

# Mechanical and Aeronautical/Astronautical Engineering Program Requirements

31-Mar-22

Course #	Description	TCC	UW				WSU			EWU	Seattle U	St. Martins	SPU	Gonzaga
		AS-CE/ME MRP	Seattle		Tacoma	Bothell	Pullman, Everett Bremerton	TriCities	Vancouver	Cheney	Seattle	Lacey	Seattle	Spokane
			ME	A/A	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME
Math& 151, 152, 153	Calculus 1, 2, 3	R	√-app	√-app	√	√	G (P), √(B,E)	√	G		G	G	G	G
Math& 254	Calculus 4	S	√-app	√-app	√	√	G (P), √(B,E)	G	G	G	G	G	G	G
Math 238	Differential Equations	R	G	√-enr	√	√	G (P), √(B,E)	G	G	G	G	G	G	G
Math 220	Linear Algebra	R	G	√-enr	P		G (P), √(B,E)	G	G		G	G	G	
Phys& 221	Calc Based Physics 1	R	√-app	√-app	√	√	G (P), √(B,E)	√	G	G	G	G	G	G
Phys& 222	Calc Based Physics 2	R	√-app	√-app	√	√	G (P), √(B,E)	√	G	G	G	G	G	G
Phys& 223	Calc Based Physics 3	R	G	√-enr	√	G	G (P), √(B,E)	G	G	G	G	G	G	G
Biol& 221	Intro to Evol, Ecol & Biodiv	S												
Chem& 161	General Chem 1	R	√-app	√-app	√	√	G (P), √(B,E)	√	G	G	G	G	G	G
Chem& 162	General Chem 2	R	√-enr	G5	P		G (P), √(B,E)	√	G			G		G
Chem& 163	General Chem 3	S												
Engr& 104	Intro to Design	S or Soc <sup>1</sup>	A	Gen	A		G (P) <sup>5</sup> , √(B,E) <sup>5</sup>	G	G		G			
Engr& 114	SolidWorks/Graphics	S or Hum <sup>1</sup>	G	Gen		G	G (P),A √(B,E)	G	G	G	G	G (GE104)	G	G
Engr 170	Intro to Material Sci	S	G		P		A	G			G			G
Engr& 204	Electric Circuits	S	G		G		A	G	G	G	P		G	G
Engr& 214	Statics	R	√-app	√-app	√	√	G (P), √(B,E)	√	G	G	G	G	G	G
Engr& 215	Dynamics	R	√-enr	√-enr	√	√	G (P), √(B,E)	G	G	G	G	G	G	G
Engr& 224	Thermodynamics	S	G-TCC	√-enr	G-TCC		G	G	G	G	P	P	G	G
Engr& 225	Mechanics of Materials	R	√-enr	√-enr	√	√	G (P), √(B,E)	G	G	G	G	G	G	G
Engr 240	App Numerical Methods	S	G	√-enr	√(or 142)		G <sup>3</sup> , √(B,E)	G	G	G	P		G (or 142)	G & ENGR120
CS 142	Java 1	S			√(or 240)		G <sup>3</sup> , √(B,E)		Engr 240 Pref		P		G (or 240)	G C++
Engl& 101	English Comp 1	R	√-app	√-app	G	√	G (P), √(B,E)	G	G	G	G		A	G
Engl& 235	Technical Writing	S	G	P	A		G		G			G 102 <sup>2</sup>		A
Hum and Soc Sci <sup>1</sup>		R	Gen - see back	Gen - see back	Gen	Gen - see back	Gen - see back	Gen - see back	Gen - see back	Gen - see back	Gen - see back	Gen - see back	Gen - see back	Gen - see back

**TCC Key:**

There are two relevant associate's degrees: 1) AS Civil and Mechanical Engineering - MRP degree, and 2) the AS-T2. More info on back.

**R** = Required for the AS- CE/ME - MRP. 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-CE/ME-MRP. You may need to take more than the minimum to meet university requirements. May also be used in the AS-T2.

**University Key:**

√ = Required for admission or certification to the department. For UW, √-app class must be completed by April 5. √-enr by Fall 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. Gen = General Education course

**Gen** = May be used as general education credit within the university BS degree.

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

**Additional notes**

<sup>1</sup> Economics is recommended. Engr& 104 counts as either a Specialization course or a Social Science, but not both. Engr& 114 may count as either Specialization course or as a Humanities, but not both. The 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/Diversity course requirements.

<sup>2</sup> SMU requires Engl& 102 instead of Engl& 235. Engl& 102 may be substituted for 235 in the AS-CE/ME-MRP degree.

<sup>3</sup> WSU - Electric Circuits must have lab. Currently, either Engr 240 or CS 142 is required.

**Tacoma Community College**

Students should generally be working toward one of three associate's degrees: 1) the Associate of Science - Civil and Mechanical Engineering - Major Related Program (AS-CE/ME - MRP), 2) the Associate of Science- Track 2 (AS-T2), and/or 3) the Associate of Arts (AA-DTA). It is important to understand the distinctions. Most Mechanical and Aero/Astro students should be working toward the AS-CE/ME -MRP, since it was developed to closely match university engineering program coursework. It requires 108 credits, rather than 90, which can be helpful with financial aid. The AS-T2 is less restrictive. Students can make more self-advising errors using this model and should not use this as a degree goal; however, if you are ready to transfer and a few classes shy of the AS-CE/ME-MRP degree, you 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. Some universities give specific benefits for one or more of these degrees. Although we occasionally advise transferring without a degree, please transfer courses back to complete the degree. 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.

# Mechanical and Aeronautical/Astronautical Engineering Program Requirements

## University of Washington - Seattle

You must apply to both the university and the major. The Mechanical and Aero/Astro departments only admit students in fall quarter. The transfer student application deadline for the University of Washington (fall quarter start) is February 15. (There may be other deadlines for international students.) The application deadline for the departments is April 5. Some classes must be completed before you apply (V-app). Some classes must be completed before you start in the fall (V-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.

## University of Washington - Tacoma

UW-Tacoma ME program is new starting Fall 2021; therefore, as with all new programs, it has not yet been ABET accredited. UWT ME will be eligible to apply for ABET accreditation after graduating its first student cohort. The ME program admits new students Fall quarter only. ME admission decisions are made on a rolling basis. Students may be admitted conditionally with prerequisites in progress. All prerequisites must be completed with a minimum grade of 2.0 by the start of autumn quarter. A 5 credit programming course is required to apply. This can be CS 142 or Engr 240 or another course. Please see the website for details on admission requirements and the application process. The Associate of Science – Mechanical/Civil/Astro Major Related Program (MRP) OR the Associate in Science - Transfer Track 2 are the most appropriate fit to meet the admission requirements.

## University of Washington - Bothell

UW-Bothell is separately ABET accredited. The ME program admits new students twice a year, for Autumn and Winter quarters.

## Washington State University - Pullman, Bremerton, Everett

In addition to the program at the main Pullman campus, WSU has junior/senior year programs at Bremerton and Everett. These are ABET accredited as part of the main campus. WSU Bremerton and Everett students must take course listed at <https://mme.wsu.edu/undergraduate/mechanical-engineering/pre-engineering-requirements/> 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). Completion of the AS-T degree (WA) automatically satisfies UCORE WR TG, QUAN, BSCI, PSCI, and three of the following requirements: HUM, SSCI, ARTS, DIVR, ROOTS. Up to three additional lower-division UCORE must be satisfied via transfer credit or in-residence credit prior to completion of a baccalaureate degree, and an individual course completed within the AS-T degree may not satisfy more than one UCORE category. Chem& 161 and 162 will satisfy the chemistry requirement for ME. WSU requires a writing portfolio <https://writingprogram.wsu.edu/uwpsubmission/> WSU is on the semester system rather than the quarter system. They require application to the university followed by admission to major. See university website for important deadlines.

## Washington State University - TriCities

WSU-TriCities has not verified the data on this handout. Students must contact them directly to verify information. WSU-TriCities is separately ABET accredited. Choose the following courses: HIST& 128 (World Civ 3), and either ECON& 201 (Micro) or ECON& 202 (Macro). Completion of the AS-T degree (WA) automatically satisfies UCORE WR TG, QUAN, BSCI, PSCI, and three of the following requirements: HUM, SSCI, ARTS, DIVR, ROOTS. Up to three additional lower-division UCORE must be satisfied via transfer credit or in-residence credit prior to completion of a baccalaureate degree, and an individual course completed within the AS-T degree may not satisfy more than one UCORE category. Chem& 161 and 162 will satisfy the chemistry requirement for ME only if the full year engineering physics sequence is completed at the community college. Although TCC's ENGR 240 (Applied Numerical Methods) transfers to other WSU campuses as EE 221, this articulation is still in progress with WSU-TriCities. Talk to a WSU advisor.

## Washington State University - Vancouver

WSU-Vancouver is separately ABET accredited. In Mechanical Engineering, students can customize their study through four option areas: (1) Micro/nanotechnology; (2) Design and Manufacturing; (3) Mechatronics (robotics and automation); (4) Renewable Energy. Completion of the AS-T degree (WA) automatically satisfies UCORE WR TG, QUAN, BSCI, PSCI, HUM, and ARTS. Students will need to complete the ROOT, SSCI, and DIVR UCORE requirements as those are not automatically satisfied with the AS-T degree or require a specific course. Choose the following courses: HIST& 128 (World Civ 3) to satisfy the ROOT UCORE, and either ECON& 201 (Micro) or ECON& 202 (Macro) to satisfy the SSCI. Students can use the Transfer Course Search Tool at <https://transfercredit.wsu.edu/transfer-course-search-tool/> to find a course to satisfy the DIVR UCORE. Chem& 161 and 162 will satisfy the chemistry requirement for ME. ENGR 240 would transfer to WSU Vancouver as the equivalent course to MECH 251 Numerical Computing, a required course for the program.

## Eastern Washington University

EWU has engineering programs, as well as a number of technology programs. Freshman and Sophomore students can be immediately accepted into the Pre-engineering major. Application to the major happens after completing a number of Freshman and Sophomore courses. Transfer students should contact the department chair ([jdurfee@ewu.edu](mailto:jdurfee@ewu.edu)) as they are likely able to transfer directly into the major. EWU gives advantages to completing the AS degree. Students who complete the AS do not need to take 15 credits of the required 25 credits in the General Education Core requirements. All courses designated as Humanities and Social Sciences by TCC will be accepted as Humanities and Social Sciences by EWU, regardless of individual course transferability. No biological

## Seattle University

Seattle University is a private Catholic (Jesuit) university and the Mechanical Engineering program is ABET accredited since 1962. Transfer student priority application deadline is March 1 for Fall Quarter and scholarships are available. Students can begin their studies at Seattle U also in winter and spring quarters. Obtaining an AS-MRP or AS-T2 degree is beneficial since it may reduce the number of CORE courses required for graduation to as few as 3. At least one course each in humanities, social science, and doing art (or creative writing) is highly recommended to maximize the benefit.

## Saint Martin's University

SMU is a private Catholic (Benedictine) university. Completion of AA-DTA recommended so the transfer students will begin as a junior standing with satisfied core requirements with the exception of religious studies and philosophy. The AS-T2, AS-MRP, or its equivalent, will be evaluated on a course-by-course basis.

Take ENGL& 102 instead of ENGL& 235. Many classes require minimum of C for transfer.

## Seattle Pacific University

SPU is a private Christian university. Students can begin their studies at SPU at any point. If you have earned, prior to matriculation at SPU, an AS-T2 degree and junior standing, you will be required to take only two of the three required University Foundations courses, UFDN 3001 Christian Scriptures and UFDN 3100 Christian Theology. At least 15 credits of your transfer coursework in humanities and social sciences will be used to fulfill SPU's humanities and social science requirements, whether or not the courses match SPU requirements on a course by course basis. There are then two years of coursework at SPU. You will be required to complete any remaining general education requirements, demonstrate proficiency in a foreign language, and complete the "W" and cultural understanding and engagement requirements prior to graduation. SPU's BSME degree is ABET accredited.

## Gonzaga University

Gonzaga University is a private Catholic (Jesuit) university. It is recommended students complete the appropriate AS-MRP for their engineering discipline which should include ENGL 101, Programming (C++ preferred), and the appropriate lower division engineering courses for the discipline. For Hum/Soc Sci, 10 cr of PHIL (Group A) is recommended (Intro to Phil, Ethics, or Logic/Critical Thinking). Please see our website ([www.gonzaga.edu](http://www.gonzaga.edu)) for academic & transfer policies, application deadlines, and scholarship information.

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