

# ***Engineering***

*at*

***Chemeketa Community College***

**Mark Miller, P.E.**

**Engineering Instructor**

**503-399-5225**

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**[go.chemeketa.edu/engineering](http://go.chemeketa.edu/engineering)**

Engineers play an essential role in the technical building blocks of society. Huge earthmovers, super computers, space probes, lifesaving medical equipment, super efficient power plants, or a modern freeway; engineers are involved in design, construction and operation of new developments and technologies. Engineers are indispensable in almost every area of society.

Chemeketa offers programs that closely follow the first two years of study at many public and private universities. In most cases, students are able to complete the first two years of a Bachelors of Science Degree in Engineering at Chemeketa before transferring to a university for completion.

In this advising guide, you will find lists of classes that you can take at Chemeketa Community College and then transfer to several different universities as you pursue one of a number of different engineering disciplines.

## **Answers to Important Questions:**

### **How do I know I would like engineering?**

Most engineers enjoy solving problems and helping people. Typical engineers like to plan or design and then build things. Having math and science skills or the willingness to learn these is also important.

### **What classes should I take while at Chemeketa?**

On the following pages you will find several lists of classes that you can take at Chemeketa to complete the first two years of many engineering disciplines before transferring to a variety of universities.

### **What if the kind of engineering I want to study is not listed or available?**

If the following pages do not contain a program of study for the kind of engineering discipline that you want to pursue it may, in many cases, be a simple matter of contacting an engineering advisor (Mark Miller, PE [mark.miller@chemeketa.edu](mailto:mark.miller@chemeketa.edu)) to have a curriculum constructed for your particular engineering discipline. If the engineering discipline is not offered at an Oregon university then you might consider an alternative. For example: structural engineering is usually studied as a subcategory of civil engineering. Automotive engineering and robotics are often covered by mechanical or electrical engineering classes depending on the specialty. Aeronautical engineering is usually covered well by mechanical engineering.

### **Do I have to be accepted into the program at Chemeketa?**

No, as long as you are a registered Chemeketa student and meet the class prerequisites you can start taking engineering classes.

### **If I need help with my schedule whom should I talk to?**

Students are strongly encouraged to stay in contact with an engineering advisor at Chemeketa (Mark Miller, PE [mark.miller@chemeketa.edu](mailto:mark.miller@chemeketa.edu)) in addition to an advisor at the school where they intend to transfer. See attached pages for contact information. Proper advising is very important because many classes have very restrictive prerequisites and many classes are only offered one time per year.

### **What if I am not ready to start with MTH251?**

Students may start the program with MTH112 in place of MTH251. The student will then have to catch up by taking MTH253 the following summer.

### **What degree do I get at Chemeketa?**

Most engineering students are encouraged to earn the Associate of Arts Oregon Transfer Degree (AAOT) as they work their way through the engineering requirements listed on the following pages. The AAOT may give the engineering student some transfer advantages on their way to a Bachelors Degree especially when it is combined with the engineering requirements on the following pages. Students are encouraged to contact Tiffany Borden at [tiffany.borden@chemeketa.edu](mailto:tiffany.borden@chemeketa.edu) for advising on the AAOT degree.

**CHEMEKETA COMMUNITY COLLEGE**  
**classes for transfer to**  
**PORTLAND STATE UNIVERSITY**  
**Transfer Engineering Guide**

**CIVIL ENGINEERING    ELEC. ENGINEERING    MECH. ENGINEERING    ENVIRO. ENGINEERING    COMP. ENGINEERING**

	COURSE	CR	COURSE	CR	COURSE	CR	COURSE	CR	COURSE	CR
FALL	CH221	5	CH221	5	CH221	5	CH221	5	CH221	5
	GE101	3	GE101	3	GE101	3	GE101	3	GE101	3
	MTH251	5	HUM or SS		MTH251	5	MTH251	5	HUM or SS	
	HUM or SS		MTH251	5	HUM or SS		HUM or SS		MTH251	5
WINTER	CH222	5	GE102	3	CH222	5	CH222	5	GE102	3
	GE102	3	MTH252	5	GE102	3	GE102	3	MTH252	5
	EGR248*	3	WR121	4	EGR248*	3	EGR248*	3	WR121	4
	MTH252	5	HUM or SS		MTH252	5	MTH252	5	HUM or SS	
	WR121	4					WR121	4		
SPRING	COMM111	4	COMM111	4	COMM111	4	COMM111	4	COMM111	4
	MTH253**	4	MTH253**	4	MTH253**	4	MTH253	4	MTH253**	4
	WR227	4	WR227	4	WR121	4	WR227	4	WR227	4
	HUM or SS		HUM or SS		HUM or SS				HUM or SS	
	SEE NOTE #1		SEE NOTE #1		SEE NOTE #1		SEE NOTE #1		SEE NOTE #1	
FALL	MTH254	5	EGR201	4	EGR201	4	MTH254	5	EGR201	4
	EGR211	4	MTH254	5	MTH254	5	EGR211	4	CS161	4
	PH211	5	PH211	5	EGR211	4	PH211	5	PH211	5
	HUM or SS		CS161	4	PH211	5	HUM or SS		HUM or SS	
	SEE NOTE #3		SEE NOTE #2				SEE NOTE #3		SEE NOTE #2	
WINTER	EGR212	4	EGR202	4	EGR212	4	EGR212	4	EGR202	4
	PH212	5	PH212	5	PH212	5	PH212	5	PH212	5
	HUM or SS		HUM or SS		HUM or SS		HUM or SS		CS162	4
			CS162	4			SEE NOTE #4		HUM or SS	
SPRING	MTH256	4	EGR203	4	MTH256	4	MTH256	4	CS260	4
	EGR213	4	MTH256	4	EGR213	4	EGR213	4	MTH256***	4
	PH213	5	PH213	5	PH213	5	PH213	5	PH213	5
	HUM or SS		HUM or SS		HUM or SS		HUM or SS		HUM or SS	

Students are encouraged to contact Mark Miller (503-399-5225 or mark.miller@chemeketa.edu) at Chemeketa Community College for individual advising.

Students are encouraged to contact an advisor at PSU (503-725-4631 or advising@eas.pdx.edu) as early as possible to learn of any possible changes and deadlines.

\* Requires DRF 130 or equivalent prerequisite.

\*\* Students are required to take a linear algebra class not offered at Chemeketa. MTH253, is not required for the BSME, BSCE, BSEE degree and is not a substitute for the required linear algebra class (Math 261 at PSU). Students may still benefit from taking MTH 253

\*\*\* Requires MTH254 or equivalent prerequisite.

HUM or SS -->Indicates humanities or social science electives that satisfy the arts and letters requirements for PSU.

NOTE #1 Students that have never used spreadsheets in a technical environment are encouraged to take GE 103.

NOTE #2 Students wanting to become professional engineers are strongly encouraged to take EGR 211 and EGR 212.

NOTE #3 Students wanting to become professional engineers are strongly encouraged to take EGR 201.

NOTE #4 Environmental engineering students need to take BI234 and its prerequisites.

**CHEMEKETA COMMUNITY COLLEGE**  
**classes for transfer to**  
**OREGON INSTITUTE of TECHNOLOGY**  
**Transfer Engineering Guide**  
*for*  
**CIVIL ENGINEERING**

*First Year*

*Second Year*

	COURSE	CR		COURSE	CR
FALL	CH201	4		MTH254	5
	GE101	3		EGR211	4
	MTH251	5		PH211	5
WINTER	CH202	4		PH212	5
	MTH252	5		WR227	4
	WR121	4		HUM or SS	
	DRF131*	3			
SPRING	COMM111	4		MTH256	4
	GE103	3		EGR213	4
	MTH253	5		EGR214	3
	WR122	4		HUM or SS	
	HUM or SS				

Students are encouraged to work CVL143 and 144 into their schedules before leaving Chemeketa Community College.

Students are encouraged to contact Mark Miller (503-399-5225 or [mark.miller@chemeketa.edu](mailto:mark.miller@chemeketa.edu)) at Chemeketa Community College for individual advising.

Students are encouraged to contact an advisor at OIT (Prof. David Thaemert 541-885-1518 [david.thaemert@oit.edu](mailto:david.thaemert@oit.edu)) as early as possible to make contacts and learn of any possible changes.

HUM or SS - Indicates humanities or social science electives that satisfy the OIT requirements.

\* Requires DRF 130 or equivalent prerequisite.

**CHEMEKETA COMMUNITY COLLEGE**  
**classes for transfer to**  
**OREGON STATE UNIVERSITY**  
**Transfer Engineering Guide**

		<i>INDUSTRIAL</i>									
		or									
		<i>CIVIL</i>	<i>ELECTRICAL &amp; COMPUTER</i>		<i>MECHANICAL</i>		<i>MANUFACTURING</i>		<i>ENERGY SYSTEMS</i>		
		COURSE	CR	COURSE	CR	COURSE	CR	COURSE	CR	COURSE	CR
FALL		BI101	4	BI101	4	BI101	4	BI101	4	BI101	4
		CH201	4	CH201	4	CH201	4	CH201	4	CH201	4
		GE101	3	GE101	3	GE101	3	GE101	3	GE101	3
		MTH251	5	MTH251	5	MTH251	5	MTH251	5	MTH251	5
		HUM or SS		HUM or SS		HUM or SS		HUM or SS		HUM or SS	
WINTER		CH202	4	GE102	3	CH202	4	CH202	4	CH202	4
		GE102	3	MTH 231	4	GE102	3	GE102	3	GE102	3
		EGR248*	3	MTH252	5	EGR248*	3	EGR248*	3	MTH252	5
		MTH252	5	WR121	4	MTH252	5	MTH252	5	WR121	4
		WR121	4	HUM or SS		WR121	4	WR121	4	NOTE #4	
SPRING		COMM111	4	COMM111	4	COMM111	4	COMM111	4	COMM111	4
		GE103	3	GE103	3	GE103	3	GE103	3	GE103	3
		MTH253	5	MTH253	5	MTH253	5	MTH253	5	MTH253	5
		WR227	4	WR227	4	WR227	4	WR227	4	WR227	4
		HPE295	3	HPE295	3	HPE295	3	HPE295	3	HPE295	3
				HUM or SS							
FALL		EGR201	4	EGR201	4	EGR201	4	EGR201	4	EGR201	4
		MTH254	5	MTH254	5	MTH254	5	MTH254	5	MTH254	5
		EGR211	4	NOTE #1		EGR211	4	EGR211	4	EGR211	4
		PH211	5	PH211	5	PH211	5	PH211	5	PH211	5
		HUM or SS		CS161	4	HUM or SS		HUM or SS		HUM or SS	
WINTER		EGR212	4	EGR202	4	EGR202	4	EGR212	4	EGR202	4
		PH212	5	MTH255	4	EGR212	4	PH212	5	EGR212	4
		DRF220	2	CS162	4	PH212	5	HUM or SS		PH212	5
		HUM or SS		PH212	5	HUM or SS		HUM or SS		HUM or SS	
		HUM or SS		HUM or SS		HUM or SS		NOTE #3		HUM or SS	
SPRING		MTH256	4	EGR203	4	MTH256	4	MTH256	4	MTH256	4
		EGR213	4	MTH256	4	EGR213	4	EGR213	4	EGR213**	4
		PH213	5	PH213	5	PH213	5	PH213	5	PH213	5
		EGR214	3	NOTE #2		EGR214	3	EGR214	3	EGR214	3
		HUM or SS		CS260	4	HUM or SS		HUM or SS		HUM or SS	
			HUM or SS								

Students are encouraged to contact Mark Miller (503-399-5225 or mark.miller@chemeketa.edu) at Chemeketa Community College for individual advising or for help with engineering disciplines not shown above.

Students are encouraged to contact an advisor at OSU (541-737-5236 or <http://enr.oregonstate.edu/>) as early as possible to make contacts and learn of any possible changes.

HUM or SS - Indicates humanities or social science electives that satisfy the Western Culture, Cultural Diversity, Literature and Arts, Social Processes and Institutions and Difference/Power/Discrimination categories in the Perspectives section of OSU's Baccalaureate Core. See the last page of this guide.

No more than two courses may be from the same department.

**Mechanical Engineering requires EC 201 or EC 202 for the Social Processes and Institutions category.**

**Civil Engineering requires EC 201 for the Social Processes and Institutions category.**

**Energy Systems Engineering requires EC 201 for the Social Processes and Institutions category.**

NOTE #1 Electrical & Computer Engineering students wanting to become professional engineers or to take classes in Energy Systems, Robotics and Control are strongly encouraged to take EGR 211 and EGR 212.

NOTE #2 Electrical & Computer Engineering students are strongly encouraged to take EGR 214. While the classes will not transfer directly, the material will be foundational for Junior and Senior study. It is also recommended that Electrical & Computer Engineering students take OSU's ECE271 & 272 or an equivalent at another institution to prepare for Junior level study.

NOTE #3 Industrial or Manufacturing Engineering students are encouraged to take OSU's ME250, IE212 and ENGR390 at OSU before their Junior year.

NOTE #4 Energy Systems Engineering students are encouraged to take OSU's IE212 and BA215 at OSU before their Junior year.

\* Requires DRF 130 or equivalent prerequisite.

\*\* 200 level restricted elective.

**CHEMEKETA COMMUNITY COLLEGE**  
**classes for transfer to**  
**OREGON STATE UNIVERSITY**  
**Transfer Engineering Guide**

	<i>CHEMICAL</i>		<i>ENVIRONMENTAL</i>		<i>BIOENGINEERING</i>	
	COURSE	CR	COURSE	CR	COURSE	CR
FALL	CH221	5	CH221	5	CH221	5
	GE101	3	GE101	3	GE101	3
	MTH251	5	MTH251	5	MTH251	5
	HUM or SS		HUM or SS		HUM or SS	
	HPE295	3	HPE295	3	HPE295	3
WINTER	CH222	5	CH222	5	CH222	5
	GE102	3	GE102	3	GE102	3
	MTH252	5	EGR248*	3	MTH252	5
	WR121	4	MTH252	5	WR121	4
	HUM or SS		WR121	4	HUM or SS	
			HUM or SS			
SPRING	COMM111	4	COMM111	4	COMM111	4
	GE103	3	GE103	3	GE103	3
	MTH253	5	MTH253	5	MTH253	5
	WR227	4	WR227	4	WR227	4
	CH223	5	CH223	5	CH223	5
FALL	EGR201	4	HUM or SS		EGR201	4
	MTH254	5	MTH254	5	MTH254	5
	EGR211	4	EGR211	4	EGR211	4
	PH211	5	PH211	5	PH211	5
	CH241	4	CH241	4	CH241	4
	NOTE #1		NOTE #1		NOTE #1	
WINTER	CH242	4	CH242	4	CH242	4
	PH212	5	PH212	5	PH212	5
	HUM or SS		EGR212	4	HUM or SS	
	HUM or SS		HUM or SS		HUM or SS	
	BI230	4	BI230	4	BI230	4
SPRING	MTH256	4	MTH256	4	MTH256	4
	CH243	4	CH243	4	CH243	4
	PH213	5	EGR213	4	PH213	5
	HUM or SS		PH213	5	HUM or SS	3
			HUM or SS			

Students are encouraged to contact Mark Miller (503-399-5225 or mark.miller@chemeketa.edu) at Chemeketa Community College for individual advising or for help with engineering disciplines not shown above.

Students are encouraged to contact an advisor at OSU as early as possible to make contacts and learn of any possible changes:

School of Chemical, Biological and Environmental Engineering  
Oregon State University  
103 Gleeson Hall  
Corvallis, OR 97331  
Phone: 541 737-7255  
E-mail: kristin.rorrer@oregonstate.edu

HUM or SS - Indicates humanities or social science electives that satisfy the Western Culture, Cultural Diversity, Literature and Arts, Social Processes and Institutions and Difference/Power/Discrimination categories in the Perspectives section of OSU's Baccalaureate Core. See the last page of this guide. No more than two courses may be from the same department.

NOTE #1 Chemical, Environmental, and BioEngineering all have a sequence of second year classes not offered at Chemeketa. Contact OSU for more details on an online option, CHE299.

\* Requires DRF 130 or equivalent prerequisite.

**CHEMEKETA COMMUNITY COLLEGE**  
**classes for transfer to**  
**OREGON STATE UNIVERSITY**  
**Transfer Engineering Guide**

**Construction Engineering Management**

	<i>First Year</i>		<i>Second Year</i>	
	COURSE	CR	COURSE	CR
FALL	BI101	4	EGR211	4
	CH201	4	PH211	5
	GE101	3	COMM111	4
	HUM or SS			
WINTER	GE102	3	PH212	5
	EGR248*	3		
	MTH251**	5		
	WR121	4		
SPRING	GE103	3	EGR213	4
	MTH252	5	HUM or SS	
	WR227	4	HUM or SS	
	HPE295	3	EGR214	3

In addition to the above classes the following classes will transfer to OSU to help the student prepare themselves for Junior level study. They have not been placed in a particular term as they are offered in a variety of formats and at a variety of times. It is recommended that students take the BA classes in their second year of study after the GE sequence.

EC201  
 EC202  
 PHL203  
 BA211, BA212 and BA213\*\*\*  
 BA226  
 CVL161A and CVL161B

Students are encouraged to contact Mark Miller (503-399-5225 or mark.miller@chemeketa.edu) at Chemeketa Community College for individual advising.

Students are encouraged to contact an advisor at OSU (541-737-5236 or http://enr.oregonstate.edu/) as early as possible to make contacts and learn of any possible changes.

Students are required to complete ENGR390 before entrance into the OSU ProSchool. Contact OSU or online offerings.

HUM or SS - Indicates humanities or social science electives that satisfy the Cultural Diversity, Literature and Arts and Difference power and Discrimination categories in the Perspectives section of OSU's Baccalaureate Core. No more than two courses may be from the same department. See the last page of this guide.

\* Requires a prerequisite of DRF130

\*\* Requires a prerequisite of MTH112

\*\*\* The Chemeketa BA211, 212, 213 sequence may be replaced with OSU's BA215 at OSU.

**OREGON STATE UNIVERSITY (CORVALLIS)**  
**BASIC COURSES REQUIRED FOR ALL DEGREES**  
 (Baccalaureate Core Curriculum) 2013-2014

Requirements	Credit Hours	Equivalent courses which satisfy requirements	Credit Hours
Writing I (Pass with "C-" grade or above)	3	<u>WR121</u> (must be completed before transferring)	3-4
Writing II	3	<u>BA214</u> ; <u>JNL216</u> ; <u>WR122</u> , 227, 240, 241, 242, 243, 244, 245, 262	3-4
Writing III Speech	3	<u>COMM111</u> , 112, 218, 219	3-4
Mathematics (Pass with "C-" grade or above)	3	<u>MTH105</u> or 111, 112, 211, 241, 251 (must be completed before transferring)	4-5
Fitness	3	<u>HPE295</u> Health and Fitness for Life	3
Writing Intensive Course		Must be taken at OSU as upper division in the major.	
*Physical Science - Including Lab	4-5	<u>CH104</u> , 105, 106, 115, 116, 117, 121, 122, 123, 201, 202, 221, 222, 223; <u>GEG105</u> ; <u>GEO142</u> , 143, 144, 201, 202, 203; <u>GS104</u> , 106, 107, 141, 142, 143; <u>PH201</u> , 202, 203, 207, 208, 209, 211, 212, 213	4-5
*Biological Science - Including Lab	4	<u>BI101</u> , 102, 103, 131, 132, 133, 143, 153, 200, 211, 212, 213, 230, 234	4-5
*One additional Physical Science or Biological Science course-Including Lab	4-5	Any courses listed for Physical or Biological Science above.	4-5
*Western Culture	3	<u>ART</u> 204, 205, 206; <u>ENG107</u> , 108, 109, 201, 202, 204, 205, 253, 254, 275; <u>FA255</u> ; <u>GEG106</u> , 207; <u>HST</u> 104, 105, 106, 201, 202, 203, 228; <u>PHL201</u> , 203; <u>REL202</u> , 203.	3-4
*Cultural Diversity	3	<u>ART</u> 201; <u>ATH212</u> , 214, 231; <u>CLA201</u> , 202, 203; <u>ENG257</u> ; <u>GEG201</u> , 202, 220; <u>HST104</u> , 105, 106, 157, 257, 258, 270; <u>HUM220</u> , <u>REL</u> 160, 201, 202; <u>SSC100</u> .	3-4
*Literature and the Arts	3	<u>ART101</u> , 204, 205, 206; <u>ENG104</u> , 105, 106, 107, 108, 109, 201, 202, 204, 205, 250, 253, 254, 256, 257, 258, 260, 269, 275; <u>FA255</u> ; <u>MUS</u> 105, 161, 201, 202, 203.	3-4
*Social Processes and Institutions	3	<u>ATH103</u> ; <u>EC201</u> , 202; <u>HE209</u> ; <u>HM</u> 210; <u>PS201</u> , 202, 205; <u>PSY100</u> , 201, 202; <u>SOC204</u> , 205.	3-4
*Difference, Power, and Discrimination	3	<u>HST201</u> , 202, 203; <u>SOC206</u> , 210, 213.	3-4
Global Issues (Upper division course; must be taken at OSU)	3		
Science, Technology and Society (Upper division course; must be taken at OSU)	3		

\*NO MORE THAN TWO COURSES FROM THE SAME DEPARTMENT MAY BE USED TO FULFILL THIS GROUP OF REQUIREMENTS.

STUDENTS ENTERING OSU WHO HAVE EARNED AN OREGON ASSOCIATE OF ARTS TRANSFER DEGREE FROM CHEMEKETA WILL BE CONSIDERED TO HAVE MET OSU'S LOWER DIVISION BACCALAUREATE CORE CURRICULUM REQUIREMENTS.

Students graduating from high school in 1997 or after must have completed two years of the same high school-level second language or two terms of the same college-level second language, or demonstrated proficiency to be admitted to OSU.