



Bioengineering and Chemical Engineering

Associate in Bioengineering and Chemical Engineering
Direct Transfer Agreement/Major Related Program (DTA/MRP)
Planning Guide 2016–2017

Bioengineering and Chemical Engineering—What is it?

Bioengineers and Chemical Engineers integrate their knowledge of natural sciences and engineering to conduct research, design and test equipment, create new medicines and develop procedures for the advancement of health care, public safety, environmental protection, science and medicine.

Areas of Study in Bioengineering and Chemical Engineering: Calculus, Biology, Chemistry, Physics, Electronic Circuits, Thermodynamics, Mechanics of Materials, Genetics, Bioinformatics, Epidemiology, Engineering Problem Solving, Project Design, Manufacturing Processes, Medical Procedures, Project Management, Computer Applications, Safety, Quality Control, Research Methods, Statistical Analysis and Professional Ethics.

What is an AS-T Track 2 MRP?

The Associate in Science Transfer (AS-T) Track 2, Major Related Program is designed to prepare students entrance into a Bachelor of Science (B.S.) program in Bioengineering or Chemical Engineering. The MRP details the required foundation courses for students to be prepared for junior standing at baccalaureate institutions. Students will be required to take additional general education courses after transfer. Engineering is also an excellent major for graduate studies in Environmental Sciences, Law, Medicine, Business and Education.

Where can I go for help?

Instructional Faculty Advisors

Alison Armstrong	206-546-4698	aarmstrong3@shoreline.edu	Rm. 2810
Eric Basham	206-546-4625	ebasham@shoreline.edu	Rm. 2809
David Phippen	206-546-4572	dhippen@shoreline.edu	Rm. 2817
Tiffany Meier	206-546-6953	tmeier@shoreline.edu	Rm. 5231

engineeringadvising@shoreline.edu
chemistryadvising@shoreline.edu
mathadvising@shoreline.edu
biologyadvising@shoreline.edu

General Academic Advising

FOSS (5000) Building, Rm. 5229
206-546-4559: advising@shoreline.edu
www.shoreline.edu/advising

International Student Academic Advising

9000 Building, Rm. 9302
206-546-4697
ieadvisors@shoreline.edu
www.shoreline.edu/international/advising/

Where can I transfer?

The AS-T Track 2 MRP in BioEngineering and Chemical Engineering makes it possible for students to transfer to a number of public and private colleges and universities with junior standing. Below are Washington State institutions that recognize this MRP.

University of Washington (BE, CHE,)
Washington State University (BE, CHE)
Walla Walla University (BE)

*Note: Engineering Majors offered at Washington State Universities are designated as follows: Bioengineering (BE) and Chemical Engineering (CHE)

What can I do with a Bachelor's Degree in Bio and Chemical Engineering?

Bio and Chemical Engineers develop strong critical thinking, problem solving and communication skills to apply their knowledge of science and engineering to a wide range of careers, including product design and testing, research and development, project management, teaching, sales and consulting.

Potential employers include: Engineering Firms, manufacturing companies, pharmaceutical companies, chemical manufacturers, biotechnology companies, hospitals, medical equipment companies, government agencies, colleges and universities and consulting firms. For more, please visit <http://www.shoreline.edu/counseling-services/career-counseling.aspx>

What do I need to take?*

Below are the requirements for the AS-T Track 2 and the Major Related Program (MRP) in Bioengineering and Chemical Engineering.

I. GENERAL EDUCATION I 18 - 20 Credits			
Courses used in General Education (Gen Ed) Core may not be used for distribution.			
General Education Courses	QTR	GR	CR
ENGL &101			5
ENGL &102 or &230, or CMST &101			3 - 5
Multicultural Understanding			5
MATH &151 (Quant. & Symb Reas.)			5

II. DISTRIBUTION REQUIREMENTS 10 Credits				
See courses listed on next page <i>ECON &201 recommended for Social Sciences</i>				
Humanities	5 Credits	QTR	GR	CR
1.				
Social Sciences	5 Credits	QTR	GR	CR
1.				

III. PRE-MAJOR PROGRAM I 79 – 84.5 Credits

PHYSICS 16.5 Credits	QTR	GR	CR
PHYS &221 <i>Fall, Win</i>			5.5
PHYS &222 <i>Win, Spr, Sum</i>			5.5
PHYS &223 <i>Win, Spr</i>			5.5
CHEMISTRY 26.5 Credits	QTR	GR	CR
CHEM 171/181 <i>Every quarter</i>			6.5
CHEM 172/182 <i>Win, Spr, Sum</i>			6.5
CHEM 173/183 <i>Fall, Spr, Sum</i>			6.5
CHEM &241/271 <i>Fall, Win</i>			7
ADDITIONAL CHEM/BIOL 5–7 Credits			
CHEM &242/272 (<i>Win, Spr</i>) –or– BIOL &211 (<i>Every Quarter</i>)	QTR	GR	CR
1.			

MATHEMATICS 15 Credits	QTR	GR	CR
MATH &152 <i>Every quarter</i>			
MATH &163 <i>Every quarter</i>			
MATH 207 <i>Fall, Spr</i>			

FOR MAJOR ELECTIVE COURSES, CHOOSE FROM LIST BELOW			
BIOL &211 (if not taken above); BIOL &212 (<i>Win, Spr</i>); CHEM &242/272 (if not taken above); CS &141 (<i>Every quarter</i>); ENGR &204 (<i>Win</i>); ENGL &230 (<i>Fall, Spr</i> - if not taken above); ENGR &214 (<i>Spr, Fall</i>); ENGR &224 (<i>Spr</i>); ENGR 240 (<i>Win</i>); MATH 208 (<i>Fall, Win</i>); MATH &264 (<i>Spr</i>)			
MAJOR ELECTIVE COURSES 15 Credits	QTR	GR	CR
1.			
2.			
3.			

What does your chosen four-year school require?

Before choosing classes, become familiar with the four-year program where you want to apply: visit the website, email the department, and/or speak with a Shoreline advisor. Below are examples from Washington schools with different admissions and graduation requirements. Check with the school for world language requirements. (Non-native speakers of English are often exempt from this requirement.)

School	Degrees	Requirements
University of Washington	B.S. in Bioengineering; Chemical Engineering with an option in Nanoscience, Molecular Engineering; and Bioresource Science and Engineering.	Note that UW Departments of Bioengineering and Chemical Engineering admit only once a year for Spring Quarter and that admission is very competitive.
Walla Walla University	B.S. in Bioengineering.	Walla Walla University is a private university affiliated with the Seventh Day Adventists. Students will be required to take religious studies courses after transfer.
Washington State University	B.S. in Bioengineering; Chemical Engineering (Pullman)	In addition to core math, science and engineering courses, WSU requires ECON& 201 to graduate. A 2.0 or better grade in all engineering and major prerequisite courses is required.

The following is a list of classes that satisfy Shoreline's 2016-2017 AS-T Track 2 degree requirements. Credits for a specific course may be used only once and may not be applied toward more than one distribution area. Course numbers with an "&" are common course numbers with content that is consistent across Washington state community colleges.

I. GENERAL EDUCATION CORE REQUIREMENTS | 20 CREDITS

COMMUNICATIONS —10 Credits	MULTICULTURAL UNDERSTANDING — 5 Credits	QUANTITATIVE / SYMBOLIC REASONING —5 Credits
English &101	Communication Studies 203, 285	Math &151
English &102, 230	Gender and Women's Studies 284	
Communication Studies &101	History 245	
	Multicultural Studies 105	

* Students planning to transfer to the University of Washington must consult Math Advising, mathadvising@shoreline.edu

II. DISTRIBUTION AREA REQUIREMENTS | 15 CREDITS

HUMANITIES—5 Credits

No more than 5 credits in 100 level foreign language.

General Humanities

American Ethnic Studies 106, 215
American Sign Language &121-&123
Art &100, 105, 234
Art History 204, 210, 224-226
Chinese &121-&123
Cinema 201, 202
Communication Studies &101, &102, 203, &210, &220, 285
Drama &101
English &111-&113, 154, 200, 207, &220, &226-&228, 229, &244-&246, 247, 248, 257, 265, 271, 272, 281, 282, 287-289
French &121-&123
Honors 100
Humanities 111-113, 140, 275
Japanese &121-&123, &221-&223
Music 100, &105, 106, 108, 109, &141-&143, 150, 206, 224, &241-&243
Philosophy &101, 102, &115, 210, 240, 248, 267
Spanish &121-&123, &221-&223

Performance Skills /Applied Theory – 5 Credits Maximum

Art 109, 110, 121-123, 131-134, 144-146, 251-256, 260-262, 271-273
Communication Studies 140, &230, 244, 245, 247
Drama 144-146, 155-157, 207-209, 224, 235, 244, 255
English &230, 279
Film 255-258, 266, 285, 286, 290
Music 114, 115, 118-120, 135, 136, 140, 144, 146, 147, 150-156, 161-167, 170, 175, 180, 184, 196, 204, 205, 207, 210-212, 225, 226, 251-253, 264, 268, 270, 280, 284, 296

SOCIAL SCIENCES— 5 Credits

American Ethnic Studies 106, 119, 229
Anthropology &100, &204, &206, &207, 215
Art History 204
Business &101
Child Advocacy Studies 102, 202, 285
Communication Studies &102
East Asia 218
Economics 100, &201, &202
Gender and Women's Studies 205, 215, 284, 285, 286, 288
Geography &100, 123, &200, 277
History &116-&118, &136, &137, &146-&148, 207, &214, &215, 218, &219, 234-238, 245-247, 256, 275
Honors 100
International Studies 101, 123, 200, 201, 205
Multicultural Studies 105, 205, 210, 238, 250
Philosophy &101, 102, &115, 210, 240, 248, 265, 267
Political Science &101, &202, &203, 221
Psychology &100, &200, 208, 209, 210, &220, 225, 236, 245
Sociology &101, 102, 112, &201, 202, 250, 288

III. ADDITIONAL SCIENCE | 5 – 6 CREDITS

Anthropology &205*
Astronomy &101
Biology 124, 126, 144, 150*, &170, 244, 249, 274, 275, 277
Chemistry &110, &121, &131, 171/181, 172/182, 173/183, &241/271, &242/272
Environmental Science &100, &101, 202
Geography 203, 204
Geology &101, &110, &115, &208
Nutrition &101*
Oceanography &101
Philosophy &120*
Psychology 202

* these courses may not meet requirements at some Baccalaureate Colleges or Universities.

STUDENT INFORMATION

Name: _____
 Student I.D. No.: _____
 Major/Pathway(s): _____
 Specialty (if applicable): _____

TRANSFER SCHOOLS OF INTEREST

- 1.
- 2.
- 3.
- 4.

Academic Goals

- Complete an A.A. or A.S. degree
- Prepare for transfer only—No degree
- High school completion program/ GED

Previous College Experience

- Transferred from another college
- Completed transfer credit evaluation
- Prior Learning Assessment

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
Total Credits	

Notes:

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
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Qtr:	Year:
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Qtr:	Year:
COURSE	CR
Total Credits	

Notes:

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
Total Credits	

Qtr:	Year:
COURSE	CR
Total Credits	

Notes: