Washington University

JESSICA H. GARBER  
ASSISTANT PROFESSOR: CHEMISTRY (C)  
B.S., Virginia Commonwealth University  
Ph.D., Texas A & M University at College Station

THOMAS L. GARRETT, JR.  
ASSOCIATE PROFESSOR: MATHEMATICS (P)  
B.A., University of Mississippi  
M.T.S., College of William and Mary  
M.S., Old Dominion University

PAUL J. GASPARO, JR.  
INSTRUCTOR: ENGLISH (V)  
B.A., Suffolk County Community College  
B.S., State University of New York College of Old Westbury  
M.A., Northern Arizona University

THOMAS M. GEARY  
ASSISTANT PROFESSOR: ENGLISH (V)  
B.A., Christopher Newport University  
M.A., University of Maryland

JUDITH GILL  
ASSOCIATE PROFESSOR: MATHEMATICS (H)  
B.A., Christopher Newport University  
M.S., Old Dominion University

RICHARD W. GILL  
ASSOCIATE PROFESSOR: MATHEMATICS (H)  
B.S., College of William and Mary  
M.S., University of South Carolina

DANIELLE G. GISCOMBE  
INSTRUCTOR: COUNSELOR (C)  
A.A., City College of Chicago at Harold Washington  
B.S., Southern Illinois University  
M.A., Norfolk State University

CARRIE L. GORDON  
INSTRUCTOR: BIOLOGY (V)  
B.S., Campbell University  
M.S., Virginia Polytechnic Institute and State University

PAUL E. GORDY  
ASSOCIATE PROFESSOR: ENGINEERING (V)  
B.S.E.E., Old Dominion University  
M.E., Old Dominion University
M.A., Hunter College
ASSISTANT PROFESSOR: ENGLISH
SHANA L. HAINES

M.A., Slippery Rock University
INSTRUCTOR: ENGLISH (P)
JAMIE M. HAINES

Ph.D., University of North Carolina at Chapel Hill
B.A., Goucher College
PROFESSOR: HISTORY
LEAH E. HAGEDORN

M.S., Norwich University
B.G.S., Virginia Commonwealth University
ASSOCIATE PROFESSOR: ENGINEERING
KENNETH P. GRIMES

Ph.D., University of North Carolina at Greensboro
M.A., North Carolina State University
Ph.D., Mississippi State University
PROFESSOR: HISTORY
JOSEPH W. GRIMSMLEY

Ph.D., Virginia Commonwealth University
M.S., Norwich University
ASSOCIATE PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (C)
ROBERT O. GUESS II

B.A., University of North Carolina at Chapel Hill
M.A., University of North Carolina at Chapel Hill
PROFESSOR: HISTORY (V)
JAMIE M. HAINES

B.A., Texas Christian University
J.D., Boston University School of Law
M.A., Hunter College
ASSISTANT PROFESSOR: ENGLISH (P)
SHANA L. HAINES

DONALD V. HALEY
ASSOCIATE PROFESSOR: ADMINISTRATION OF JUSTICE (V)
A.A.S., Tidewater Community College
B.A., Saint Leo University
M.P.A., Troy State University

FERDINAND V. HALLARE
ASSISTANT PROFESSOR: MATHEMATICS (V)
B.S., University of Philippines
M.S., University of Philippines
M.A., University of Kansas

ELDRIDGE C. HAMM, JR.
PROFESSOR: BUSINESS MANAGEMENT AND ADMINISTRATION (V)
B.S., University of Richmond
M.S., Virginia Commonwealth University
Ed.D., Vanderbilt University

KIA L. HARDY
INSTRUCTOR: COUNSELOR (N)
B.A., College of William and Mary
M.Ed., College of William and Mary

ALEXANDRA HARRINGTON
ASSOCIATE PROFESSOR: BIOLOGY (P)
B.S., North Carolina State University
Ph.D., Eastern Virginia Medical School

KATINA L. HARRIS-CARTER
ASSOCIATE PROFESSOR: BIOLOGY (P)
B.S., Western Illinois University
M.S., Hampton University

EUGENIA HARRISON
INSTRUCTOR: MATHEMATICS (C)
B.S., Northern Illinois University
M.S., University of Alabama

ROBERT E. HARRISON
ASSOCIATE PROFESSOR: COUNSELOR (V)
B.A., University of Kansas
M.S., Cornell University

LYNETTE K. HAUSER
ASSISTANT PROFESSOR: BIOLOGY (P)
B.A., Goucher College
M.S., University of Virginia

ROBERT H. HAWKES
PROFESSOR: ARTS (P-VAC)
B.F.A., Virginia Commonwealth University
M.F.A., Ohio University

ERIC T. HAYES
PROFESSOR: CHEMISTRY (C)
B.S., Virginia Polytechnic Institute and State University
M.S., University of Cincinnati

GEORGE B. HEPT
ASSOCIATE PROFESSOR: PHYSICS (C)
B.S., U.S. Air Force Academy
M.S., Massachusetts Institute of Technology
M.S., Air War College

CHRISTY A. HEWETT
ASSISTANT PROFESSOR: MATHEMATICS (V)
B.S., Southern Illinois University
M.S., Southern Illinois University

TOINETTE S. HIGGINS
ASSOCIATE PROFESSOR: NURSING (P)
A.S., Excelsior College
B.S.N., University of Phoenix
M.S.N., University of Phoenix
Ph.D., Capella University

THOMAS P. HILTON
ASSOCIATE PROFESSOR: PHILOSOPHY (V)
B.S., East Tennessee State University
M.A., East Tennessee State University
M.A., Old Dominion University

DAVID S. HOPE
ASSOCIATE PROFESSOR: SPEECH AND DRAMA (V)
B.A., Tusculum College
M.F.A., Ohio University

C. GREGORY HOOD
ASSOCIATE PROFESSOR: CHEMISTRY (V)
B.S., University of Richmond
Ph.D., University of Virginia

RICHARD L. HOLTZ
ASSOCIATE PROFESSOR: ADMINISTRATION OF JUSTICE (V)
A.A., Old Dominion University
M.A., Old Dominion University

DIANA B. HOMSI
ASSISTANT PROFESSOR: BIOLOGY (V)
B.S., Old Dominion University
M.S., Old Dominion University

C. GREGORY HOOD
ASSOCIATE PROFESSOR: PHYSICS (V)
B.A., Virginia Commonwealth University
M.S., University of Virginia

JEANNE E. HOPKINS
ASSISTANT PROFESSOR: EARLY CHILDHOOD EDUCATION (P)
B.S., Mount Olive College
M.S., Nova Southeastern University

JENNIFER D. HOPKINS
ASSOCIATE PROFESSOR: INTERIOR DESIGN (C)
B.F.A., North Carolina State University
M.A., Boston University
Ph.D., Boston University

D. R. HORETH
ASSOCIATE PROFESSOR: BIOLOGY (V)
A.S., Tidewater Community College
B.S., University of New York at Regents College
M.S., Old Dominion University
DALE R. HORTON
INSTRUCTOR: PHYSICS (C)
B.S., University of Illinois
M.S., University of Illinois

ROBERT E. HOUSE, JR.
ASSISTANT PROFESSOR: ENGLISH (V)
B.A., Bard College
M.A., University of Colorado

DAVID E. HOWELL
INSTRUCTOR: AUTOMOTIVE TECHNOLOGY (C-RAC)
B.S., Old Dominion University

JOSHUA L. HOWELL
INSTRUCTOR: ENGLISH (N)
B.A., Old Dominion University
M.A., Longwood University

CORNELIUS M. ISAAC
INSTRUCTOR: TRUCKING (P)
Commercial Driver’s License

ELISABETH A. JAKUBOWSKI
INSTRUCTOR: COUNSELOR (V)
B.S., Indiana University of Pennsylvania
M.A., Indiana University of Pennsylvania

RICHARD JAMES
ASSISTANT PROFESSOR: ADMINISTRATION OF JUSTICE (P)
B.A., St. Leo University
M.A., Regent University

TARIQ O. JAWHAR
ASSOCIATE PROFESSOR: ENGLISH (V)
B.A., Old Dominion University
M.A., Old Dominion University
D.L., Drew University

WILLIAM D. JENKINS
ASSOCIATE PROFESSOR: MARKETING AND ECONOMICS (V)
B.A., University of North Carolina
M.B.A., University of North Carolina at Chapel Hill
Ph.D., University of North Carolina at Chapel Hill

CECELIA L. JOHNSON
ASSISTANT PROFESSOR: BIOLOGY (N)
B.S., University of Mary Washington
M.S., Old Dominion University

JOSEPH JOYNER, JR.
ASSOCIATE PROFESSOR: MATHEMATICS (N)
B.G.S., Roosevelt University
M.S., University of Maryland

JOSEPH KIRACOFE
ASSOCIATE PROFESSOR: HISTORY (C)
B.A., College of William and Mary
M.A., University of Connecticut
Ph.D., University of Connecticut

MICHAEL D. KIRBY
ASSOCIATE PROFESSOR: MATHEMATICS (V)
B.A., Christopher Newport University
M.S., College of William and Mary

JOEL I. KIRCH
ASSOCIATE PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (V)
A.S., Thomas Nelson Community College
B.S., Christopher Newport University
M.S., Capitol College

ALBERT V. KOOK
ASSOCIATE PROFESSOR: ELECTRICITY/ELECTRONICS (V)
A.A.S., Tidewater Community College

JOHN R. KRENZKE
ASSISTANT PROFESSOR: HISTORY (V)
B.S., University of Minnesota
M.A., University of Chicago
Ph.D., Loyola University Chicago

HARLAN R. KREPCIK
ASSOCIATE PROFESSOR:
AIR CONDITIONING & REFRIGERATION (P)
A.A.S., Tidewater Community College
A.S., Tidewater Community College
B.S., New York Institute of Technology
M.S., New York Institute of Technology

ROBERT S. RUNZINGER
ASSOCIATE PROFESSOR: ENGLISH (V)
B.A., St. Bonaventure University
M.A., Pennsylvania State University
M.F.A., Old Dominion University

SEAN S. LACROIX
ASSISTANT PROFESSOR: ECONOMICS (C)
B.A., North Carolina State University
M.S., University of North Carolina at Charlotte

SAMUEL H. LAMB II
ASSOCIATE PROFESSOR: PSYCHOLOGY (V)
B.S., Old Dominion University
M.S.Ed., Old Dominion University
Ed.D., Virginia Polytechnic Institute and State University
C.A.G.S., Virginia Polytechnic Institute and State University
C.A.S., Old Dominion University

SONYA L. LANDAS
ASSOCIATE PROFESSOR: PSYCHOLOGY (V)
B.S., Old Dominion University
M.S., Old Dominion University

CHIKETTA LANE
ASSOCIATE PROFESSOR: ACCOUNTING (N)
B.S., Winston Salem State University
M.S., Old Dominion University

EDMOND P. LASALLE
INSTRUCTOR: ENGLISH (V)
B.A., Charter Oak State College
M.A., State University of New York - Excelsior College

DEREK LAWS
ASSISTANT PROFESSOR: CHEMISTRY (P)
B.S., Framingham State University
Ph.D., University of Vermont

DAVID L. LEE
INSTRUCTOR: AUTOMOTIVE TECHNOLOGY (C-RAC)
A.A.S., Tidewater Community College

AMANDA V. LEO
ASSOCIATE PROFESSOR: OCCUPATIONAL THERAPY (V)
B.S., Duquesne University
M.S., Duquesne University

LYDIA A. LEPORTE
ASSOCIATE PROFESSOR: ACCOUNTING (V)
B.S., University of Pennsylvania
M.A., American University
M.A.C.C., University of West Florida

ALLAN G. LIBBY
ASSOCIATE PROFESSOR: NURSING (P)
B.A., University of North Carolina at Wilmington
M.S., University of North Carolina at Chapel Hill

DONALD D. LIBURD
ASSISTANT PROFESSOR: ENGLISH (N)
B.S., Liberty University
M.A., Old Dominion University

THERESA A. LONG
ASSOCIATE PROFESSOR: SPANISH (P)
B.A., Western Michigan University
M.A., Western Michigan University
Ph.D., Western Michigan University

SHAHIN MAAREF
ASSOCIATE PROFESSOR: CHEMISTRY (V)
B.S., Pedagogical University
M.S., Azad University
Ph.D., State University of New York

MARY E. MACDOUGAL
ASSOCIATE PROFESSOR: BIOLOGY (C)
B.S., University of Rhode Island
M.S., Old Dominion University

ANNE F. MACH
ASSOCIATE PROFESSOR: EMERGENCY MEDICAL SERVICES (V)
B.S.N., University of Phoenix

LAURA LEA M. MACINTYRE
ASSOCIATE PROFESSOR: MATHEMATICS (P)
A.S., Tidewater Community College
B.S., Norfolk State University
M.A., Hampton University

CLAUDIA D. MACON
ASSOCIATE PROFESSOR: BUSINESS MANAGEMENT AND ADMINISTRATION (V)
B.S., Old Dominion University
M.B.A., Old Dominion University

WILLIAM M. MARCIL
ASSOCIATE PROFESSOR: OCCUPATIONAL THERAPY (V)
A.A.S., Maria College
B.S., State University of New York at Buffalo
M.S., State University of New York at Buffalo
Ph.D., Regent University

MICHELE A. MARITS
ASSOCIATE PROFESSOR: ENGLISH (V)
B.A., Old Dominion University
M.A., Old Dominion University
KATHLEEN A. MASCANGELO
ASSOCIATE PROFESSOR: EMERGENCY MEDICAL SERVICES (V)
B.S.N., West Virginia University
M.S., Old Dominion University

ANGELA C. MASON
INSTRUCTOR: BIOLOGY (C)
B.S. University of Cincinnati
M.S., Ohio University

ROBERT A. MAYNARD
ASSOCIATE PROFESSOR: MATHEMATICS (V)
B.S., Ohio State University
M.S., Ohio State University
M.E., Old Dominion University

CHRISTOPHER MCCAMMON
ASSOCIATE PROFESSOR: PHILOSOPHY (N)
B.A., Trinity International University
Ph.D., University of Nebraska at Lincoln

MONICA LYNN MCFERRIN
ASSOCIATE PROFESSOR: ENGLISH (W)
B.A., James Madison University
M.A., Old Dominion University

THOMAS J. MCHUGH
ASSOCIATE PROFESSOR: CHEMISTRY (N)
B.S., Old Dominion University
M.S., Old Dominion University
Ph.D., Arizona State University

IAIN MCKAIG
PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (V)
B.S., Old Dominion University
Ph.D., University of Virginia

WILLIAM MCNAMARA
ASSISTANT PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (C)
B.S., United States Naval Academy
M.S., Old Dominion University

ARThUR A. MENDONSA
PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (C)
B.S., Tidewater Community College
M.S., Old Dominion University

CATHERINE K. MERRITT
ASSISTANT PROFESSOR: NURSING (P)
A.S., Tidewater Community College
B.S., Old Dominion University
M.S., Walden University

ANNETTE S. MEBWORN
INSTRUCTOR: ENGLISH (V)
A.S., Tidewater Community College
B.A., Norfolk State University
M.A., Old Dominion University

LINDA K. MILLER
ASSOCIATE PROFESSOR: SPANISH (V)
B.A., College of William and Mary
M.A., University of Virginia

WALLACE E. MILLER
INSTRUCTOR: TRUCKING (P)
Commercial Driver’s License

RICHARD A. MIMS
ASSISTANT PROFESSOR: WELDING (P)

AMBER-LEIGH D. MITCHELL
INSTRUCTOR: EMERGENCY MEDICAL SERVICES (V)
A.A.S., Tidewater Community College
B.A., Virginia Wesleyan College
M.P.A., Walden University

DANA C. MITCHELL
INSTRUCTOR: MATHEMATICS (P)
B.S., Virginia Polytechnic Institute and State University
M.B.A., Old Dominion University
M.A., University of North Carolina in Charlotte

MICHAEL H. MITCHELL
PROFESSOR: BIOLOGY (C)
A.S., Tidewater Community College
B.S., Old Dominion University
M.S., Old Dominion University
Ph.D., Old Dominion University

JESSICA H. MORALES
ASSISTANT PROFESSOR: CHEMISTRY (C)
B.S., Virginia Commonwealth University
Ph.D., Texas A & M University at College Station

JAMIE L. MORGAN
INSTRUCTOR: EMERGENCY MEDICAL SERVICES (N)
A.S., Tidewater Community College
A.A.S., Tidewater Community College

RYAN M. MULDOWNEY
ASSISTANT PROFESSOR: STUDIO ARTS (P-VAC)
B.F.A., University of the Arts
M.F.A., Pennsylvania Academy of the Fine Arts

DEBRA M. MURRAY
ASSOCIATE PROFESSOR: NURSING (P)
B.S., Pennsylvania State University
M.S.N., University of Virginia
D.N.P., University of Virginia

GRACE T. MURRAY
INSTRUCTOR: BIOLOGY (N)
A.S., Pensacola Junior College
B.S., Old Dominion University
M.S., Old Dominion University

CHERYL NABATI
INSTRUCTOR: LIBRARIAN (V)
B.S., Buffalo State College
M.L.S., University of New York at Buffalo

DAVID P. NEFF
PROFESSOR: HISTORY (V)
B.S., Jacksonville University
M.A., Old Dominion University
M.A., Georgetown University
D.A., George Mason University

P. CHARLOTTE JARRETT NEWSOM
ASSOCIATE PROFESSOR: MATHEMATICS (V)
B.S., Howard College
M.S., Florida State University

JESSE W. NEWTON
ASSISTANT PROFESSOR: PHILOSOPHY (P)
B.A., Atlanta Christian College
M.A., Biola University
Ph.D., University of Virginia

CRAIG A. NILSEN
PROFESSOR: ARTS (P-VAC)
B.A., University of Delaware
M.F.A., West Virginia University

GARY D. NOAH
PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (V)
B.S., Embry-Riddle Aeronautical University
M.P.A., Valdosta State University
M.S., Strayer University

LARRY G. NOBLES
INSTRUCTOR: AUTOMOTIVE TECHNOLOGY (C-RAC)
A.A.S., Tidewater Community College

ROBERT C. NOYES
ASSISTANT PROFESSOR: COUNSELOR (P)
B.A., Brown University
M.Ed., University of Virginia

ANN B. OK
INSTRUCTOR: RADIOTHERAPY (V)
A.A.S., Tidewater Community College
B.S., Old Dominion University

JARED P. OLIVERIO
ASSOCIATE PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (V)
B.S., Old Dominion University
M.S., Old Dominion University

KARL H. OYSTER, JR.
ASSISTANT PROFESSOR: PSYCHOLOGY (V)
B.S., Ohio University
M.A., Ball State University

ANDREA C. PALMISANO
ASSISTANT PROFESSOR: PSYCHOLOGY (V)
B.A., Fairleigh Dickinson University
M.A., Fairleigh Dickinson University

WILLIAM A. PAQUETTE
PROFESSOR: HISTORY (P)
A.B., Grove City College
M.A., Duquesne University
Ph.D., Emory University

DARRYL L. PARKER
INSTRUCTOR: AUTOMOTIVE TECHNOLOGY (C)
A.A.S., Tidewater Community College

ANNE M. PARRELLA
PROFESSOR: HISTORY (C)
M.S., Indiana State University
M.A., University of Virginia
Ph.D., University of Virginia

ANTONIO PASSARO, JR.
ASSISTANT PROFESSOR: ADMINISTRATION OF JUSTICE (N)
B.S., Tidewater Community College
B.A., Virginia Wesleyan College
M.A., Norfolk State University

ANDREA A. PEARMAN
ASSISTANT PROFESSOR: SPEECH (V)
B.A., Maryville College
M.A., Regent University

WILLIAM W. PEARSALL
ASSOCIATE PROFESSOR: ADMINISTRATION OF JUSTICE (C)
A.A.S., Northern Virginia Community College
B.A., National-Louis University
J.D., Appalachian School of Law

CYNTHIA H. PEDIGO
ASSOCIATE PROFESSOR: LEGAL ASSISTING (V)
B.A., James Madison University
J.D., College of William and Mary

KIMBERLY A. PEREZ
PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (V)
B.A., Chatham College
M.S., University of Maryland
M.S., Strayer University
M.S.I.S., Strayer University
C.A.G.S., Strayer University
MOZELL J. PERSON
ASSISTANT PROFESSOR: PSYCHOLOGY (P)
B.A., Chowan University
M.A., Norfolk State University

JIMMY L. PETERSON
PROFESSOR: SOCIOLOGY (N)
B.S., Alabama State University
M.S., University of Wisconsin
Ph.D., University of Michigan

CECELIA S. PETRETTO
INSTRUCTOR: ENGLISH (P)
B.A., Old Dominion University
M.A., Old Dominion University

NANCY R. PETTIGREW
LECTURER: ART/HISTORY (P)
B.A., University of Maryland
M.A., University of Maryland

DIANE M. PETTWAY
ASSOCIATE PROFESSOR: EMERGENCY MEDICAL SERVICES (V)
A.S., Norfolk State University
B.S., Norfolk State University
M.S., California College for Health Sciences

ANNE M. PINKERTON
PROFESSOR: BIOLOGY (N)
B.S., College of William and Mary
M.A., State University of New York at Binghamton
Ph.D., Eastern Virginia Medical School

MICHAEL C. PLUMB
PROFESSOR: INDUSTRIAL ENGINEERING (V)
B.S., University of Louisville
M.B.A., Golden Gate University
Ph.D., Old Dominion University

SHANNON H. PONACK
INSTRUCTOR: ENGLISH (DEVELOPMENTAL READING/Writing) (N)
A.A., Tidewater Community College
B.A., Old Dominion University

DEBRA A. SILLS PORTER
ASSOCIATE PROFESSOR: ACCOUNTING (V)
B.B.A., University of Memphis
M.S., University of Memphis

NANCY N. PRATHER-JOHNSON
ASSISTANT PROFESSOR: BUSINESS ADMINISTRATION (P)
B.S., Johnson & Wales University
M.B.A., Johnson & Wales University

JOHN H. PRUDEN III
ASSOCIATE PROFESSOR: INDUSTRIAL ENGINEERING TECHNOLOGY (V)
B.S., Virginia Polytechnic Institute and State University
M.E.A., George Washington University

KARIN A. PRYOR
ASSISTANT PROFESSOR: ENGLISH (C)
B.A., Marietta College
M.A., Bowling Green State University
M.Ed., Bowling Green State University

TIFFANNY A. PUTMAN
INSTRUCTOR: COUNSELOR (CMVE)
B.S., Savannah State University
M.S., Fort Valley State University

SUSANNE G. RAUCH
INSTRUCTOR: ENGLISH (V)
A.A., Antelope Valley Community College
B.A., California State University
M.A., California State University

WILLIAM G. REESE, JR.
ASSISTANT PROFESSOR: ECONOMICS (V)
B.S., Old Dominion University
M.A., Old Dominion University

CALLIE REICHENBACH
ASSISTANT PROFESSOR: NURSING (P)
M.S.N., Walden University

WILLIAM G. REID
PROFESSOR: ENGLISH (N)
B.A., Old Dominion University
M.A., Old Dominon University

OLIVIA J. REINAUER
INSTRUCTOR: LIBRARIAN (P)
B.A., University of Texas
M.S., University of Texas

JOSEPH E. REISH
ASSOCIATE PROFESSOR: PSYCHOLOGY (P)
B.S., Virginia Polytechnic Institute and State University
M.A., Radford University

RINA M. REYNOLDS
ASSOCIATE PROFESSOR: NURSING (P)
B.S.N., Virginia Commonwealth University
M.S., Virginia Commonwealth University

JAMES T. RIFFE
INSTRUCTOR: TRUCKING (P)
Certificate, Tidewater Community College

DANIEL L. RING
ASSISTANT PROFESSOR: ENGLISH (C)
B.A., University of Notre Dame
M.A., University of New Orleans
M.A., University of Maryland

RICHARD S. ROANE, JR.
INSTRUCTOR: REFERENCE LIBRARIAN (P)
B.S., James Madison University
M.S., University of North Texas

JAMES N. ROBERTS
ASSISTANT PROFESSOR: ECONOMICS (V)
B.A., Cleveland State University
M.A., Michigan State University

ADRIEL L. ROBINSON
INSTRUCTOR: MATHEMATICS (C)
A.S., Allegany College of Maryland
B.A., Houghton College
M.S., West Virginia University

VICKIE H. ROGERS
INSTRUCTOR: COUNSELOR (V)
B.S. Virginia Commonwealth University
M.B.A., Virginia Commonwealth University

GARY W. ROSE
LECTURER: WELDING (P)
A.A., Saint Leo University
A.A.S., Community College of The Air Force

SYLVIA T. ROSS
ASSOCIATE PROFESSOR: ENGLISH (N)
B.A., University of Notre Dame
M.A., University of Miami

BOBBY G. ROWE, JR.
INSTRUCTOR: AUTOMOTIVE TECHNOLOGY (C-RAC)
A.A.S., Tidewater Community College

BOBBY G. ROWE, SR.
PROFESSOR: AUTOMOTIVE TECHNOLOGY (C-RAC)
A.A.S., Tidewater Community College
A.A., State University of New York at Albany
B.S., State University of New York at Albany
M.S., Troy State University

AMY L. RUEDISUELI
PROFESSOR: SOCIOLOGY (V)
B.S., Eastern Michigan University
M.A., Eastern Michigan University
Ph.D., Wayne State University

CAMERON L. RUSSELL
ASSISTANT PROFESSOR: BIOLOGY (N)
B.S., Old Dominion University
M.S., Old Dominion University

SIRJE KAASIK RUSSELL
INSTRUCTOR: ENGLISH AS A SECOND LANGUAGE (V)
B.A., Mount Vernon College
M.Ed., Temple University

LAURA RIEVES SANDERS
INSTRUCTOR: PSYCHOLOGY (V)
B.S., Old Dominion University
M.S., Old Dominion University

CAROLYN D. SATZ
ASSOCIATE PROFESSOR: ACCOUNTING (C)
A.S., Tidewater Community College
B.S., Old Dominion University
M.T., Old Dominion University

WHITNEY L. SAUNDERS
ASSISTANT PROFESSOR: NURSING (P)
B.S.N., Norfolk State University
M.S.N., Hampton University

ELIZABETH ELAINE W. SCHLEEPER
INSTRUCTOR: ENGLISH (P)
A.S., Tidewater Community College
B.A., Old Dominion University
M.A., Old Dominion University

MARIO R. SCRIBNER
ASSISTANT PROFESSOR: MATHEMATICS (V)
B.S., Old Dominion University
M.S., Old Dominion University

CHARLES L. SELLS
INSTRUCTOR: COLLISION REPAIR TECHNOLOGY (C)
Diploma, Belmont Career Center

ROBIN L. SEYMORE
ASSOCIATE PROFESSOR: PSYCHOLOGY (V)
B.A., College of William and Mary
M.A., Regent University
M.A., Regent University
Ps.D., Regent University

SYLVIE G. SHAPERO
INSTRUCTOR: ENGLISH (N)
B.A., California State University - Northridge
M.F.A., George Mason University

INDU J. SHARMA
ASSOCIATE PROFESSOR: DIAGNOSTIC MEDICALSONOGRAPHY (P)
A.S., Tidewater Community College
A.S., Tidewater Community College
B.A., College of William and Mary
M.A., Troy State University

PETER M. SHAW
PROFESSOR: BUSINESS MANAGEMENT AND ADMINISTRATION (N)
A.S., Tidewater Community College
B.S., Old Dominion University
M.B.A., College of William and Mary

AMY K. SHAY
INSTRUCTOR: HEALTH INFORMATION MANAGEMENT (V)
A.A.S., Tidewater Community College
B.S., Old Dominion University
WILLIAM L. SHERRILL  
PROFESSOR: ECONOMICS (N)  
A.A., Old Dominion University  
B.S., Old Dominion University  
M.A., Old Dominion University

RICHARD L. SHOAF  
PROFESSOR: HISTORY (P)  
A.B., University of North Carolina at Chapel Hill  
M.A., Harvard University

RUTH H. SHUMATE  
ASSISTANT PROFESSOR: LIBRARIAN (P)  
A.S., Tidewater Community College  
B.Ed., Old Dominion University  
M.S.L.S., Catholic University of America

THOMAS D. SIEGMUND  
PROFESSOR: PHOTOGRAPHY (P-VAC)  
B.F.A., Old Dominion University  
M.F.A., Norfolk State University

FRANK J. SIGNORELLI  
ASSISTANT PROFESSOR: EMERGENCY MEDICAL SERVICES (V)  
A.S., Tidewater Community College  
B.S., Old Dominion University

WILLIAM A. SIMMONS  
INSTRUCTOR: ENGINEERING (C)  
A.S., Tidewater Community College  
B.S.E.E., Old Dominion University  
M.E.E., Old Dominion University

DANIA O. SINIBALDI  
INSTRUCTOR: MATHEMATICS (V)  
B.S., Old Dominion University  
M.S., Montana State University

ANGELA L. SLAUGHTER  
ASSISTANT PROFESSOR: BUSINESS MANAGEMENT & ADMINISTRATION (P)  
B.S., Old Dominion University  
M.S., Averett University

TIFFANYE P. SLEDGE  
ASSOCIATE PROFESSOR: SOCIOLOGY (P)  
B.A., Spelman College  
M.A., Arizona State University  
Ph.D., Arizona State University

THOMAS M. SLOPNICK  
PROFESSOR: HISTORY (V)  
B.A., University of Connecticut  
M.A., Western Connecticut State University  
Ph.D., University of Connecticut

VIOLA A. SMITH  
ASSOCIATE PROFESSOR: NURSING (P)  
B.S., Indiana University of Pennsylvania  
M.S., Indiana University of Pennsylvania

GREGORY L. SNYDER  
INSTRUCTOR:  
LIBRARIAN CATALOGING & TECHNICAL SERVICES (V)  
B.A., University of Houston  
B.A., University of Houston  
M.S., University of North Texas

JIMMY W. SPELTS  
ASSISTANT PROFESSOR: NURSING (P)  
A.A., Tidewater Community College  
B.S., Old Dominion University  
M.S.N., University of Phoenix

MAURA J. SPREEN  
INSTRUCTOR: COUNSELOR (V)  
B.A., St. Ambrose University  
M.S.Ed., Old Dominion University

IAN THOMAS SPRINGER  
INSTRUCTOR: ENGLISH (V)  
B.S., Michigan Technological University  
M.A., Eastern Michigan University

CRYSTAL S. STAFFORD  
INSTRUCTOR: COUNSELOR (V)  
B.A., Longwood University  
B.S., Old Dominion University  
M.S.Ed., Old Dominion University

DIANNE H. STANBACH  
INSTRUCTOR: ENGLISH (V)  
B.A., California State University  
M.A., California State University

DAVID A. STEINHAUER  
PROFESSOR: DRAFTING (P)  
B.S.Ed., Kent State University  
M.S.Ed., Old Dominion University

SARAH STEVENSON  
INSTRUCTOR: ENGLISH & READING (DEVELOPMENTAL) (C)  
B.A., Old Dominion University  
M.S., Old Dominion University

LAETITIA S. STONE  
ASSOCIATE PROFESSOR: FRENCH (V)  
B.A., Old Dominion University  
M.A., Old Dominion University

TRICIA J. SWOOPE  
INSTRUCTOR: ENGLISH (V)  
B.A., Old Dominion University  
M.A., Old Dominion University

AZAM M. TABRIZI  
INSTRUCTOR: GEOPHYSICAL SCIENCE (C)  
B.S., Tabriz University  
M.S., University of London

MEGAN AUBURN TALIAFERRO  
INSTRUCTOR: NATURAL SCIENCES (V)  
B.S., College of William & Mary  
D.V.M., Virginia-Maryland Regional College of Veterinary Medicine

MICHAE|L P. TARPEY  
INSTRUCTOR: PHILOSOPHY (C)  
B.A., Calvin College  
M.A., Old Dominion University  
M.A., Old Dominion University

EUGENIA B. TAYLOR  
ASSOCIATE PROFESSOR: MATHEMATICS (C)  
B.S., University of South Carolina  
M.A., College of William and Mary

LARA B. TEDROW  
ASSOCIATE PROFESSOR: PSYCHOLOGY (N)  
B.S., Old Dominion University  
M.S., Old Dominion University  
M.S.Ed., Old Dominion University

C. GREGG TENNEFOSS  
PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (V)  
A.A.S., Tidewater Community College  
B.S., Old Dominion University  
M.S.Ed., Old Dominion University

DOUGLAS M. THIELE  
INSTRUCTOR: ENGLISH (C)  
B.S., Indiana University  
M.A., Old Dominion University  
M.S., Old Dominion University

SUKE E. TOOLEY  
ASSISTANT PROFESSOR: ENGLISH (N)  
B.A., Christopher Newport University  
M.A., University of Kansas

MANISHA N. TRIVEDI  
INSTRUCTOR: BIOLOGY (P)  
B.S., St. Xavier's College  
M.S., Gujarat State University  
M.S., Old Dominion University

VINCENT TUCKER, JR.  
INSTRUCTOR: MATHEMATICS (P)  
B.S., Norfolk State University  
M.S., Hampton University

ROBERT C. TYLER  
INSTRUCTOR: COUNSELOR (P)  
B.A., Johnson State University  
M.S., City University of New York at Hunter College

KIM B. UITLEY  
PROFESSOR: RADILOGIC TECHNOLOGY (V)  
A.A.S., Central Virginia Community College  
B.S., Old Dominion University  
M.S., Old Dominion University

JENNIFER A. VALENTINE  
INSTRUCTOR: SOCIOLOGY (V)  
B.A., Virginia Wesleyan College  
M.S., Virginia Commonwealth University

DAVID M. VANN  
INSTRUCTOR: TRUCKING (P)  
Commercial Driver's License

BONITA J. VOLKER  
ASSOCIATE PROFESSOR: INFORMATION SYSTEMS TECHNOLOGY (N)  
A.S., Tidewater Community College  
B.S., Old Dominion University  
M.B.A., Old Dominion University

REBECCA L. VONDERHAAR  
INSTRUCTOR: SOCIOLOGY (P)  
A.S., Tidewater Community College  
B.S., Old Dominion University  
M.S., Old Dominion University

SCOTT E. WADE  
ASSISTANT PROFESSOR: HISTORY (V)  
A.A.S., Mountain Empire Community College  
B.A., University of Virginia at Wise  
M.A., George Mason University

G. NICOLE WALKER  
ASSISTANT PROFESSOR: COUNSELOR (P)  
B.A., Saint Paul’s College  
M.A., Hampton University  
M.S., Troy State University  
Ph.D., Capella University

JOSEPH R. WALLS  
INSTRUCTOR: ENGLISH (V)  
B.A., Liberty University  
M.A., Liberty University

JOSEPH F. WALTON  
ASSOCIATE PROFESSOR: FUNERAL SERVICES (V)  
A.S., Gupton-Jones College  
B.S., Hampton University  
M.A., Norfolk State University

CHARLITA L. WARREN  
ASSISTANT PROFESSOR: NURSING (N)  
B.S.N., Norfolk State University  
M.S.N., Walden University
IVORY J. WARREN  
ASSISTANT PROFESSOR: HUMAN SERVICES (N)  
B.S.W., Norfolk State University  
M.S.W., Norfolk State University  

JACQUELINE M. WARREN  
PROFESSOR: ADMINISTRATIVE SUPPORT TECHNOLOGY (V)  
A.A., Old Dominion University  
B.S., Old Dominion University  
M.Ed., Virginia Polytechnic Institute and State University  

SHANNON L. WASHINGTON  
ASSISTANT PROFESSOR: NURSING (P)  
Diploma, Riverside School of Professional Nursing  
M.S.N., Walden University  

JOSHUA L. WATERS  
INSTRUCTOR: TRUCKING (P)  
Certificate, Tidewater Community College  

LIBBY A. WATTS  
ASSISTANT PROFESSOR: MATHEMATICS (N)  
A.S., Monroe Community College  
B.A., State University of New York at Geneseo  
M.A., State University of New York at Potsdam  

MATTHEW K. WATTS  
ASSISTANT PROFESSOR: MATHEMATICS (C)  
B.S., James Madison University  
M.S., University of Arizona  

DEBRA A. WELLS  
PROFESSOR: ADMINISTRATIVE SYSTEMS TECHNOLOGY (P)  
B.S., Norfolk State University  
M.Ed., Regent University  

MARK J. WHEATON  
INSTRUCTOR, CHEMISTRY (V)  
B.S., Hampden-Sydney College  
M.A., University of Arizona  

LISA L. WHITAKER  
INSTRUCTOR: HEALTH INFORMATION MANAGEMENT (V)  
B.S., Virginia Commonwealth University  

CAROLE B. WHITENER  
ASSOCIATE PROFESSOR: EARLY CHILDHOOD DEVELOPMENT (C)  
B.M., East Carolina University  
M.S.Ed., Old Dominion University  

GORDON L. WHITMAN  
ASSISTANT PROFESSOR: PSYCHOLOGY (N)  
A.B., West Virginia University  
M.A., Ohio State University  

STEVEN JO WHITNEY  
INSTRUCTOR: AUTOMOTIVE TECHNOLOGY (C)  
A.A.S., Tidewater Community College  

CAROLYN W. WILLIAMS  
INSTRUCTOR, COUNSELOR (V)  
B.S., Fayetteville State University  
M.A.Ed., East Carolina University  

JOHN T. WILLIAMS, JR.  
ASSOCIATE PROFESSOR: ENGLISH (P)  
B.A., Waynesburg College  
M.A., Fitchburg State College  

JUDY H. WILLIAMS  
ASSOCIATE PROFESSOR: MATHEMATICS (P)  
B.A., Frostburg State College  
M.A., West Virginia University  

LINDA S. WILLIAMS  
PROFESSOR: BUSINESS MANAGEMENT AND ADMINISTRATION (C)  
B.A., University of Richmond  
M.B.A., East Carolina University  
M.S., Strayer University  

MICHAEL J. WILLIAMS  
ASSISTANT PROFESSOR: BIOLOGY (P)  
B.S., State University of New York at Geneseo  
M.S., University of Charleston  

EMILY L. WILSON  
ASSOCIATE PROFESSOR: BIOLOGY (C)  
B.A., University of Florida  
Ph.D., University of Miami School of Medicine  

MARC C. WINGETT  
INSTRUCTOR: BIOLOGY (C)  
B.S., Virginia Polytechnic Institute and State University  
B.S., Old Dominion University  
M.S., Old Dominion University  

DAVID L. WINTERS  
ASSOCIATE PROFESSOR: CHEMISTRY (V)  
B.S., West Virginia State College  
M.S., West Virginia University  

NITA B. WOOD  
ASSOCIATE PROFESSOR: ENGLISH (P)  
B.A., Norfolk State University  
M.A., Norfolk State University  

GERALDINE WOODBERRY-WRIGHT  
PROFESSOR: BIOLOGY (P)  
B.A., Lehigh University  
D.P.M., New York College of Podiatric Medicine  

MARTHA M. WOODS  
ASSISTANT PROFESSOR: TRUCKING (P)  
A.A.S., Tidewater Community College  

LISA A. WRENN  
INSTRUCTOR: BIOLOGY (V)  
A.S., Tidewater Community College  
B.S., James Madison University  
M.S., Old Dominion University  

BETHANY WRIGHT  
INSTRUCTOR: LIBRARIAN (V)  
B.A., Brigham Young University  
M.L.I.S., University of South Carolina  

DAVID S. WRIGHT  
PROFESSOR: PHYSICS (V)  
B.S., Brigham Young University  
M.A., Brigham Young University  
Ph.D., Virginia Polytechnic Institute and State University  

WILLIAM T. YOUNGER III  
ASSOCIATE PROFESSOR: PHYSICS (VB/C)  
A.S., College of the Albemarle  
B.S., East Carolina University  
M.S., East Carolina University  
Ph.D., ABD, University of North Carolina
H
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