Bioengineering, Chemical Engr, Biomass Resource Sci & Engr, and Plastics & Composites Engineering Program Requirements

Revised April 29, 2019

		TCC	UW			WSU		WWU
			Seattle			Pullman		Bellingham
Course #	Description	AS-MRP	BioE	ChemE	BRSE	BioE	ChemE	PCE
Math& 151, 152	Calculus 1, 2	R	√-app	√-app	√-app	√	√	√
Math& 153	Calculus 3	R	√-app	√-app	√-app	√	√	
Math& 254	Calculus 4	S	√-app	√-app	√-app	G	√	
Math 238	Differential Equations	R	G	√- app	G	A	G	
Math 220	Linear Algebra	S	G	G	G	A	G	
Phys& 221	Calc Based Physics 1	R	√-app	√-app	√-app	√	√	√
Phys& 222	Calc Based Physics 2	R	√-enr	√-app	G	√	√	G
Phys& 223	Calc Based Physics 3	R	A	G	G	A	G	G
Chem& 161	General Chemistry 1	R	√-app	√-app	√-app	√	√	√
Chem& 162	General Chemistry 2	R	√-app	√-app	√-app	√	√	√
Chem& 163	General Chemistry 3	R	√-app	√-app	√-app	√	√	see note
Chem& 261	Organic Chem 1	R	√-enr	G	G	A	√	G
Chem& 262	Organic Chem 2	S		G	G	A	√	
Chem& 263	Organic Chem 3					A	A	
Biol& 221	Evolution, Ecology & Biodiv		√-enr			A		
Biol& 222	Cellular & Molecular	S	G			√	A	A
Biol& 223	Bio of Organisms	S	G			A		
Engr& 104 [1]	Intro to Design	S or Soc	A	A	A	A		√
Engr& 114	SolidWorks/Graphics	Hum	A			A		
Engr 170	Intro to Material Sci	NA	A	A				√
Engr& 204	Electric Circuits	S		A	A	G		
Engr& 214	Statics	S	A	A	A	G		√
Engr& 215	Dynamics		A	A	A	A		
Engr& 224	Thermodynamics	S		P	G	A	A	
Engr& 225	Mechanics of Materials		A	A	A			G
Engr 240	Applied Numerical Methods	S	√-enr	G				
CS 142	Java 1	S		Engr 240 Pref				G
Engl& 101	English Composition 1	R	√-app	√-app	√-app	G	G	G
Engl& 235	Technical Writing	S		G	G	G	G	
Hum and Soc Sci[1]		R	A	A	A	A	A	A

TCC Key: There are two relevant Associate's degrees, the AS-Bioengineering & Chemical Engineering - MRP degree and the AS-T2. More info on back.

R = Required for the Associate of Science degree . The AS-T2 also requires completion of a minimum of 32 additional advisor-approved college level credits.

S = Specialization Course - Minimum of 4 courses for AS-MRP. Minimum of 32 college level credits for AS-T2

University Key: √ = Required for admission or certification to the department. For Fall admission at UW (BRSE), √-app class must be completed by April 5 and √-enr by fall start at UW. For Spring admission at UW (BioE, ChemE, BRSE), √-app class must be completed by Jan 15. √-enr by Spring start at UW.

G = Graduation requirement for the Bachelor of Science at the university. These are freshman/sophomore level courses so take now, if possible.

A = Meets an additional requirement. The university requires the selection of additional classes from specific lists for the BS.

P = Provides preparation for junior level university coursework and/or for the FE/EIT exam, the first step to being licensed.

Additional notes [1] Engr 104 is a Social Science. Engr 114 is a Humanities. AS degrees require 15 credits of Humanities and Social Science. At least 5 credits must be a Humanities and 5 credits must be a social science. One class must meet the multicultural requirement. See approved lists. Universities may have specific course Humanities/Social Science course requirements.

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Tacoma Community College

Students should generally be working toward one of three associate's degrees: 1) the Associate of Science - Major Related Program for Mechanical/Civil (AS-MRP), 2) the Associate of Science- Track 2 (AS-T2), and/or 3) the Associate of Arts DTA (AA-DTA). It is important to understand the distinctions. The AS-MRP was developed on the state level to most closely mirror the coursework that a student would be taking at a university engineering program. It requires 108 credits, rather than 90, which can be helpful with financial aid. In general, most Civil and Environmental students should be working toward the AS-MRP. The AS-T2 was also developed on the state level for a broader group of science/engineering fields. Students can make more self-advising errors using this model and should not use this as a degree goal; however, if ready to transfer and are a few classes short of the AS-MRP degree, might still be eligible for the AS-T2 (speak with an engineering advisor). The AA-DTA degree is intended for students to complete their general education requirements and is usually a poor fit for engineering students since it does not allow them to take all of the required prerequisites. Some universities give specific benefits for one or more of these degrees. Although we advise transferring without a degree in some instances, transferring courses back to complete the degree is requested. TCC funding is tied to associate's degree completion, so you help future students by finishing your degree. You may earn more than one degree from TCC, but must have an additional 30 credits for each degree. TCC strongly encourages economics courses for engineering students.

University of Washington - Seattle

You must apply to both the university and the major. The Bioengineering and Chemical Engineering departments only admits students in spring quarter. The Bioresource Science & Engr departments admits autumn and spring. Spring quarter deadlines are Dec. 15 for the university and Jan. 15 for the departments. Fall quarter deadlines are Feb. 15 for the university and April 5 for the departments. (There may be other deadlines for international students.) Some classes must be completed before you apply (√-app). Some courses must be completed before you start in the fall (√-enr). University of Washington requires core requirements from high school. This applies even if high school was years ago! High school is considered to start in 9th grade. The core requirements are 4 years of English, 3 years of math, 3 years of social science, 2 years of foreign language, 2 years of lab science, and 0.5 years of art. If you did not complete these in high school, the requirements can be met through TCC courses. In general, 1 year of high school class = 5 credits of college work. See the University of Washington website for more details.

The UW Bioengineering department offers a option in Nano & Molecular Engineering. The full biology sequence (221, 222, 223) should be taken at the community college for transfer equivalency to the UW's biology sequence. The UW Biomass Resource Science and Engineering program was formerly known as the Paper Science and Engineering program. It is small, targeted program. In the past, there have been a number of scholarships for this program, including scholarships that also allowed students to complete a bachelor's degree in chemical engineering. Entry to the program requires a 300 level thermodynamics course. Talk to UW department advisors for more information about meeting this requirement.

Washington State University - Pullman

WSU gives advantages to completing the AS-MRP degree. Individual departments have specific requirements, so while a social science may transfer, if you don't choose carefully, you may also have to take another class to meet the requirement. Choose the following courses: HIST& 128 (World Civ 3) and ECON& 202 (Macro). WSU requires a writing portfolio. Save samples of graded written work from TCC. Download forms from the WSU website, and ask your instructor to sign them. Do it as you are taking classes, rather than having to go back and ask instructors to evaluate your work again. WSU is on the semester system, rather than the quarter system. They require application to the university, followed by certification into the program. See university website for important deadlines.

The Bioengineering program has both a general and a pre-med option. The Chemical Engineering department at WSU generally offers ChE 201, Material and Energy Balances during the summer. This class is required for both Bioengineering and Chemical Engineering certification. It is a sophomore level course that is not offered at any CC. It is a great way to transition between TCC and WSU (http://www.summer.wsu.edu/)

Western Washington University

WWU's Plastics Engineering Technology (PET) program has been replaced by a Plastics and Composites Engineering (PCE) program. Apply for admission to the program for spring of sophomore year (primary admission) or fall of junior year (secondary admission). Transfer earlier if you cannot complete Engr 170 before transfer. The AS-T2 is the most appropriate associate's degree option.

WWW PCE does not require Chem 163, but this class is a prereq for TCC's Chem 261.

It is the student's responsibility to check university websites and meet with university advisors to ensure the accuracy of advising information