



## GENERAL INFORMATION

EvCC offers a number of pathways toward technical careers. This curriculum guide focuses on the **Engineering Transfer Associate of Science** Degree, which is designed to prepare students for transfer to a four-year program. The first- and second-year engineering, math and science courses that form this degree serve as preparation for a variety of engineering majors, including aeronautical, biological, civil, chemical, electrical, mechanical and materials science.

In separate curriculum guides we describe the **Engineering Technology** Degree, designed for those intent upon transfer into an Engineering Technology Program at Central Washington University, Eastern Washington University, or Western Washington University. EvCC also offers courses in Technology Management. All curriculum guides for EvCC may be found around campus, on the Web at [everettcc.edu](http://everettcc.edu), or you may call 425-388-9219 to request specific copies.

Our Engineering faculty have established strong relationships with local universities to assure that our courses are transferable and prepare students for their major. In addition, our faculty can advise students about meeting the criteria for admission to selective engineering programs at the universities. Our engineering students have transferred to the University of Washington, Washington State University, Seattle University, Cornell, Stanford, and CSU-Long Beach, to name a few.

## SUGGESTED PREPARATION

It is helpful to have the following traits: intellectual curiosity, technical aptitude, a solid mathematical and scientific foundation, interest in solving problems, perseverance, the ability to work accurately and systematically and a basic understanding of the economics and environmental context in which engineering is practiced. The ability to work in unusual locations, and the ability to work under pressure to meet deadlines or to solve problems can be valuable. Students should develop effective communication and interpersonal skills; cultivate opportunities to participate as a team member on job projects; and master relevant computer programs.

Although there are no specific admission requirements to begin your pre-engineering studies at EvCC, preparatory courses in chemistry, mathematics and physics are prerequisites for many of the required engineering courses. Students who have not completed these courses during their high school program should complete the equivalent college courses as soon as possible. See the quarterly class schedule and consult with an engineering advisor to determine specific requirements. Students wishing to transfer to the University of Washington or certain other four-year schools must also meet foreign language requirements.

## Engineering is fascinating!

It offers more career options than any other discipline. It's a profession that can take you from the depths of the ocean to the far reaches of outer space, from within the microscopic structures of the human cell to the top of the tallest skyscrapers. Whether it's cell phones, digital cameras, DVDs, or facial recognition devices that can pick out a terrorist in a crowded football stadium, engineers are behind almost all of today's exciting technology. Engineers are problem solvers who search for quicker, better, and less expensive ways to use the forces and materials of nature to meet today's challenges. Engineering students have their pick of many fields. From electrical to civil to aeronautical to biomedical, every discipline within engineering will lead to an exciting and rewarding career.

[http://www.engineeringk12.org/students/What\\_Is\\_Engineering/default.php](http://www.engineeringk12.org/students/What_Is_Engineering/default.php)

## CAREER OPTIONS

Engineering is a very broad field, embracing many aspects of everyday life, ranging from agriculture, aerospace and medicine to electrical, mechanical, structural and even chemical and bioengineering. People employed in this field are typically involved in design and implementation of systems, structures and devices to streamline production, make operations more uniform and to address certain technical and mechanical challenges. Most engineers specialize in a certain area within the broader field. Typically, at least a Bachelor's Degree is required for work in this profession. A good description of the Engineering field is available on the web site of American Society for Engineering Education:

[www.asee.org/precollege](http://www.asee.org/precollege)

## PROGRAM ADVISORS

Frequent contact with an advisor is highly recommended. Students should also consult closely with department advisors at the university to which they wish to transfer, to keep abreast of possible changes. (The area code for the phone numbers below is 425)

### Engineering and Engineering Technology:

Eric Davishahl, WHI 312, 388-9246, [edavishahl@everettcc.edu](mailto:edavishahl@everettcc.edu)  
Dalius Gilvydis, WHI 313, 388-9140, [dgilvydis@everettcc.edu](mailto:dgilvydis@everettcc.edu)  
Andrew Vanture, WHI 224, 388-9556, [avanture@everettcc.edu](mailto:avanture@everettcc.edu)  
Sumita Singh (Bio and Chem), WHI 307, 388-9373, [ssingh@everettcc.edu](mailto:ssingh@everettcc.edu)

### Engineering Technology and Drafting:

Robert Osnes, MON 205, 388-9383, [rosnes@everettcc.edu](mailto:rosnes@everettcc.edu)

## UNIVERSITY OPTIONS

Further information about Engineering majors, and transfer requirements can be found at these websites:

[November 2008]

- Washington State University: [www.cea.wsu.edu/](http://www.cea.wsu.edu/)
- University of Washington: [www.engr.washington.edu/](http://www.engr.washington.edu/)
- Seattle University: [www.seattleu.edu/scieng/](http://www.seattleu.edu/scieng/)
- Eastern Washington University: [www.ewu.edu/x20351.xml](http://www.ewu.edu/x20351.xml)

## EVCC'S ENGINEERING CLUB WANTS YOU!

Join the fun and gain practical engineering design experience by participating in the Engineering Club. The club focuses its efforts on sending student teams to regional, national, and international design competitions.

In previous years EvCC's teams have brought home the honors by placing 10<sup>th</sup> in an international competition with a human-powered submarine, 4<sup>th</sup> in international competition with their Frisbee Launcher, and 1<sup>st</sup> in Washington with their project presentation in the Human Powered Paper Vehicle. Design project experience looks great when you are applying to internships and university engineering programs. We hope you take advantage of the opportunity and put yourself and EvCC on the map.

## EVENING COURSES

In addition to day classes, the following courses are usually offered evenings during the quarters indicated:

ENGR& 114 [123] (W); ENGL& 230 [ENGR 231] (F)

MATH& 141 [140] (F,W,Sp,Su); 142; 144 [147] (Sp); 151[152] (F); 152 [153] (W); 153 [154] (Sp)

## COURSE SEQUENCES

For sample course sequences, please visit the Engineering Department website at <http://www.everettcc.edu/programs/mathsci/physical/engineering/>

## GETTING STARTED AT EVCC

Our Enrollment Services Office provides information about application, advising, orientation and registration for new and continuing students. Contact Enrollment Services or the Counseling, Advising and Career Center (CACC) if you would like to speak one-to-one with an advisor about getting started. Contact:

- Enrollment Services, Jackson Center,  
425-388-9219, [admissions@everettcc.edu](mailto:admissions@everettcc.edu)
- CACC, Third Floor, Parks,  
425-388-9263

**This curriculum guide contains checklists for three different degree paths:**

- Mechanical, Civil, Aeronautical, Industrial, Materials Science
- Computer and Electrical Engineering
- Bioengineering and Chemical Engineering

If you are missing a checklist, please go to:

[www.everettcc.edu/c.guides](http://www.everettcc.edu/c.guides) and click on "Engineering Transfer"



Engineering alums Euneka Robinson-McCutchen, Quang Nguyen, and Leif Johansen met in Engineering class at EvCC, and have been friends ever since. Each graduated from a 4-year college after leaving EvCC; Euneka is finishing her masters in Civil Engineering at University of Washington; Quang graduated from University of Washington and now works as a civil engineer at the Washington State Dept. of Transportation; Leif graduated from Western Washington University and now works for Reid Middleton in Snohomish. Says Quang, "I thought I was going to be an electrical engineer. But after taking Civil Engineering from Eric Davishahl-that was more interesting-we got to solve engineering problems hands-on." Says Leif, "I took classes that interested me, and EvCC is a great place to explore. Eventually I figured out what interested me was engineering."

Engineering at EvCC:  
Creating a better world through  
engineering.

Small classes  
Personal attention  
Hands-on  
Teamwork  
Career guidance



## NEW COURSE NUMBERING SYSTEM - Effective Summer, 2008:

- Courses listed with an ampersand in the course number (e.g. ENGL&101) reflect the new Common Course Numbering System.
- Courses in [brackets] are the "old" course numbers and may be used to satisfy requirements. For more information, go to [www.everettcc.edu/ccn](http://www.everettcc.edu/ccn)

# Associate of Science – Pre-Engineering

## Mechanical, Civil, Aeronautical, Industrial, Materials Science

This checklist is targeted at transfer students with an interest in an **engineering** major at a university. Students should meet with an advisor and maintain this checklist while at Everett Community College. The quarter before expected completion, this checklist should be submitted with a diploma application to the Enrollment Services Office. Note: Though courses in a foreign language are not required in the Associate of Science degree, some universities may require two or three quarters of foreign language for admission or for graduation.

**Note:** Prior to starting some or all of the following courses, students should:

- Complete ENGL 98 or earn a placement score into ENGL& 101
- Complete MATH& 144 [147] or MATH&142 or place into MATH& 151 [152]
- Complete PHYS& 121 [117] or a rigorous high school physics class
- Complete PHYS 130 before PHYS& 233 [133]
- Complete CHEM& 140 [98] or place into CHEM& 161 [140]
- Complete ENGR 120 and or PHYS& 221/231 [121/131] before ENGR& 214 [210]

**Student:** \_\_\_\_\_ **Advisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**COMPLETION of Diversity Course**

	(Where Completed/Course Title)		(Year Completed)	(Grade)
<u>Course Number</u>	<u>Course Title</u>	<u>Credits</u>	<u>Quarter Completed</u>	<u>Grade</u>
<b>COMMUNICATIONS SKILLS</b> (5 credits) <sup>1</sup>				
ENGL& 101	English Composition I	5	_____	_____
<b>MATHEMATICS</b> (Pre-requisite Math courses may also be required.)				
MATH& 151 [152]	Calculus I	5	_____	_____
MATH& 152 [153]	Calculus II	5	_____	_____
MATH& 153 [154]	Calculus III	5	_____	_____
MATH 260	Linear Algebra	5	_____	_____
MATH 261	Differential Equations	5	_____	_____

**HUMANITIES AND SOCIAL SCIENCE** (15 credits, in three different disciplines. One course must be selected from Humanities, and another from Social Sciences. The third course may be from Humanities or Social Sciences. For acceptable courses, see course list for the Associate of Science – see separate guide. We recommend economics, history, psychology, sociology, speech (CMST) as good choices. See Notes 1 and 2 .)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

**SCIENCE AND ENGINEERING**

CHEM& 161 [140]	General Chemistry I	5.5	_____	_____
CHEM& 162 [150]	General Chemistry II	5.5	_____	_____
PHYS& 221/231 [121/131]	Engineering Physics I	5.5	_____	_____
PHYS& 222/232 [122/132]	Engineering Physics II	5.5	_____	_____
PHYS& 223/233 [123/133]	Engineering Physics III	5.5	_____	_____
ENGR 109	Engineering Orientation	2	_____	_____
ENGR 120	Intro to Technical Computing	2	_____	_____
ENGR& 214 [210]	Statics	5	_____	_____
ENGR& 225 [220]	Mechanics of Materials	5	_____	_____
ENGR& 215 [230]	Dynamics	5	_____	_____

**ADDITIONAL ENGINEERING ELECTIVES** (minimum 16 credits; select **four** courses as appropriate for intended major and transfer institution)

ENGR& 104 (Note 2) [101]	Introduction to Design	5	_____	_____
ENGR& 114 [123]	Engineering Graphics	4	_____	_____
ENGR 142	Comp. Programming for Engineers	5	_____	_____
ENGR& 204 [215]	Electrical Circuits	5	_____	_____
ENGL& 230 [ENGR 231]	Technical Writing	3	_____	_____
ENGR 240	Applied Numerical Methods	4	_____	_____
ENGR& 224 [260]	Thermodynamics	5	_____	_____
MATH& 254 [252]	Calculus IV	5	_____	_____

**Total: minimum 107.5 credits required, minimum 2.0 GPA. See Note 2.**

**Note 1:** Use one of these courses to satisfy the diversity requirement.

**Note 2:** ENGR& 104 [101] may be used as a Social Science course for students transferring to the UW only; otherwise it counts only as an engineering elective. It may be counted only once.

# Associate of Science – Pre-Engineering

## Computer and Electrical Engineering

This checklist is targeted at transfer students with an interest in an **engineering** major at a university. Students should meet with an advisor and maintain this checklist while at Everett Community College. The quarter before expected completion, this checklist should be submitted with a diploma application to the Enrollment Services Office. Note: Though courses in a foreign language are not required in the Associate of Science degree, some universities may require two or three quarters of foreign language for admission or for graduation.

**Note:** Prior to starting some or all of the following courses, students should:

- |  |  |
|--|--|
| <input type="checkbox"/> Complete ENGL 98 or earn a placement score into ENGL& 101<br><input type="checkbox"/> Complete MATH& 144 [147] or MATH& 142 or place into MATH& 151 [152]<br><input type="checkbox"/> Complete PHYS& 121 [117] or a rigorous high school physics class<br><input type="checkbox"/> Complete PHYS 130 before PHYS& 233 [133] | <input type="checkbox"/> Complete CHEM& 140 [98] or place into CHEM& 161 [140]<br><input type="checkbox"/> Complete ENGR 120 and or PHYS& 221/231 [121/131] before ENGR& 214 [210] |
|--|--|

**Student:** \_\_\_\_\_ **Advisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**COMPLETION of Diversity Course**

(Where Completed/Course Title) (Year Completed) (Grade)

Course Number	Course Title	Credits	Quarter Completed	Grade
<b>COMMUNICATIONS SKILLS</b> (5 credits) <sup>1</sup>				
ENGL& 101	English Composition I	5	_____	_____
<b>MATHEMATICS</b> (Pre-requisite Math courses may also be required.)				
MATH& 151 [152]	Calculus I	5	_____	_____
MATH& 152 [153]	Calculus II	5	_____	_____
MATH& 153 [154]	Calculus III	5	_____	_____
MATH 260	Linear Algebra	5	_____	_____
MATH 261	Differential Equations	5	_____	_____

**HUMANITIES AND SOCIAL SCIENCE** (15 credits, in three different disciplines. One course must be selected from Humanities, and the other from Social Sciences. The third course may be from Humanities or Social Sciences. For acceptable courses, see course list for the Associate of Science – see separate guide. We recommend economics, history, psychology, sociology, speech (CMST) as good choices. See Notes 1 and 2.)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

**SCIENCE AND ENGINEERING** (\*\* Choose Engineering 142 and 143 for UW and Seattle U. Choose CP 130 and 131 for WSU.)

CHEM& 161 [140]	General Chemistry I	5.5	_____	_____
PHYS& 221/231 [121/131]	Engineering Physics I	5.5	_____	_____
PHYS& 222/232 [122/132]	Engineering Physics II	5.5	_____	_____
PHYS& 223/233 [123/133]	Engineering Physics III	5.5	_____	_____
ENGR 109	Engineering Orientation	2	_____	_____
ENGR 142 or CS& 131 [CP 130] **	Computer Programming I	5	_____	_____
ENGR& 204 [215]	Electrical Circuits	5	_____	_____

**ADDITIONAL ENGINEERING ELECTIVES** (minimum 22 credits; select **five** as appropriate for intended major and transfer institution)

ENGR& 104 [101] (See Note 2)	Introduction to Design	5	_____	_____
ENGR 143	Computer Programming II	5	_____	_____
ENGR& 214 [210]	Statics	5	_____	_____
ENGR& 215 [230]	Dynamics	5	_____	_____
ENGL& 230 [231]	Technical Writing	3	_____	_____
ENGR 240	Applied Numerical Methods	4	_____	_____
ENGR& 224 [260]	Thermodynamics	5	_____	_____
BIOL& 222 [200]	Majors Cell/Molecular	5	_____	_____
CHEM& 162 [150]	General Chemistry II	5.5	_____	_____
MATH& 254 [252]	Calculus IV	5	_____	_____

**Total: minimum 101 credits required, minimum 2.0 GPA. See Note 2.**

**Note 1:** Use one of these courses to satisfy the diversity requirement.

**Note 2:** ENGR& 104 [101] may be used as a Social Science course for students transferring to the UW only; otherwise it counts only as an engineering elective. It may be counted only once.

# Associate of Science – Pre-Engineering

## Bioengineering and Chemical Engineering

This checklist is targeted at transfer students with an interest in an **engineering** major at a university. Students should meet with an advisor and maintain this checklist while at Everett Community College. The quarter before expected completion, this checklist should be submitted with a diploma application to the Enrollment Services Office. Note: Though courses in a foreign language are not required in the Associate of Science degree, some universities may require two or three quarters of foreign language for admission or for graduation.

**Note:** Prior to starting some or all of the following courses, students should:

- |  |   |
|--|---|
| <input type="checkbox"/> Complete ENGL 98 or earn a placement score into ENGL& 101<br><input type="checkbox"/> Complete MATH& 144 [147] or MATH& 142 or place into MATH& 151 [152]<br><input type="checkbox"/> Complete PHYS& 121 [117] or a rigorous high school physics class<br><input type="checkbox"/> Complete PHYS 130 before PHYS& 233 [133] | <input type="checkbox"/> Complete CHEM& 140 [98] or place into CHEM& 161 [140]<br><input type="checkbox"/> Complete ENGR 120 and MATH 260 prior to ENGR 240 |
|--|---|

**Student:** \_\_\_\_\_ **Advisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**COMPLETION of Diversity Course**

	(Where Completed/Course Title)		(Year Completed)	(Grade)
Course Number	Course Title	Credits	Quarter Completed	Grade
<b>COMMUNICATIONS SKILLS</b> (5 credits) <sup>1</sup>				
ENGL& 101	English Composition I	5	_____	_____
<b>MATHEMATICS</b> (Pre-requisite Math courses may also be required.)				
MATH& 151 [152]	Calculus I	5	_____	_____
MATH& 152 [153]	Calculus II	5	_____	_____
MATH& 153 [154]	Calculus III	5	_____	_____
MATH 261	Differential Equations	5	_____	_____

**HUMANITIES AND SOCIAL SCIENCE** (15 credits, in three different disciplines. One course must be selected from Humanities, and the other from Social Sciences. The third course may be from Humanities or Social Sciences. For acceptable courses, see course list for the Associate of Science – see separate guide. We recommend economics, history, psychology, sociology, speech (CMST) as good choices, as well as ENGR 104 [101] for UW transfer. See Notes 1 and 2.)


**SCIENCE AND ENGINEERING**

CHEM& 161 [140]	General Chemistry with Lab I	5.5	_____	_____
CHEM& 162 [150]	General Chemistry with Lab II	5.5	_____	_____
CHEM& 163 [160]	General Chemistry with Lab III	5.5	_____	_____
CHEM& 261 [200]	Organic Chemistry with Lab I	5.5	_____	_____
CHEM& 262 [201] or BIOL& 222 [200]	Organic Chemistry with Lab II or Majors Cell/Molecular	5-6	_____	_____
PHYS& 221/231 [121/131]	Engineering Physics I with Lab	5.5	_____	_____
PHYS& 222/232 [122/132]	Engineering Physics II with Lab	5.5	_____	_____
PHYS& 223/233 [123/133]	Engineering Physics II with Lab	5.5	_____	_____
ENGR 109	Engineering Orientation	2	_____	_____

**ADDITIONAL ENGINEERING ELECTIVES** (minimum 12 credits; select **three** as appropriate for intended major and transfer institution)

ENGR 142	Computer Programming	5	_____	_____
ENGR& 204 [215]	Electrical Circuits	5	_____	_____
ENGL& 230 [231]	Technical Writing	3	_____	_____
ENGR 240	Applied Numerical Methods	4	_____	_____
ENGR& 225 [260]	Thermodynamics	5	_____	_____
BIOL& 221 [180]	Majors Ecology/Evolution	5	_____	_____
BIOL& 222 [200]	Majors Cell/Molecular	5	_____	_____
CHEM& 262 [201]	Organic Chemistry II	6	_____	_____
MATH& 254 [252]	Calculus IV	5	_____	_____
MATH 260	Linear Algebra	5	_____	_____

**Total: minimum 97.5 credits required, minimum 2.0 GPA. See Note 2.**

**Note 1:** Use one of these courses to satisfy the diversity requirement.

**Note 2:** ENGR& 104 [101] may be used as a Social Science course for students transferring to the UW only; otherwise it counts only as an engineering elective. It may be counted only once.

**Associate of Science in Pre-Engineering**  
**Elective Recommendations for EvCC Engineering Students**

<b>Major</b>	<b>Univ. of Washington</b>	<b>Washington State Univ</b>	<b>Seattle University</b>
Mechanical	ENGR& 104 [101] * ENGR& 114 [123] MATH& 254 [252] ENGL& 230 [ENGR 231] ENGR 240	ENGR& 114 [123] ENGR& 104 [101] * ENGR 240 Choose <b>1</b> more	ENGR& 114 [123] ENGR& 104 [101] * MATH& 254 [252] ENGR 240
Civil & Environmental	ENGR& 104 [101] * MATH& 254 [252] ENGL& 230 [ENGR 231] ENGR 240 Choose <b>1</b> more	ENGR& 104 [101] * MATH& 254 [252] ENGR 240 ENGR& 204 or 224 [215, 260]	ENGR& 104 [101] * MATH& 254 [252] ENGL& 230 [ENGR 231] ENGR 240
Aeronautics & Astronautics	ENGR& 104 [101] * MATH& 254 [252] ENGR& 224 [260] ENGL& 230 [ENGR 231] ENGR 240	N/A	
Industrial Engineering	ENGR& 104 [101] * ENGL& 230 [ENGR 231] ENGR& 204 [215] MATH& 254 [252] ENGR 142	N/A	N/A
Materials Science	ENGR& 104 [101] * MATH& 254 [252] ENGL& 230 [ENGR 231] ENGR 240 ENGR& 204 or 224 [215, 260]	MATH& 254 [252] ENGR& 224 [260] ENGR& 204 [215] ENGR 240	N/A
Chemical	(CHEM& 262 [201]) ** ENGR& 104 [101] * MATH& 254 [252] ENGR& 224 [260] ENGR 142	(BIOL& 222 [200]) ** MATH& 254 [252] ENGR& 204 [215] Choose <b>1</b> more	N/A
Bioengineering	(BIOL& 222 [200]) ** ENGR& 104 [101] * BIOL& 221 [180] MATH& 254 [252] ENGR 142	(BIOL& 222 [200]) ** ENGR& 204 [215] MATH& 254 [252] MATH 260	N/A
Electrical	ENGR& 104 [101] * MATH& 254 [252] ENGR& 214 [210] ENGR 143 Choose <b>2</b> more	ENGR& 104 [101] * MATH& 254 [252] ENGR & 214 [210] ENGR 240 Choose <b>1</b> more	ENGR& 104 [101] * MATH& 254 [252] Choose <b>3</b> more
Computer	ENGR& 104 [101] * MATH& 254 [252] ENGR& 214 [210] ENGR 143 Choose <b>2</b> more	MATH& 254 [252] ENGL& 230 [ENGR 231] CS& 131 [CP 130] Choose <b>2</b> more	ENGR& 104 [101] * MATH& 254 [252] Choose <b>3</b> more

\*ENGR& 104 [101] satisfies a social science requirement at the University of Washington and can be used to satisfy this requirement on the AS Degree if you intend to transfer to the UW. It is recommended as a social science elective for all engineering majors who intend to transfer to UW.

\*\*Indicates choice between Biology and Chemistry in Science and Engineering section on BioE/ChemE checklist.

Everett Community College does not discriminate on the basis of race, religion, creed, color, national origin, age, sex, sexual orientation, marital status, the presence of any physical, sensory or mental disability, or status as a disabled or Vietnam era veteran in its programs and activities or employment. This publication is effective MAY 2008. The College reserves the right to change courses, programs, degrees and requirements. It is the student's responsibility to be aware of correct information by routinely checking with Enrollment Services and/or the advisors listed in this publication. Requirements applicable to all certificates and degrees are published in the College Catalog. Nothing contained herein shall be construed to create any offer to contract or any contractual rights.

For more information, call 425-388-9219, Everett Community College, 2000 Tower Street, Everett, WA 98201, [www.everettcc.edu](http://www.everettcc.edu)