

Student Handbook
for
ENGINEERING
at
Tidewater Community College
2008 – 2009

For the most recent updates to this handbook, see
www.tcc.edu/faculty/webpages/pgordy/handbook.pdf
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Engineering at TCC

The curriculum in Engineering at Tidewater Community College is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in one of several fields of engineering such as:

- *Aerospace Engineering*
- *Civil Engineering*
- *Chemical Engineering*
- *Computer Engineering*
- *Electrical Engineering*
- *Environmental Engineering*
- *Mechanical Engineering*
- *Mining/Metallurgical Engineering*
- *Nuclear Engineering*

The curriculum is based on a core of material fundamental to all areas of engineering. This material includes courses which depend heavily on advanced mathematics and sciences applied to engineering fields. The courses offered during this two-year program are very comparable to the first two years of most four-year engineering programs; however, it is essential that students acquaint themselves with the requirements and the curricula of the college or university to which transfer is considered. By obtaining transfer information early, students can avoid later transfer problems such as:

- 1) Each engineering college may not have programs in all engineering fields. For example, if you wish to major in Chemical Engineering, your choices may be somewhat limited.
- 2) Certain engineering programs may require freshman and sophomore level courses that are not a part of TCC's Engineering curriculum. Students may possibly be able to take these courses at TCC or at another local institution. In many cases students can make some course substitutions in the A.S. degree program in order to transfer as efficiently as possible.
- 3) Some engineering departments at certain universities may require a higher GPA than others.

Transfer information has been provided in this booklet for Old Dominion University (ODU) and for Virginia Polytechnic Institute and State University (Virginia Tech) since most TCC Engineering students transfer to these universities. A table of transfer options for colleges in Virginia has also been included.

TCC students may also wish to consult with the TCC Counseling Center in planning their programs and selecting electives.

What's New in the 2007-2008 TCC Student Handbook for Engineering ?

EGR 277 and EGR 278 (Digital Logic and Digital Logic Lab) have been replaced by EGR 270 – Fundamentals of Computer Engineering
MTH 174 has been reduced from 5 credits to 4 credits
MTH 275 has been replaced by MTH 277

For additional information regarding the Engineering program at TCC, contact:

Paul Gordy, Engineering Program Head, TCC Virginia Beach Campus
Office: H-115 (Advanced Technology Center)
Phone: 822-7175
Paul Gordy's E-mail address: **PGordy@tcc.edu**
Paul Gordy's Home Page: **www.tcc.edu/faculty/webpages/PGordy/**

Selecting an Engineering Discipline

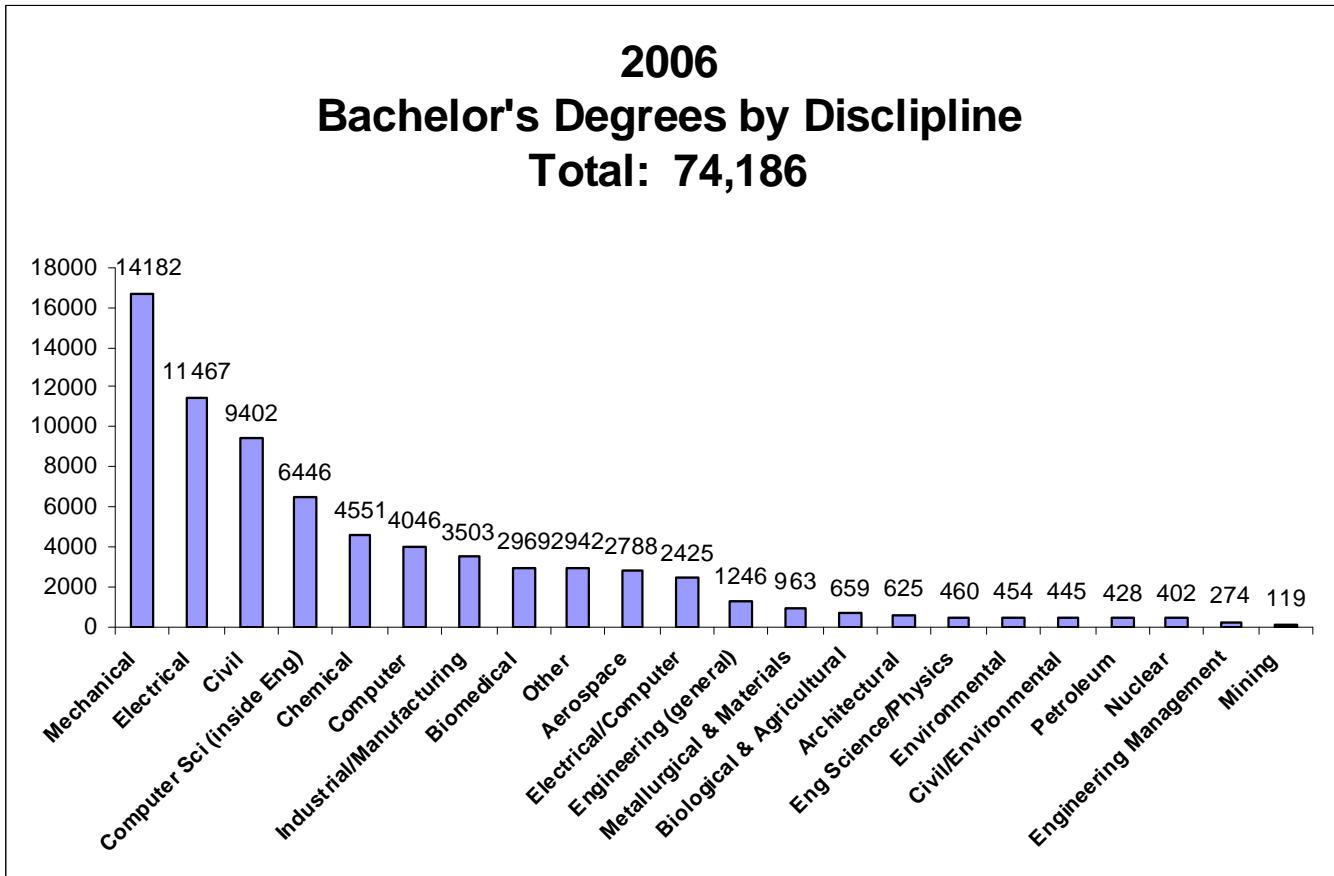
Many factors are involved in choosing an Engineering discipline in which to specialize. Some students have a definite area of preference before they begin their college education, while other students may have difficulty selecting a discipline. Since most Engineering programs are quite similar in the freshman year, students have some time in which to make this decision. Although the sophomore years of most Engineering programs are somewhat similar, there are often some discipline-specific courses required so it is to the students advantage to select a discipline or at least begin to narrow the choices. The junior year of any Engineering program will be almost completely discipline-specific, so all students should have selected an Engineering discipline by the end of their sophomore year. When students transfer from TCC into a four-year Engineering program they will need to apply for transfer into a specific Engineering department.

Some possible factors in selecting an Engineering discipline are listed below.

- Work experience in a related area
- Personal preference/strengths/aptitude
- Local employment opportunities
- Salary
- Nationwide demand for specific types of Engineers
- Engineering disciplines available at local universities
- Work environment

Starting salaries for recent graduates with Bachelor's degrees in Engineering are consistently quite high. The tables on the following page shows average starting salaries for specific Engineering disciplines.

To a large extent, the law of supply and demand seems to control how many potential Engineers enter each discipline. If jobs were not available in a particular area of Engineering, the number of students entering that discipline would certainly begin to decrease. The chart below indicates how many BS degrees in Engineering were awarded by discipline in 2007 (Source: [Profiles of Engineering and Engineering Technology Colleges](#) – ASEE 2007 Edition).



Engineering Salary by Discipline

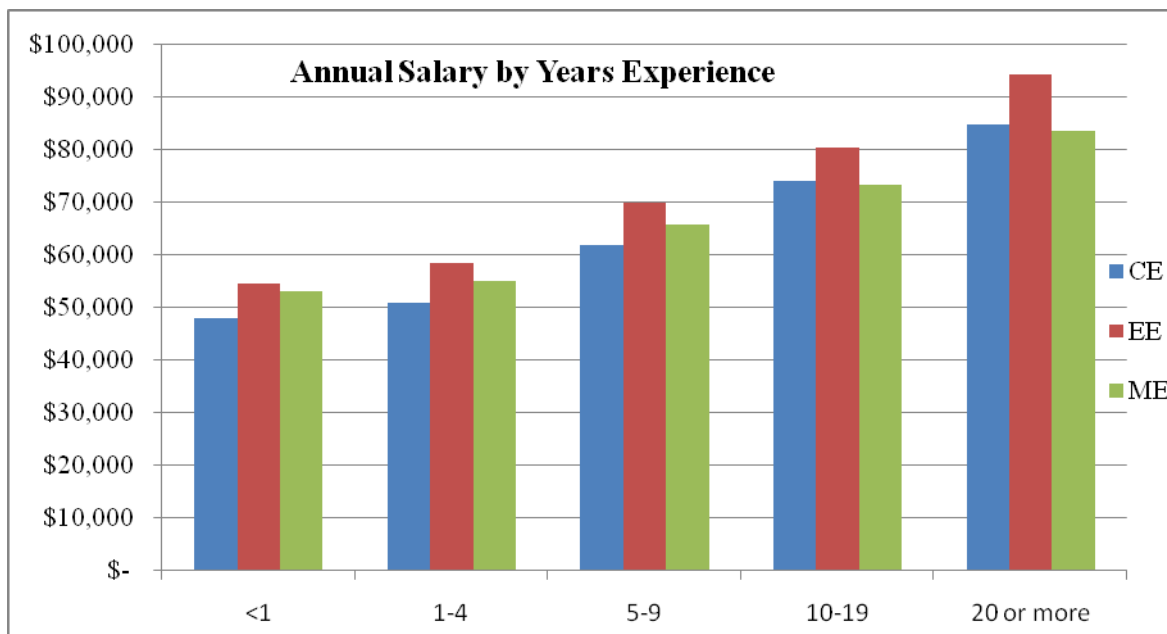
Discipline	Starting Salaries *	All levels of experience **
Aerospace (AE)	\$53,626	\$101,020
Biomedical (BI)	\$51,044	\$69,760
Chemical (CH)	\$59,218	\$91,040
Civil (CV)	\$48,998	\$76,760
Computer (CP)	\$55,920	\$89,640
Electrical (EE)	\$55,333	\$83,270
Environmental (EN)	\$47,914	\$74,980
Industrial (IN)	\$54,585	\$78,210
Materials (MT)	\$53,056	\$82,680
Mechanical (ME)	\$54,057	\$78,640
Nuclear (NU)	\$55,966	\$119,260
Petroleum (PT)		\$140,770

* Fall 2007 National Association of Colleges and Employers (NACE) Salary Survey (www.naceweb.org)

** May 2007 Bureau of Labor Statistics (www.bls.gov)

Engineering Salary by Length of Experience

Years Experience	CE	EE	ME
<1	\$47,930	\$54,482	\$52,965
1-4	\$50,803	\$58,420	\$55,096
5-9	\$61,885	\$69,871	\$65,748
10-19	\$74,025	\$80,443	\$73,256
20 or more	\$84,956	\$94,345	\$83,550



Source: www.PayScale.com (July 2008)

According to the 2007 NSPE Engineering Income & Salary Survey:

- The average annual salary for an engineer with less than one year of experience is \$49,250.
- The median annual salary for all engineers is \$81,316
- Petroleum engineers have the highest annual salary of \$119,500. The second highest were mining and forensic engineers at \$107,500. The third highest were nuclear engineers at \$106,000.
- The average annual salary of engineers with BS degrees is \$73,000.
- The average annual salary of engineers with MS degrees is \$82,558.
- The average annual salary of engineering with Ph.D degrees is \$94,000.
- The average annual salary of licensed Professional Engineers (PE's) is \$86,000, which is 24% higher than the salary for non-licensed engineers at \$69,355.

Engineering or Engineering Technology?

Students considering a major in Engineering should understand the difference between Engineering and Engineering Technology. Some colleges or universities, such as ODU, offer programs in both Engineering and Engineering Technology. Virginia Tech used to have both Engineering and Engineering Technology programs but eliminated their Engineering Technology programs in the 1980's. They now have only Engineering programs. ASEE reports that in 2007 there were:

- 338 colleges and universities offering BS degrees in Engineering
- 248 colleges and universities offering MS degrees in Engineering
- 191 colleges and universities offering PhD degrees in Engineering
- 93 colleges offering BS degrees in Engineering Technology

(Source: Profiles of Engineering and Engineering Technology Colleges – ASEE 2007 Edition).

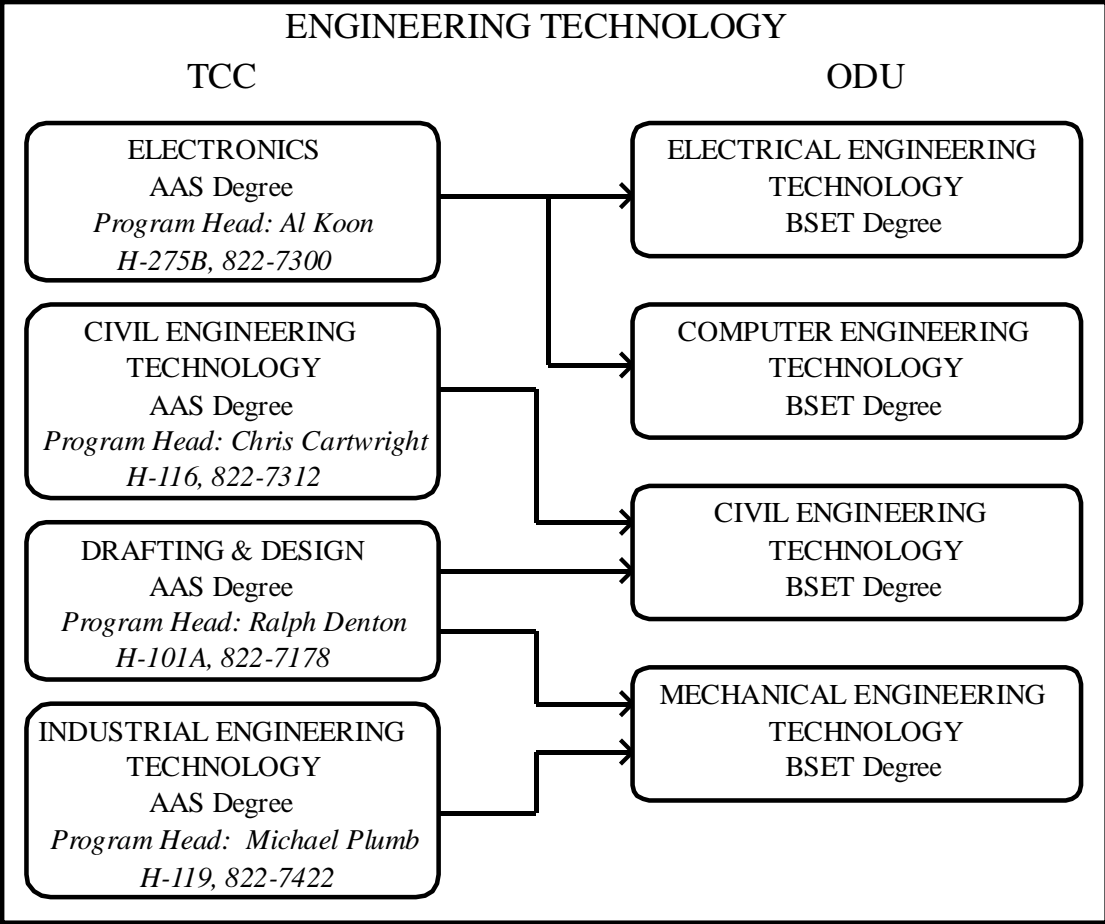
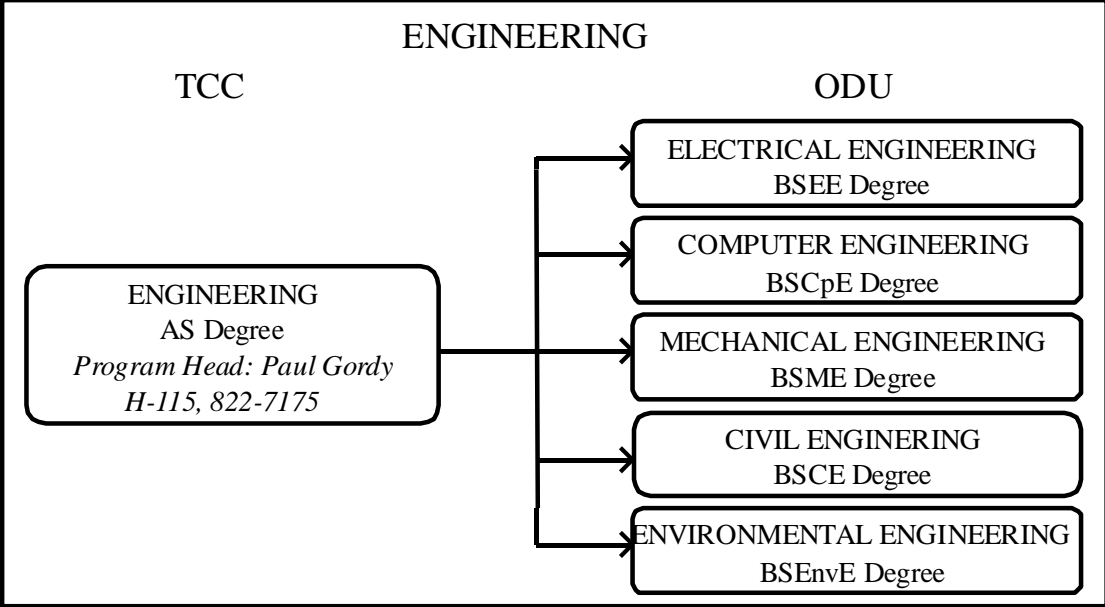
In general, Engineering is a more rigorous program mathematically, providing a better foundation for design work, research, and post-graduate study (Master's or Ph.D. degrees). Engineering graduates are typically offered higher salaries and will have a wider assortment of employment opportunities than Engineering Technology graduates. Engineers typically have the lead role in engineering projects such as new product development, engineering design work or analysis, production management, consulting, etc., whereas Engineering Technologists often work in more of an engineering support capacity.

In general, Engineering Technology is more "hands on" oriented and students in these curricula may spend much more time in lab courses than Engineering students. Engineering Technologists often work closely with Engineers, but in a supportive role such as in quality assurance, prototype model construction and testing, safety, reliability assessment, design modification, and production (although Engineers may work in these areas as well). Students majoring in Engineering Technology should realize that some companies will not hire graduates with Engineering Technology degrees (such as NASA) and hire only applicants with Engineering degrees for Engineering positions. Other companies make no distinction between the degrees. The federal government (Norfolk Naval Shipyard, NAVSEA, Naval Public Works, etc.) will often hire Engineering Technology graduates as engineers once they pass the Fundamentals of Engineering (FE) exam. Post-graduate programs in Engineering Technology are rare and Engineering Technology students are typically required to take many undergraduate math and engineering courses before they will be accepted into postgraduate Engineering programs.

Students sometimes have taken courses in Engineering Technology programs and wish to use the credits in an Engineering program. This is generally not possible. ABET accredits both Engineering and Engineering Technology programs nationwide and does not allow Engineering programs to give credit for Engineering Technology courses.

As stated previously, Virginia Tech offers only Engineering programs. ODU offers both Engineering programs (with 5 undergraduate degrees) and Engineering Technology programs (with 4 undergraduate degrees). The chart on the following page indicates how different curricula at TCC transfer to ODU.

**ENGINEERING AND ENGINEERING TECHNOLOGY
TRANSFER RELATIONSHIP
BETWEEN TCC AND ODU**



ENGINEERING (831)

Associate in Science Degree: Engineering

<u>Pre-/Co-requisite</u>	<u>Course Number</u>	<u>Course Title</u>	<u>Credits</u>	<u>When Taken</u>	<u>Grade</u>
FIRST SEMESTER					
Co-req or Pre-req: MTH 164 or 166 Placement _____ Placement _____	CHM 111	College Chemistry I	4	_____	()
	EGR 120	Introduction to Engineering	2	_____	()
	ENG 111	College Composition I	3	_____	()
	HIS _____	History (HIS 101,102, 111,112,121, or 122)	3	_____	()
	MTH 173	Calculus with Analytic Geometry I	5	_____	()
	SDV 101	Orientation to Engineering and Technologies	1	_____	()
Total:			18		
SECOND SEMESTER					
Pre: CHM 111 Co-req or Pre-req: MTH 164 or 166 Pre: ENG 111 Pre: MTH 173 _____	CHM 112	College Chemistry II	4	_____	()
	EGR 110	Engineering Graphics	3	_____	()
	ENG 112 or ENG 131	College Composition II or Technical Report Writing ***	3	_____	()
	MTH 174	Calculus with Analytic Geometry II	4	_____	()
	EGR	Approved Engineering Elective *	3	_____	()
	Total:			17	
THIRD SEMESTER					
Pre: EGR 110 or instructor perm. Pre: MTH 174 Pre: MTH 174 _____	EGR 125	Introduction to Engineering Methods (C++)	4	_____	()
	EGR	Approved Engineering Elective *	3	_____	()
	MTH 279	Ordinary Differential Equations	4	_____	()
	PHY 241	University Physics I	4	_____	()
	_____	Social Science Elective **	3	_____	()
	Total:			18	
FOURTH SEMESTER					
_____ _____ Pre: MTH 174 Pre: PHY 241 _____ _____	_____	Humanities Elective **	3	_____	()
	_____	Humanities Elective **	3	_____	()
	MTH 277	Vector Calculus	4	_____	()
	PHY 242	University Physics II	4	_____	()
	EGR	Approved Engineering Elective *	3	_____	()
	_____	Health, Physical Education or Recreation	1	_____	()
Total:			18		
Total Minimum Credits for A.S.degree:			71		

Notes related to the A.S. degree in Engineering shown on the previous page

***Approved Engineering Electives** include the following courses (consult the Engineering Program Head for assistance in determining which courses are recommended for transfer into Civil Engineering, Mechanical Engineering, Electrical Engineering, etc.). A minimum of 9 credits of Approved Engineering Elective are required for the degree; however, additional courses may still be transferable.

EGR 140 - Engineering Mechanics - Statics (3 cr, co-requisite MTH 164, pre-requisite EGR 120)

EGR 245 - Engineering Mechanics - Dynamics (3 cr, pre-requisite EGR 140)

EGR 246 - Mechanics of Materials (3 cr, pre-requisite EGR 140)

EGR 247 - Mechanics of Materials Lab (1 cr, co-requisite EGR 246)

EGR 260 - Circuit Analysis (3 cr, co-requisites MTH 279 and EGR 120)

EGR 261 - Signals & Systems (3 cr, pre-requisites EGR 260 and MTH 279)

EGR 262 - Fundamental Circuits Lab (2 cr, pre-requisite EGR 260)

EGR 270 – Fundamentals of Computer Engineering (4 cr, pre-requisite EGR 260)

EGR 2xx – Engineering Analysis Tools (3 cr., co-requisite EGR 260) – Under development

** **Social Science/Humanities Electives.**

Eligible courses are listed page 64 in the 2008-2009 catalog. Students should consult an academic advisor or counselor to choose the appropriate course(s). A table of general areas for each elective is provided below.

Social Science Electives	Humanities Electives
Economics -ECO	Art (history or appreciation only) - ART
Geography - GEO	Drama
History - HIS	Foreign Languages (not acceptable for ODU)
Political Science - PLS	Humanities – HUM
Psychology - PSY	Literature – ENG
Social Science - SOC	Music (history or appreciation only) – MUS
Sociology - SOC	Philosophy – PHI
	Religion - REL

*** **ENG 112 is recommended for students transferring to Virginia Tech. ENG 131 is recommended for students transferring to ODU, although ENG 112 is acceptable.**

TCC Computer Competency Requirement

Note that successful completion of the A.S. degree in Engineering satisfies the TCC Computer Competency Requirement

Approved Engineering Electives

The TCC Engineering curriculum sheet on the previous two pages includes nine credits of “Approved Engineering Electives”. Students should select a **minimum** of nine credits of Engineering courses in order to satisfy this requirement. Factors to consider when selecting Approved Engineering Electives include:

- Students should pick courses that will allow them to transfer efficiently into the Engineering program of their choice at a 4-year college or university
- Students can sometimes benefit by taking more than nine credits of Approved Engineering Electives if all of the credits transfer

Since most TCC Engineering students transfer to either Old Dominion University or Virginia Tech, a table is provided below with recommended selections for Approved Engineering Electives. Additional transfer information for these institutions is provided later in this handbook.

Recommended Approved Engineering Electives (minimum of 9 required)

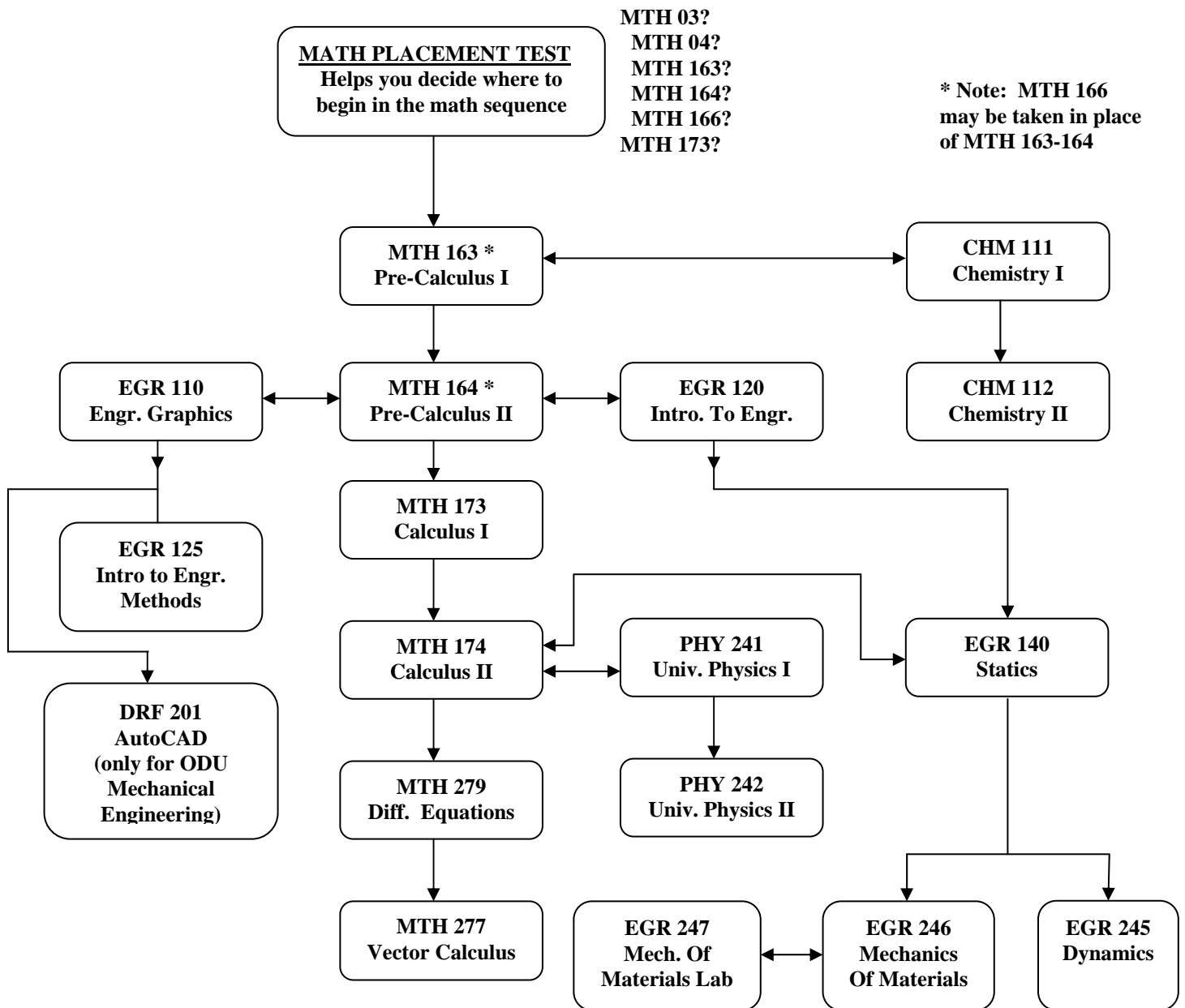
ODU Civil Engineering		ODU Environmental Engineering		ODU Mechanical Engineering		ODU Electrical Engineering		ODU Computer Engineering	
Electives	Cr	Electives	Cr	Electives	Cr	Electives	Cr	Electives	Cr
EGR 140	3	EGR 140	3	EGR 140	3	EGR 260	3	EGR 260	3
EGR 245	3	BIO 101	4	EGR 245	3	EGR 261	3	EGR 261	3
EGR 246	3	EGR 246	3	EGR 246	3	EGR 262	2	EGR 262	2
EGR 247	1	EGR 247	1	EGR 247	1	EGR 270	4	EGR 270	4
						EGR 2xx	3	EGR 2xx	3
						EGR 140	3	CSC 210	4

VA Tech Chemical Engineering		VA Tech Civil Engineering		VA Tech Environmental Engineering		VA Tech Electrical Engineering		VA Tech Computer Engineering		VA Tech All Others **	
Electives	Cr	Electives	Cr	Electives	Cr	Electives	Cr	Electives	Cr	Electives	Cr
EGR 140	3	EGR 140	3	EGR 140	3	EGR 140	3	EGR 140	3	EGR 140	3
EGR 246	3	EGR 245	3	EGR 245	3	EGR 260	3	EGR 260	3	EGR 245	3
CHM 241	3	EGR 246	3	EGR 246	3	EGR 261	3	EGR 261	3	EGR 246	3
CHM 245	1										

** Includes the following:

Aerospace Engineering
 Ocean Engineering
 Biological Systems Engineering
 Engineering Science & Mechanics
 Industrial & Systems Engineering
 Material Science
 Mechanical Engineering
 Mining & Minerals Engineering

Flowchart of Technical Courses for Engineering Students Transferring into **Civil, Environmental, or Mechanical Engineering**



MTH 03?
MTH 04?
MTH 163?
MTH 164?
MTH 166?
MTH 173?

* Note: MTH 166
may be taken in place
of MTH 163-164

LEGEND:



Indicates a pre-requisite

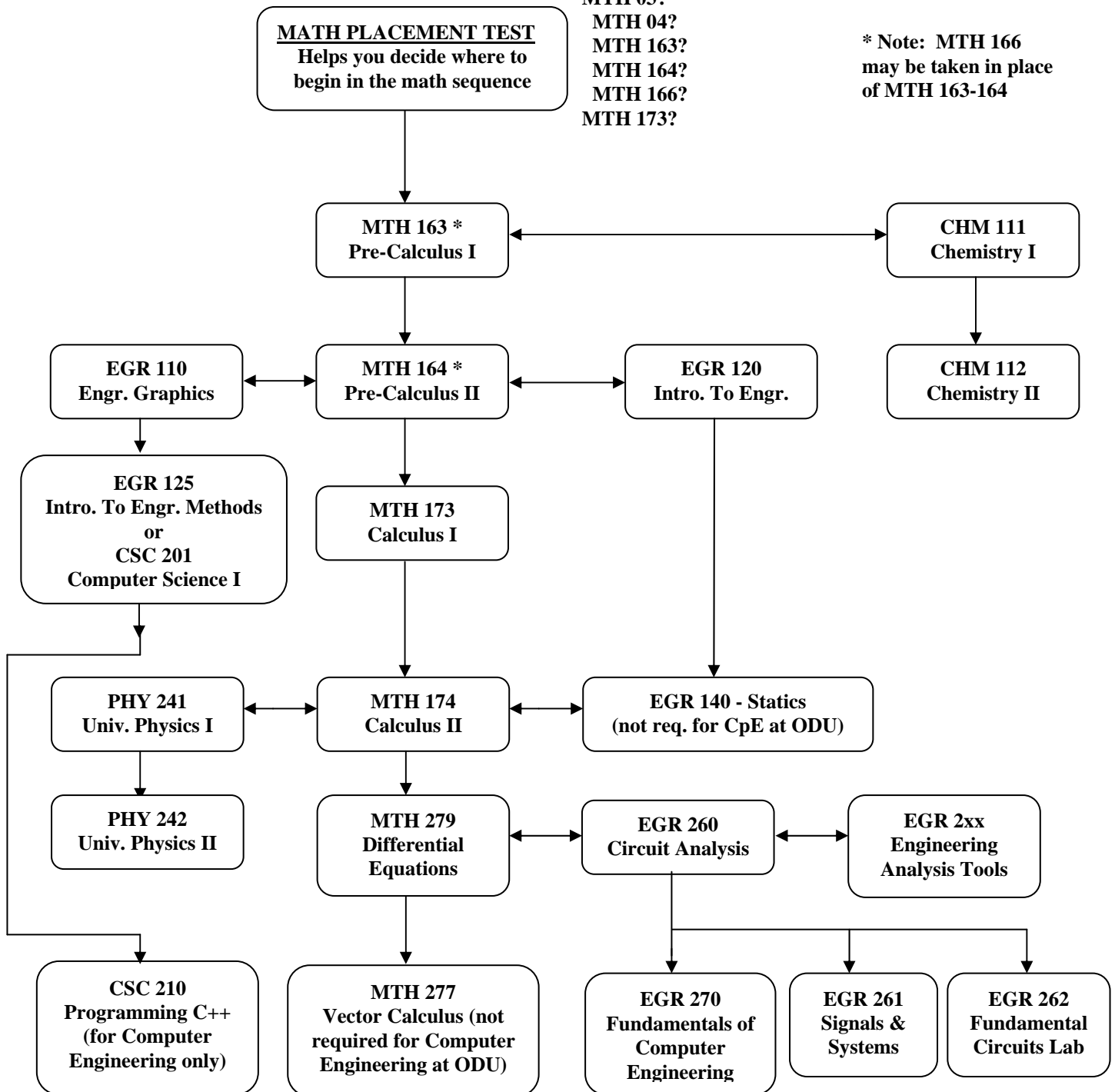


Indicates a co-requisite

Flowchart of Technical Courses for Engineering Students Transferring into **Electrical or Computer Engineering**

MTH 03?
MTH 04?
MTH 163?
MTH 164?
MTH 166?
MTH 173?

* Note: MTH 166
may be taken in place
of MTH 163-164



LEGEND:

- ↓ Indicates a pre-requisite
- ↔ Indicates a co-requisite

Tentative Annual Schedule of Engineering Courses 2008-2010 (Virginia Beach Campus)

Fall 2008 and Fall 2009

	<u>Time</u>
EGR 110 - Engineering Graphics	D/E
EGR 120 - Introduction to Engineering	D/E/H
EGR 125 - Introduction to Engineering Methods (C++)	D/E
EGR 140 - Engineering Mechanics - Statics	D/E
EGR 245 - Engineering Mechanics - Dynamics	D
EGR 246 - Mechanics of Materials	D
EGR 247 - Mechanics of Materials Laboratory	D
EGR 260 - Circuit Analysis	E
EGR 261 – Signals & Systems	D

Spring 2009 and Spring 2010

EGR 110 - Engineering Graphics	D/E
EGR 120 - Introduction to Engineering	D/E/H
EGR 125 - Introduction to Engineering Methods (C++)	D/E
EGR 140 - Engineering Mechanics - Statics	D/E
EGR 245 - Engineering Mechanics - Dynamics	E
EGR 246 - Mechanics of Materials	E
EGR 247 - Mechanics of Materials Laboratory	E
EGR 260 - Circuit Analysis	D
EGR 261 – Signals & Systems	E
EGR 262 – Fundamental Circuits Lab	D
EGR 270 – Fundamentals of Computer Engineering	E

Summer 2009 and Summer 2010

EGR 110 - Engineering Graphics	D/E
EGR 120 - Introduction to Engineering	D/E
EGR 125 - Introduction to Engineering Methods (C++)	E
EGR 140 - Engineering Mechanics - Statics	E
EGR 245 - Engineering Mechanics - Dynamics	E
EGR 262 – Fundamental Circuits Lab	E
EGR 270 – Fundamentals of Computer Engineering	E

Notes:

- 1) D - denotes a daytime class meeting between 8:00 - 4:00 p.m.
E - denotes an evening class meeting between 4:30 - 9:55 p.m.
H - denotes hybrid class (mostly internet-based class with some required meetings on campus)
- 2) Future academic years are expected to have similar schedules.
- 3) Additional EGR courses may be offered at the Chesapeake campus and at the Tri-Cities Center in Portsmouth
- 4) EGR 2xx – Engineering Analysis Tools will probably be offered for the first time in Spring 2009. Check with Paul Gordy for future offerings of this course.

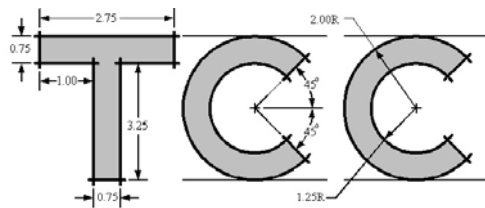
Scholarships

The following scholarships are available for engineering students. See the Engineering Program Head for additional information.

Name of Scholarship	General Information and Requirements	Amount	Deadline
Michael J. French, Jr. Memorial Engineering Scholarship	Michael J. French, Jr. was the President of the TCC Engineering Club during the 2001-2002 academic year and died of leukemia in 2004. The TCC Engineering Club has established this scholarship in his memory. More information and applications are available at http://www.tcc.edu/faculty/webpages/PGordy/MJFScholarship/ Minimum GPA 3.0 Must have completed MTH 173 and EGR 120 or equiv.	\$500 minimum	April 1
TCC/NSU Scholarship	A federal government grant provides for scholarships for TCC and NSU students in engineering, computer engineering, or computer science. TCC students do not need to be transferring to NSU to apply. Applicants must be eligible for financial aid.	\$500/sem or \$1000/yr	
Virginia Space Grant Scholarship	This scholarship is given to encourage talented Virginia Community College students to pursue studies in technical fields, engineering, and the sciences. Awards are generally made for full-time students although part time students are also eligible. Minimum GPA 3.0	\$1500/yr	Feb 15
Society for Women Engineers Scholarship	The Hamton Roads Section of SWE awards scholarships for women enrolled in engineering transfer programs.	\$500	Dec 1 and June 1
Leo Padis Scholarship	This scholarship is available only for students completing the A.S. degree in Engineering from a Virginia Community College. Merit based. Several scholarships awarded.	\$1000	June 1
ODU Departmental Scholarships	The ODU Civil and Environmental Engineering Department offers a scholarship for transfer students. Contact the department for additional information. Other engineering departments may also offer departmental scholarships.	varies	when transferring
Other ODU Scholarships	Students completing the AS degree in Engineering and transferring to ODU in the fall semester may be eligible for the Governor's Scholarship - \$4000/yr, merit based	varies	For fall transfers



**National Society of
Professional Engineers®**



ENGINEERING

TCC Engineering Club

The TCC Engineering Club is a student chapter of the National Society of Professional Engineers (NSPE). Participation in club activities can greatly enhance the educational experience for Engineering students. Club activities include:

- Field Trips to local business/industry
- Engineering speakers from business/industry
- Presentations by 4-year Engineering colleges
- National Engineers Week activities
- Social activities
- Regular meetings
- Design contests
- Service projects

The TCC Engineering Club also offers students leadership opportunity. Club officers and committee members are involved in planning field trips, speakers, contests, and more. Club members are also eligible for scholarships through NSPE. Meetings are generally scheduled on the 1st and 3rd Tuesday of each month from 12:30 to 1:30 in room H-160 (Advanced Technology Center) during the Fall and Spring semesters.



Virginia Power Field Trip



Rosemont Road Cleanup

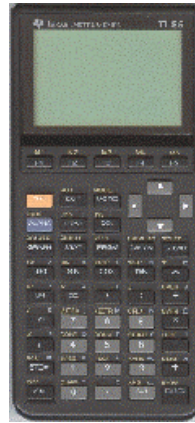


ASEE Battery-Powered Car Competition

Calculators have become increasingly powerful in recent years. In order to insure that one student does not have an advantage over another during a test simply due to the calculator being used, Engineering students are required to have one of the following calculators:



- TI - 85
- TI - 86
- TI - 89
- TI - 92
- TI Voyage 200
- HP - 48G
- HP - 48GX
- HP - 49
- HP - 50



Instructors will not actually check to see what type of calculator that the students are using. However, students should realize that they may be at a disadvantage to other students on a test if they have a calculator with lesser capabilities. Some of the features which separate these calculators from others are listed below:

- Solution of simultaneous equations (including complex coefficients)
- Vector operations (such as dot and cross products)
- Determination of roots of polynomials
- Algebraic operations involving complex numbers
- Regression analysis and curve fitting
- Unit conversions
- Graphing
- Programming capabilities
- Symbolic Calculations

Computer Recommendation for Engineering Students

TCC Engineering students are not required to own computers. Computer labs are available in various locations on campus for student use (H-209 in the ATC has most of the engineering software). Nearly all Engineering courses do require significant computer use and many students find it to be a great convenience to have their own computers.



TCC Computer Competency Requirement

TCC requires that all graduates should be able to demonstrate computer competency in some basic areas, including word-processing, spreadsheets, data base operations, and internet/email use. **Engineering students are automatically exempt from this requirement** due to the significant computer content in all Engineering courses. Engineering graduates are some of the most computer-competent graduates. Software taught and used in TCC Engineering courses includes AUTOCAD, C++, MATLAB, EXCEL, Autodesk Inventor, PSPICE, and resources on the Internet.

Transfer Options for TCC Engineering Students in Virginia

TCC is accredited by the Southern Association of Colleges and Schools (SACS). As a result, TCC students are able to easily transfer credits to other colleges nationwide. Listed below are Engineering programs in Virginia which students may want to consider for continuing their Engineering education. Each college or university sets their own transfer requirements, so students should contact the college of their choice early in their program to check on transfer details. Since most TCC Engineering students transfer to either Old Dominion University or Virginia Tech, detailed transfer information is provided in this booklet for their Engineering programs.

College or University	Engineering programs offered	Comments
Old Dominion University	Civil Engineering Environmental Engineering Computer Engineering Electrical Engineering Mechanical Engineering	Guaranteed acceptance with 2.2 GPA Foreign Language requirement waived and General Education requirements automatically met by the AS degree in Engineering.
Virginia Tech	Aerospace Engineering Biological Engineering Chemical Engineering Civil Engineering Computer Engineering Electrical Engineering Engineering Science & Mechanics Environmental Engineering Industrial & Systems Engineering Material Science Mechanical Engineering Mining & Minerals Engineering Ocean Engineering	Guaranteed acceptance with 3.0 GPA and completion of A.S. degree. The articulation agreement is available online at: http://myfuture.vccs.edu/Portals/0/ContentAreas/AcademicServices/VCCS_VT.pdf
Christopher Newport University	Computer Engineering	
Hampton University	Chemical Engineering Electrical Engineering	Private University so more expensive Only Chemical Engineering program in the Tidewater area
George Mason University	Electrical Engineering Operations Research & Management Science * Systems Engineering * Urban Systems Engineering *	2.5 GPA required for transfer *Not accredited by ABET
Virginia Commonwealth University	Chemical Engineering Electrical Engineering Mechanical Engineering	Relatively new Engineering programs (started in Fall 1996)
University of Virginia	Aerospace Engineering Applied Mechanics Chemical Engineering Civil Engineering Electrical Engineering Engineering Science Nuclear Engineering Systems Engineering	A new articulation agreement was introduced in 2007 guaranteeing admission to all engineering programs with 3.4 GPA and completion of A.S. degree. The articulation agreement is available online at: www.virginia.edu/undergradadmission/docs/agreement.doc
Virginia Military Institute	Civil & Environmental Engineering Electrical Engineering Mechanical Engineering	Minimum 2.0 GPA for transfer Must be 22 years old or younger

Old Dominion University Transfer Information

Admission:

Students should address their requests for applications, catalogues, etc., to:

Old Dominion University
 Office of Admissions
 Norfolk, VA 23529
 683-3637
 Internet: www.odu.edu

Students may also apply online. The deadlines for transfer admission are as follows:

Fall or Summer admission: February 15

Spring admission: October 1

Students must indicate on their application which degree program they wish to pursue. Students who complete their A.S. degree in Engineering from TCC with a minimum GPA of 2.2 are automatically accepted into the Engineering department of their choice. Transfer credit will only be given for courses in which the student received a grade of C or better. Official copies of TCC transcripts must be sent at the time of application and again once all coursework at TCC has been completed. Engineering department personnel generally will not counsel students or provide specific transfer information until the student has applied for admission to ODU.

Note: Many TCC students transfer to ODU *before* completing their A.S. degree (often taking courses at both colleges in the same semester). If this occurs, simply let your ODU advisor know that you plan to complete the A.S. degree and your records will be evaluated such that you will receive the benefits of completing the degree.

General Information for all Engineering Programs at ODU:

1. ODU offers five engineering degree programs (also shown in the chart on page 6):

Electrical Engineering	Civil Engineering	Mechanical Engineering
Computer Engineering	Environmental Engineering	
2. There are at least three significant advantages to completing the A.S. degree in Engineering at TCC before transferring to ODU:
 - A) The foreign language requirement is waived *if the student completes* the A.S. degree in Engineering from TCC.
 - B) Scholarships are sometimes available for transfer students *if the student completes* the A.S. degree in Engineering, such as the \$4000/yr Governor's Scholarship.
 - C) The lower-level General Education requirements at ODU are automatically met *if the student completes* the A.S. degree in Engineering from TCC. This gives the student great flexibility in that general education courses transfer as a block and do not need to match on a course-by-course basis. This is illustrated in the diagram shown below.

TCC General Education Courses			ODU General Education Courses	
Course	Cr.	⇒	Course	Cr.
History Elective	3		History Perspective I	3
Social Science Elective	3		Social Studies Perspective I	3
Humanities Science Elective	3		Philosophy Perspective	3
Humanities Science Elective	3		Literary Perspective	3
ENG 112 or ENG 131	3		Fine Arts Perspective	3
Total Credits:	15		Total Credits:	15

ODU Electrical Engineering Transfer Information

1. Once you have applied and received a letter of acceptance contact the Electrical and Computer Engineering (ECE) office at 683-3741 for an appointment for transcript evaluation, registration, and questions.
2. See the ODU Electrical Engineering Curriculum Worksheet on the following page.
3. The Electrical Engineering curriculum at ODU contains 5 sophomore-level electrical/computer engineering courses and students should have all 5 of these courses in order to move smoothly into the junior-level electrical engineering courses. All 5 of these courses can be taken at TCC as indicated by the chart below. Be sure to check the annual schedule on page 11 since each course is not offered every semester at TCC.

TCC Course Number and Title	TCC Credits	ODU Course Number	ODU Credits
EGR 260 Circuit Analysis	3	ECE 201	3
EGR 261 Signals & Systems	3	ECE 202	3
EGR 262 Fundamental Circuits Lab	2	ECE 287	2
EGR 270 Fundamentals of Computer Engineering	4	ECE 241	4
EGR 2xx Engineering Analysis Tools	3	ECE 200	3

4. Take EGR 140 – Statics as it transfers to ODU as a required non-major Engineering elective.

Overall Recommendation:

1. Take the 5 electrical courses listed above as **Approved Engineering Electives** at TCC (although a minimum of only 9 credits are needed for the A.S. degree at TCC).
2. Complete the A.S. degree in Engineering at TCC.
3. Take EGR 140 – Statics for additional transfer credit.

Be sure to visit their website!

ODU Electrical & Computer Engineering Home Page: www.ece.odu.edu
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ODU Electrical Engineering Transfer Worksheet (Unofficial)
(BSEE Degree)

ODU Course #	ODU Course Title	Cr	√	Transfer Credit from TCC
ENGL 110C	English Composition	3		ENG 111
MATH 211	Calculus I	4		MTH 173
CHEM 115N	Chemistry I	4		CHM 111
ENGN 110	Engineering & Tech I	2		EGR 120
GEN ED	Perspective 1	3		A. S. Degree *
MATH 212	Calculus II	4		MTH 174
CS 150	Intro to Programming	4		EGR 125
CHEM 117	Chemistry II	3		CHM 112
PHYS 231N	University Physics I	4		PHY 241
ENGN 111	Engineering & Tech II	2		EGR 110
ECE 201	Circuit Analysis	3		EGR 260
ECE 200	Engineering Analysis Tools	3		EGR 2xx (under development)
MATH 307(280)	Differential Equations	3		MTH 279
PHYS 232N	University Physics II	4		PHY 242
ECE 241	Fund of Computer Engineering	4		EGR 270
ECE 202	Circuits, Signals & Linear Systems	3		EGR 261
ECE 287	Circuits Lab	2		EGR 262
Engr	Non-major Engr Elective	3		EGR 140
MATH 312 (285)	Calculus III	4		MTH 277
GEN ED	Perspective 2	3		A. S. Degree *
ECE 303	Electrical Power	3		
ECE 313	Electronic Circuits	4		
ECE 332	Micro. Materials & Processes	3		
ENGL 131C	Technical Writing	3		ENG 131
GEN ED	Perspective 3	3		A. S. Degree *
ECE 304	Probability, Statistics & Reliability	3		
ECE 387	Microelec Fabrication Lab	3		
ECE 4XX	Technical Elective 1	3		
ECE 323	Electromagnetics	3		
GEN ED	Perspective 4	3		A. S. Degree *
ECE 485W	EE Design I	3		
ECE 4XX	Technical Elective 2	3		
Depth	Upper Division Cluster or Minor	3		
Depth	Upper Division Cluster or Minor	3		
GEN ED	Perspective 5	3		A. S. Degree *
ECE 486	EE Design II	3		
ECE 4XX	Technical Elective 3	3		
ECE 4XX	Technical Elective 4	3		
ENGN 401	FE Exam Review	1		
Elective	Approved Elective	3		
Depth	Upper Division Cluster or Minor	3		

Total credits in B.S. degree: 127

Max Total Transfer Credits: 77

Note: The ODU Foreign Language Requirement is waived if the A. S. Degree has been completed.

* If the A.S. Degree is completed, the 15 credits of TCC General Education requirements transfer as a block to cover the 15 credits of ODU General Education requirements (see chart on page 16).

ODU Computer Engineering Transfer Information

- Once you have applied and received a letter of acceptance, contact the Electrical and Computer Engineering (ECE) office at 683-3741 for an appointment for transcript evaluation, registration, and questions.
- See the ODU Computer Engineering Curriculum Worksheet on the following page.
- The Computer Engineering curriculum at ODU contains 5 sophomore-level electrical/computer engineering courses and students should have all 5 of these courses in order to move smoothly into the junior-level electrical engineering courses. All 5 of these courses can be taken at TCC as indicated by the chart below. Be sure to check the annual schedule on page 11 since each course is not offered every semester at TCC.

TCC Course Number and Title	TCC Credits	ODU Course Number	ODU Credits
EGR 260 Circuit Analysis	3	ECE 201	3
EGR 261 Signals & Systems	3	ECE 202	3
EGR 262 Fundamental Circuits Lab	2	ECE 287	2
EGR 270 Fundamentals of Computer Engineering	4	ECE 241	4
EGR 2xx Engineering Analysis Tools	3	ECE 200	3

- The Computer Engineering program at ODU requires 2 computer science courses (based on the language C++). These 2 courses can be taken at TCC as indicated by the chart below.

TCC Course Number and Title	TCC Credits	ODU Course Number	ODU Credits
EGR 125 Intro to Engineering Methods or CSC 201 Computer Science I	4	CS 150	4
CSC 210 Programming C++	4	CS 250	4

Note: Some students take CSC 110 before CSC 201 if they would like a slower introduction into programming concepts using C++.

- The Computer Engineering program is the only Engineering program at ODU does not require TCC's MTH 277. It is recommended that you substitute CSC 210 in place of MTH 277 for graduation purposes at TCC. A waiver is required for this substitution. See Paul Gordy in H-115 for the waiver.

Overall Recommendation:

- Take the 5 Electrical/Computer Engineering courses listed in the first table above as **Approved Engineering Electives** at TCC (although a minimum of only 9 credits are needed for the A.S. degree at TCC).
- Take the 2 Engineering/Computer Science courses listed in the second table above.
- Do not take MTH 277 at TCC (obtain a waiver to replace it with CSC 210 or with additional Approved Engineering Electives).
- Complete the A.S. degree in Engineering at TCC.

Be sure to visit their website!

ODU Electrical & Computer Engineering Home Page: www.ece.odu.edu
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ODU Computer Engineering Transfer Worksheet (Unofficial)
(BSCpE Degree)

ODU Course #	ODU Course Title	Cr	√	Transfer Credit from TCC
ENGL 110C	English Composition	3		ENG 111
MATH 211	Calculus I	4		MTH 173
CHEM 115N	Chemistry I	4		CHM 111
ENGN 110	Engineering & Tech I	2		EGR 120
GEN ED	Perspective 1	3		A. S. Degree *
MATH 212	Calculus II	4		MTH 174
CS 150	Intro to Programming	4		EGR 125
CHEM 117	Chemistry II	3		CHM 112
PHYS 231N	Gen Physics w/Calc I	4		PHY 241
ENGN 111	Engineering & Tech II	2		EGR 110
ECE 201	Circuit Theory	3		EGR 260
PHYS 232N	Gen Physics w/Calc II	4		PHY 242
ECE 200	Engineering Analysis Tools	3		EGR 2xx (under development)
MATH 307 (280)	Differential Equations	3		MTH 279
GEN ED	Perspective 2	3		A. S. Degree *
ECE 202	Circuits, Signals & Linear Systems	3		EGR 261
ECE 287	Circuits Lab	2		EGR 262
ECE 241	Fund of Computer Engineering	4		EGR 270
CS 250	Problem Solving & Programming	4		CS 210
CS 252	Intro to UNIX	1		
GEN ED	Perspective 3	3		A. S. Degree *
ECE 313	Electronic Circuits	4		
ENGL 131C	Technical Writing	2		ENG 131
ECE 341	Digital System Design	3		
CS 361	Data Structures	3		
GEN ED	Perspective 4	3		A. S. Degree *
ECE 304	Probability, Statistics & Reliability	3		
ECE 346	Microcontrollers	3		
CS 451	Software Engineering	3		
Depth	Upper Division Cluster or Minor	3		
ECE 3xx	Technical Elective 1	3		A. S. Degree *
ECE 489W	CMEN Design I	3		
ECE 443	Computer Architecture	3		
ECE 4xx	Technical Elective 2	3		
Depth	Upper Division Cluster or Minor	3		
GEN ED	Perspective 5	3		A. S. Degree *
ECE 486	ECE Design II	3		
CS 471	Operating Systems	3		
ENGN 401	FE Exam Review	1		
ECE 4xx	Technical Elective 3	3		
Depth	Upper Division Cluster or Minor	3		
ECE 4xx	Technical Elective 4	3		

Total credits in B.S. degree: 127

Max Total Transfer Credits: 76

Note: The ODU Foreign Language Requirement is waived if the A. S. Degree has been completed.

* If the A.S. Degree is completed, the 15 credits of TCC General Education requirements transfer as a block to cover the 15 credits of ODU General Education requirements (see chart on page 16).

ODU Mechanical Engineering

Transfer Information

1. Once you have applied and received a letter of acceptance, contact the Academic Advisor for Mechanical Engineering and Mechanics (MEM), at 683-6363, for an appointment for transcript evaluation, registration, and questions.
2. See the ODU Mechanical Engineering Curriculum Worksheet on the following page.
3. Students transferring to ODU can take DRF 201 (AutoCAD) for additional transfer credit beyond the A.S. degree in Engineering. DRF 201 (4 cr) will transfer to ODU as MET 100 or MET 120 – Computer Aided Engineering Graphics as shown on the transfer worksheet on the following page. Note that EGR 110 is a pre-requisite to DRF 201.
4. Students transferring to ODU will lack MEM 201 and MEM 203 (Material Science and Lab), but these courses are not prerequisites for any junior level courses and can easily fit into your schedule at some point once you transfer to ODU.

Overall Recommendation:

1. Take EGR 140, EGR 245, EGR 246, and EGR 247 at **Approved Engineering Electives** at TCC.
2. Complete the A.S. degree in Engineering at TCC.
3. Take DRF 201 for additional transfer credit.

Be sure to visit their website!

ODU Mechanical Engineering Home Page: www.mem.odu.edu

ODU Mechanical Engineering Transfer Worksheet (Unofficial)
(BSME Degree)

ODU Course #	ODU Course Title	Cr	√	Transfer Credit from TCC
ENGN 110	Freshmen Engr. & Technology I	2		EGR 120
MATH 211	Calculus I	4		MTH 173
CHEM 115N	Chemistry I	4		CHM 111
ENGL 110C	English Composition	3		ENG 111
GEN ED	New PAGE or Lower Gen Ed Persp.	3		A. S. Degree *
CHEM 117	Chemistry II	3		CHM 112
MATH 212	Calculus II	4		MTH 174
CS 150	Programming Methodology	4		EGR 125
PHYS 231N	University Physics I	4		PHY 241
ENGN 111	Freshmen Engr. & Technology II	2		EGR 110
MET 100/120	Engineering Graphics	3		DRF 201
ME 201	Material Science	3		
ME 203	ME Lab 1 - Materials	1		
ME 204	Statics	3		EGR 140
PHYS 232N	University Physics II	4		PHY 242
MATH 312	Calculus III	4		MTH 277
ME 205	Dynamics	3		EGR 245
ME 220	Egr. Mech. II - Solid Mechanics	3		EGR 246
ME 225	ME Lab II - Solid Mechanics	1		EGR 247
MATH 307	Differential Equations	3		MTH 279
ENGL 131C	Technical Writing	3		ENG 131
GEN ED	Lower Gen. Ed. Perspective	3		A. S. Degree *
ME 311	Thermodynamics I	3		
ME 303	Fluid Mechanics	3		
ME 305	ME Lab III - Thermo/Fluids	1		
ME 340	Computational Methods in ME	3		
GEN ED	Lower Gen. Ed. Perspective	3		A. S. Degree *
ME 312	Thermodynamics II	3		
ME 332	Mechanical Engineering Design I	3		
ME 315	Heat and Mass Transfer	3		
GEN ED	Lower Gen. Ed. Perspective	3		A. S. Degree *
GEN ED	Lower Gen. Ed. Perspective	3		A. S. Degree *
ME 434W	Project Design and Management I	3		
ME 433	Mechanical Engineering Design II	3		
ME 436	Dynamic Systems and Control	3		
ENGN 401	Fundamentals of Engineering Review	1		
ME	ME Option **	3		
GEN ED	Upper Division/Cluster	3		
ME 435	Project Design and Management II	3		
ME	ME Option **	3		
ME	ME Option **	3		
GEN Ed	Upper level cluster/minor	3		
GEN ED	Upper level cluster/minor	3		

Total credits in B.S. degree: 126 Max Total Transfer Credits: 72

Note: The ODU Foreign Language Requirement is waived if the A. S. Degree has been completed.

* If the A.S. Degree is completed, the 15 credits of TCC General Education requirements transfer as a block to cover the 15 credits of ODU General Education requirements (see chart on page 16).

** ME students must declare 1 of 3 possible options before taking ME Options. See next page.

COURSES FOR MECHANICAL ENGINEERING OPTIONS

Upon completion of their junior year, ODU Mechanical Engineering students must pick one of the three options or specializations shown below. Note on the previous page that several senior courses are listed as "ME Option". Those courses must be chosen from the list of courses provided below for the option selected.

POWER/ENERGY CONVERSION

MEM 411	Power Systems	Required	Fall
MEM 412	Environmental Control	Required	Spring
MEM 414	Introduction to Gas Dynamics	Select one	Fall
	Or		
MEM 416	Solar Energy (Odd years)		
	Or		
MEM 419	Introduction to Nuclear Energy (Even years)		
MEM 438	Control Systems Design & Application	Select one	Spring
	Or		
MEM 413	Energy Conversion		

MECHANICAL SYSTEMS/DESIGN

MEM 441	CAD of Mechanical Systems	Required	Fall
MEM 431	Mechanisms	Required	Spring
MEM 405	Intermediate Dynamics	Select one	Fall
	Or		
MEM 404	Vibrations		
MEM 438	Control Systems Design & Application	Select one	Spring
	Or		
MEM 440	Introduction to Finite Elements		
	Or		
MEM 422	Modern Engineering Materials		

AEROSPACE

MEM 406	Fluid Dynamics and Aerodynamics	Required	Fall
MEM 403	Flight Mechanics	Required	Spring
MEM 414	Introduction to Gas Dynamics	Select one	Fall
	Or		
MEM 405	Intermediate Dynamics		
MEM 417	Propulsion Systems	Select one	Spring
	Or		
MEM 420	Aerospace Structural Design		

ODU Civil Engineering

Transfer Information

The Civil Engineering program at ODU allows students to specialize in various disciplines within Civil Engineering, including:

- Geotechnical
- Structural
- Water Resources

Specific information for students planning to transfer into Civil Engineering at ODU is shown below.

1. Once you have applied and received a letter of acceptance, contact Dr. Akan, Civil and Environmental Engineering Department Chairman, at 683-3753 for an appointment for transcript evaluation, registration, and questions.
2. See the ODU Civil and Environmental Engineering Curriculum Worksheet on the following page.
3. ODU does not require EGR 247 (Mechanics of Materials Lab) for the Civil Engineering program, but TCC Engineering faculty recommend that students take it anyway. Taking the lab (EGR 247) along with the course (EGR 246) gives the student practical experience in experiments involving the mechanics of materials.
4. Students may also take CIV 171 (Surveying - 3 credits) at TCC in place of CET 319 (Surveying - 1 credit) at ODU for additional transfer credit beyond the A. S. degree. This is not a good match in terms of the number of credits, but still may be a good option for some students.

Overall Recommendation:

1. Take EGR 140, EGR 245, and EGR 246 as **Approved Engineering Electives** at TCC.
2. Complete the A.S. degree in Engineering at TCC.
3. Consider taking EGR 247.
4. Consider taking CIV 171 at TCC in place of CET 319 at ODU.

Be sure to visit their website!

ODU Civil & Environmental Engineering Home Page: www.cee.odu.edu

ODU Civil Engineering Transfer Worksheet (Unofficial)
(BSCE Degree)

ODU Course #	ODU Course Title	Cr	√	Transfer Credit from TCC
ENGN 110	Freshman Engineering & Technology I	2		EGR 120
CHEM 115N	Chemistry I	4		CHM 111
ENGL 110C	English Composition	3		ENG 111
GEN ED	Social Science Perspective	3		A. S. Degree *
MATH 211	Calculus I	4		MTH 173
CS 150	Programming Methodology	4		EGR 125
CHEM 117	Chemistry II	3		CHM 112
MATH 212	Calculus II	4		MTH 174
PHYS 231N	Gen Physics w/Calc I	4		PHY 241
ENGN 111	Freshman Engineering & Technology II	2		EGR 110
GEN ED	Historical Perspective	3		A. S. Degree *
MATH 312	Calculus III	4		MTH 277
CEE 100	Statics	3		EGR 140
PHYS 232N	Gen Physics w/Calc II	4		PHY 242
ENGL 111C	English Composition II	3		ENG 131
ME 220	Mechanics of Solids	3		EGR 246
CEE 240	Geographic Information Systems	3		
CET 319	Surveying for Engineers	1		CIV 171
GEN ED	Philosophical Perspective	3		A. S. Degree *
MATH 307U	Differential Equations	3		MTH 279
ME 205	Dynamics	3		EGR 245
CEE 304	Introduction to Fundamentals of CEE Infrastructure Systems	3		
CEE 350	Environmental Pollution & Control	3		
CEE 330	Hydromechanics	3		
CEE 305	C & E Engineering Computations	3		
CEE 230	CEE Materials	3		
CEE 323	Soil Mechanics	3		
CEE 340	Hydraulics & Water Resources	3		
CEE 335	CEE Soils & Hydraulics Lab	1		
CEE 310	Structural Engineering I	3		
ENGN 401	Fund. of Engineering (FE) Review	1		
GEN ED	Literary Perspective	3		A. S. Degree *
CEE 410	Concrete Design I	3		
CEE 4XX	Civil Engineering Elective 1	3		
CEE 365	Transportation Engineering	3		
GEN ED	Gen Ed Upper Level Requirement 1	3		
GEN ED	Fine Arts Perspective	3		A. S. Degree *
CEE 4XX	Civil Engineering Elective 2	3		
CEE 4XX	Civil Engineering Elective 3	3		
GEN ED	Gen Ed Upper Level Requirement 2	3		
GEN ED	Gen Ed Upper Level Requirement 3	3		
CEE 403W	Civil Engineering Design Project	3		

Total credits in B.S. degree: 125 Max Total Transfer Credits: 69

Note: The ODU Foreign Language Requirement is waived if the A. S. Degree has been completed.

* If the A.S. Degree is completed, the 15 credits of TCC General Education requirements transfer as a block to cover the 15 credits of ODU General Education requirements (see chart on page 16).

ODU Environmental Engineering **Transfer Information**

1. Once you have applied and received a letter of acceptance, contact Dr. Akan, Civil and Environmental Engineering Department Chairman, at 683-3753 for an appointment for transcript evaluation, registration, and questions.
2. See the ODU Civil and Environmental Engineering Curriculum Worksheet on the following page.
3. Students should also take BIO 101 (Biology I) at TCC in place of BIOL 115N at ODU for additional transfer credit beyond the A. S. degree.
4. ODU does not require EGR 247 (Mechanics of Materials Lab) for the Civil Engineering program, but TCC Engineering faculty recommend that students take it anyway. Taking the lab (EGR 247) along with the course (EGR 246) gives the student practical experience in experiments involving the mechanics of materials.

Overall Recommendation:

1. Take EGR 140, EGR 246, and BIO 101 as **Approved Engineering Electives** at TCC (a waiver is needed from Paul Gordy in H-115 to use BIO 101).
2. Complete the A.S. degree in Engineering at TCC.
3. Consider taking EGR 247.

Be sure to visit their website!

ODU Civil & Environmental Engineering Home Page: www.cee.odu.edu

ODU Environmental Engineering Transfer Worksheet (Unofficial)
(BSEnvE Degree)

ODU Course #	ODU Course Title	Cr	√	Transfer Credit from TCC
ENGN 110	Freshman Engineering & Technology I	2		EGR 120
CHEM 115N	Chemistry I	4		CHM 111
ENGL 110C	English Composition	3		ENG 111
GEN ED	Social Science Perspective	3		A. S. Degree *
MATH 211	Calculus I	4		MTH 173
CS 150	Programming Methodology	4		EGR 125
CHEM 117	Chemistry II	3		CHM 112
MATH 212	Calculus II	4		MTH 174
PHYS 231N	University Physics I	4		PHY 241
ENGN 111	Freshman Engineering & Technology II	2		EGR 110
GEN ED	Historical Perspective	3		A. S. Degree *
MATH 312	Calculus III	4		MTH 277
CEE 100	Statics	3		EGR 140
PHYS 232N	University Physics II	4		PHY 242
ENGL 111C	English Composition II	3		ENG 131
ME 220	Mechanics of Solids	3		EGR 246
CEE 250	Principles of Environmental Engineering	3		
CEE 240	Geographic Information Systems	3		
MATH 307U	Differential Equations	3		MTH 279
BIOL 115N	General Biology	4		BIO 101
CEE 304	Introduction to Fundamentals of CEE Infrastructure Systems	3		
CEE 330	Hydromechanics	3		
CEE 305	CEE Engineering Computations	3		
CEE 230	CE Materials	3		
CEE 355W	Environmental Engineering Analysis	3		
CEE 323	Soil Mechanics	3		
CEE 340	Hydraulics & Water Resources	3		
CEE 335	CEE Soils & Hydraulics Lab	1		
CEE 310	Structural Engineering I	3		
ENGN 401	Fund. of Engineering (FE) Review	1		
GEN ED	Literary Perspective	3		A. S. Degree *
CEE 365	Transportation Engineering	3		
CEE 410	Concrete Design I	3		
CEE 4xx	Civil Engineering Elective I	3		A. S. Degree *
GEN ED	Fine & Performing Arts Perspective	3		A. S. Degree *
GEN ED	Upper Level Requirement 1	3		
GEN ED	Upper Level Requirement 2	3		
GEN ED	Upper Level Requirement 3	3		
CEE 4xx	Civil Engineering Elective 2	3		
CEE 4xx	Civil Engineering Elective 2	3		
CEE 403W	Civil Engineering Design Project	3		

Total credits in B.S. degree: 125 Max Total Transfer Credits: 72

Note: The ODU Foreign Language Requirement is waived if the A. S. Degree has been completed.

* If the A.S. Degree is completed, the 15 credits of TCC General Education requirements transfer as a block to cover the 15 credits of ODU General Education requirements (see chart on page 16).

Virginia Tech Transfer Information

Virginia Tech's College of Engineering is consistently ranked as one of the top engineering colleges in the nation in the quality of its undergraduate education. Virginia Tech offers Bachelor of Science degrees in the following fields:

Aerospace Engineering	Biological Engineering	Chemical Engineering
Civil Engineering	Computer Engineering	Engineering Science and Mechanics
Electrical Engineering	Environmental Engineering	Industrial and Systems Engineering
Material Science	Mechanical Engineering	Mining & Minerals Engineering
Ocean Engineering		

Articulation Agreement with Virginia Tech:

In 1992 an articulation agreement was developed between Virginia Tech and all colleges in the VCCS, including TCC. The Articulation Agreement guarantees transfer admission into the College of Engineering at Virginia Tech for all students who complete the A.S. degree in Engineering and have a minimum GPA of 3.0. A copy of the articulation agreement is available online at http://myfuture.vccs.edu/Portals/0/ContentAreas/AcademicServices/VCCS_VT.pdf

Important notes on the Articulation Agreement:

1. There are several important reasons to *complete the A.S. degree in Engineering* before transferring to Virginia Tech:
 - Students are guaranteed admission with a 3.0 GPA
 - Students receive block credit for general education requirements. All degrees from Virginia Tech must satisfy Areas 1-7 of the Virginia Tech Core Curriculum. Completing the A.S. degree automatically satisfies Areas 1-7. If the degree is not completed, students must be sure to take specific general education courses to satisfy each of these areas.
 - The Leo Padis Scholarship is available only to transfer students from Virginia Community Colleges that complete the A.S. degree in Engineering (more information on page 29).
 - Speakers from Virginia Tech typically visit TCC each year. They always encourage students to complete the A.S. degree and indicated that students that complete the degree before transferring have a higher rate of success.
 - Completing the A.S. degree helps with registering for courses within an certain engineering program. Specifically, if you lack any courses from Virginia Tech's freshman year, you will be admitted into the Engineering Education (Engineering Fundamentals) division rather than into a specific program (such as civil engineering) and you will then be given low priority in terms of enrolling for courses in that program.
2. A 3.0 GPA plus the A.S. degree will guarantee admission into the College of Engineering, but not necessarily into the Engineering program (e.g., Civil, Electrical) of your choice. You should list your 1st, 2nd, and 3rd choices for Engineering departments on your application. You will usually receive the department of your choice unless the department is one that is particularly high in demand and therefore the number of students admitted is limited. This has not been a problem in recent years.
3. 3.0 is the minimum GPA to be guaranteed admission to Virginia Tech, but you might be accepted with a lower GPA.
4. The Articulation Agreement shows that 60 credits in the appropriate areas are required, but you can transfer up to half of the credits in the B.S. degree (typically around 64 credits). You might check the Virginia Tech Transfer Guide to see what other courses will transfer.

5. Virginia Tech officials warn transfer students not to attempt to gain entrance into one program and then try to transfer into another program once you are at Virginia Tech. Only a very limited number of internal transfers are allowed each year and you may not be allowed to change departments.
6. Students may also be interested in knowing that some of the less common areas of engineering such as Biological Engineering (formerly known as Agricultural Engineering) and Mining & Minerals Engineering often have some advantages such as
 - less stringent transfer requirements (sometimes less than a 3.0 GPA is accepted)
 - smaller class sizes
 - scholarships in these areas are much easier to obtain. As an example, often nearly every student in the Mining & Minerals Engineering program is on scholarship (the mining industry provides most scholarships).

Tablet Computers:

Virginia Tech requires all engineering students to own a tablet computer as well as a specific list of software. The requirements in terms of hardware and software change each year so you should request information concerning the current requirements. If you do not already own a tablet computer, Virginia Tech sells computers, software, and service agreements that you might wish to consider. Financing is available to finance computers over the length of your degree program.

Scholarship Information:

Scholarships for transfer students are sometimes hard to obtain, but Virginia Tech does offer one such scholarship. The Leo A. Padis Scholarship is available only to students graduating from a Virginia Community College and transferring into Virginia Tech's College of Engineering.

- The applicant must complete the A.S. degree to be eligible.
- Selection is based on academic performance.
- The number of scholarships varies each year (generally 4 or more).
- The scholarship provides \$1000./year.
- The deadline for application is typically May 1.
- See Paul Gordy in H-115 for an application.

Applying for Admission to Virginia Tech:

Students should address their requests for applications, financial aid and scholarships, catalogues, etc., to Virginia Tech

Office of Undergraduate Admissions
104 Burruss Hall
Blacksburg, VA 24061
Telephone: 540-231-6267

Note that you may also apply on line. Visit Virginia Tech's web site at:

Virginia Tech Home Page: www.vt.edu

Transfer students should apply for Fall semester admission by February 15. There are no advantages to applying earlier (be sure to wait until Fall semester grades are on your transcripts). Students must indicate on their application to which Engineering department they would like to be admitted. First, second, and third choices should be listed on the application (for example, Aerospace, Mechanical, Electrical). Students will be notified concerning their acceptance by May 15 or as soon as possible. Acceptance for Fall admission automatically implies acceptance for the prior Summer semester as well. There is no separate Summer admission. Transfer admissions for Spring semester are not generally accepted. Virginia Tech prefers that transfer students begin either Summer or Fall semester.

Students considering Virginia Tech are strongly encouraged to obtain information early on the engineering program of their choice. This will allow them to compare the 2-year curriculum at TCC to the desired Virginia Tech curriculum and allow them to plan their schedules wisely. Virginia Tech offers accelerated summer sessions where students may take courses that they are lacking so that they can make a smooth transition into the junior year of their program. Virginia Tech tries to offer courses which transfer students often lack during the summer.

Other notes related to admission:

1. CLEP credits are generally not accepted by Virginia Tech.
2. If you transfer less than 45 credits to Virginia Tech, you must also send high school transcripts and SAT scores.
3. International students must score a minimum score of 550 on the TOEFL.
4. No students are accepted for transfer without ENG 111-112 or the equivalent.
5. Virginia Tech has a foreign language requirement. If you are using high school foreign language courses to meet this requirement be sure to send high school transcripts.
6. If you have any special circumstances to explain (such as a low GPA due to old grades in another curriculum) include a letter of explanation.
7. Send transcripts from all colleges that you have attended. Just because TCC gave you credit for a course from another college, it is not guaranteed that Virginia Tech will do so.
8. Only courses in which you received a grade of C or better will transfer.

For additional information regarding the Engineering program at Virginia Tech, contact:

Paul Gordy, Engineering Department, TCC Virginia Beach
Office: H-115 (Advanced Technology Center)
Phone: 822-7175
E-mail: Pgordy@tcc.edu

Transfer of courses to Virginia Tech

Virginia Tech provides an online transfer guide located at the following URL:

<http://www.registrar.vt.edu/tranguide/2007/vccs/>

Note that only certain courses below may be needed for specific engineering disciplines at Virginia Tech. For example, all disciplines require all of the MATH courses listed below whereas EGR 260-262 are only required for electrical and computer engineering and CHM 241&245 are only required for chemical engineering. Students transferring to Virginia Tech should visit their web site to determine which TCC courses should be selected for transfer.

TCC Course #	TCC Course Title	TCC Cr	VT Course #	VT Cr
EGR 110	Engineering Graphics	3	ENGE 1114	2
EGR 120	Intro to Engineering	2	ENGE 1024	2
EGR 125	Intro to Engineering Methods (C++)	4	ENGE 2324 or ENGE 2314	1, 2
EGR 140	Statics	3	ESM 2104	3
EGR 245	Dynamics	3	ESM 2304	3
EGR 246	Mechanics of Materials	3	ESM 2204	3
EGR 260	Circuit Analysis	3	ECE 2004	3
EGR 261	Signals & Systems	3	2704	3
EGR 262	Fundamental Circuits Lab	2	2274	1
EGR 270	Fund of Computer Engineering	4	Currently being evaluated	
MTH 173 - 174	Calculus I - II	9	MATH 1205, 1206, 1224	8
MTH 277	Calculus III	4	MATH 2224	3
MTH 279	Differential Equations	4	MATH 2214	3
PHY 241 - 242	University Physics I - II	8	PHYS 2305 - 2306	8
CHM 111	Chemistry I	4	CHEM 1035, CHEM 1045	4
CHM 112	Chemistry II	4	CHEM 1036, CHEM 1046	4
CHM 111 – 112*	Chemistry I-II	8	CHEM 1074-1084	3
CHM 241	Organic Chemistry	3	CHEM 2535	3
CHM 245	Organic Chemistry Lab	1	CHEM 2545	1
ENG 111	English Composition I	3	ENGL 1105	3
ENG 112	English Composition II	3	ENGL 1106	3
HIS Elect	History Elective	3	See Note	3
Soc Sci Elect	Social Science Elective	3	See Note	3
Hum Elect	Humanities Elective	3	See Note	3
CSC 201	Computer Science I	4	CS 1044	3

Note: If students satisfy the articulation agreement (complete the A.S. degree with a minimum 3.0 GPA and have all native VCCS credit) then general education requirements are transferred as a block (i.e., the Transfer Module) so the exact courses used for History, Social Science, and Humanities electives does not matter. If students do not satisfy the articulation agreement, then specific courses should be selected in order to satisfy Virginia Tech's University Core Curriculum.

Students given credit for the Transfer Module will have automatically satisfied Areas 1-5 of Virginia Tech's University Core Curriculum. See the following page for additional information.