

# Plastics & Composites Engineering, BS

## Plan of Study 2020-2021 Academic Year

### 148 Total Credits for Major

\*ABET accredited

\*All students must initially declare as a pre-major in Plastics & Composites; students cannot apply for the Major unless all pre-major prerequisites have been satisfied with a grade of C- or better.

\*Course offerings/schedule are subject to change.

### Fall Quarter

### Winter Quarter

### Spring Quarter

<b>Year 1</b> <b>Pre-major</b>	<b>Math 124 Calc I (5)</b> <u>FWS</u>	<b>MATH 125 Calc II (5)</b> <u>FWS</u>	<b>ENGR 197D Eng, Innovation &amp; Design (4)</b> <u>WS</u>
	<b>CHEM 161 Gen. Chemistry (5)</b> <u>FWS</u>	<b>PHYS 161 Phys w/ Calc I (5)</b> <u>FW</u>	PHYS 162 Physics w/ Calc II (5) <u>WS</u>
	ENGR 197C Eng, Design & Society (2) <u>FW</u>	<b>CHEM 162 Gen. Chemistry (5)</b> <u>FWS</u>	GUR
	GUR		GUR

<b>Year 2</b> <b>Pre-Major</b>	<b>ENGR 214 Statics (4)</b> <u>FW</u>	CSCI 140 or 141 (4) Programming <u>FWS</u>	PCE 371 Intro Plastics Mat & Proc (5) <u>FS</u>
	<b>ENGR 170 Intro to Mat Sci &amp; Eng (4)</b> <u>EW</u>	ENGR 225 (5) Mech of Materials <u>FWS</u>	MFGE 261 Intro to CAD (4) <u>FS</u>
	PHYS 163 Phys w/ Calc III (5) <u>FS</u>	MATH 345 Engineering Stats (4) <u>FWS</u>	GUR
	GUR	GUR	GUR

<b>Year 3</b> <b>Major</b>	MFGE 341 Quality Assurance (4) <u>FW</u>	PCE372 Intro Compos. Mat & Proc (5) <u>WS</u>	MFGE 362 CAD Using Surfaces (4) <u>WS</u>
	MFGE 231 Intro to Manuf. Process (4) <u>ES</u>	MFGE 342 Design of Experiments (4) <u>WS</u>	CHEM 308 Polymer Chem (3)      S
	CHEM 251 Elem. Org. Chemistry (5)      F	GUR	PCE 331 Injection Molding (4)      S
	GUR	GUR	GUR

<b>Year 4</b> <b>Major</b>	PCE 491 Project Research (WP) (3)      F	PCE 492 Project Proposal (WP) (3)      W	PCE 493 Project Implementation (4)      S
	PCE 471 Adv Materials & Char (4)      F	PCE 431 Adv Materials & Proc (4)      W	EE 351 Electronics for Engineers (4) <u>FS</u>
	PCE 472 Advanced Composites (4)      F	MFGE 332 Intro to CAM & CNC (4) <u>FW</u>	PCE 461 Tooling for Plastics (4)      S
	Tech Elective	Tech Elective	Tech Elective

Notes:

- All courses in bold are required courses to apply to the major. ENGR 197C is optional. ENGR 197 D is required.
- Not completing MATH 124 and MATH 125 during the first year will likely delay graduation.
- SUBSTITUTIONS: ENGR 104 may be substituted for ENGR 197D. MATH 134 & 135 (Honors Calculus) may be substituted for MATH 124 & 125. MATH 341 may be substituted for MATH 345. CSCI 141 may be substituted for CSCI 140.
- For students considering a Material Science minor or MSCI courses as Tech Electives, CHEM 123 should be taken prior to Year 4.
- Students must complete PHYS 163 by the end of winter quarter and MFGE 342 by the end of winter quarter Junior year or graduation will be delayed.

## Admissions—

**Program Admissions:** Admission to the Plastics and Composites major is a two-phase process. When students initially declare, they are designated as pre-majors. Students must complete the courses listed below in order to apply to the major. Admission to full major status is determined by academic performance as a pre-major, a short essay and other factors. Admission to the major is competitive. Neither completion of the prerequisites nor attainment of any specific GPA guarantees admission.

**Major Prerequisite courses:** CHEM 121, CHEM 122, MATH 124, MATH 125, PHYS 161, ENGR 197D or 104, ENGR 170, And ENGR 214. Students may be currently enrolled in *no more than two* of the above courses when they apply for major admission. A final decision on your application may be delayed until receipt of final grades for in-progress courses. Students must obtain at least a C- in the above courses and a cumulative GPA of 2.0 or higher in these courses to be considered. AP scores are converted to GPA as follows: 5 = A; 4 = B; 3 = C. Decisions are based primarily on cumulative GPA in the prerequisite courses, but successful completion of other required Major courses, GPA in the major, overall GPA, and the short essay are also considerations.

**Application:** In addition to academic performance as described above, acceptance will also be based on an essay (500 words or less) explaining any prior experience, academic challenges, and/or achievements that would give insight as to why you would like to study Plastics & Composites Engineering. Applications are due on the first Friday in February. Only complete, on-time applications will be considered. Students who are accepted must register for PCE 371, MATH 345 and MFGE 261 Spring quarter before the end of Phase II registration unless they are given explicit permission from a PCE advisor not to do so. Students who do not register for these classes by the end of Phase II registration may lose their major status. Students must complete PHYS 163 by the end of fall quarter and MFGE 342 by the end of winter quarter junior year or graduation will be delayed.

**Other times:** If additional spaces become available, all pre-majors will be notified by email that applications are being accepted, including the application deadline.

**Transfer Students:** A student that will be transferring to Western Washington University will be designated as a pre-major and will need to apply to the major. Transfer students who believe they are ready to apply to the PCE major should contact the Pre-major Advisor for advising before applying to Western.

## Approved Technical Electives (13 credits total required)

CHEM 300-level (excluding CHEM 351/352/354)  
 CHEM 400-level  
 CSCI 300- and 400-level  
 EE 352 INTRODUCTION TO AUTOMATION & CONTROL (4)  
 ID 320 ID CAD SKILLS (4)  
 MATH 204 ELEMENTARY LINEAR ALGEBRA (4)  
 MATH 224 MULTIVARIABLE CALC & GEOMETRY I (5)  
 MATH 225 MULTIVARIABLE CALC & GEOMETRY II (4)  
 MATH 300-level (excluding MATH 341/345)  
 MATH 400-level  
 MFGE 333 DESIGN FOR MANUFACTURE (4)  
 MFGE 381 MANUFACTURING PROCESS PLANNING (4)  
 MFGE 434 ADVANCED CAM & CNC (4)  
 MFGE 453 INDUSTRIAL ROBOTICS (4)  
 MFGE 463 DESIGN OF TOOLING (4)  
 MFGE 464 DESIGN & ANALYSIS OF MECHANISMS (4)  
 MFGE 465 MACHINE DESIGN (4)

MFGE 466 CAD AUTOMATION (4)  
 MSCI 321 MATERIALS CHEMISTRY (1)  
 MSCI 323 SEMICONDUCTOR MATERIALS & DEVICES (1)  
 MSCI 330 INTRODUCTION TO MATERIALS SCIENCE II (4)  
 MSCI 410 MATERIALS CHARACTERIZATION (4)  
 OPS 460 DESIGNING & IMPROVING OPS (4)  
 OPS 463 ENTERPRISE RESOURCE PLAN. SYS. (4)  
 OPS 466 SUPPLY CHAIN MANAGEMENT (4)  
 PCE 300/400 DIRECTED INDEPENDENT STUDY (1-15)  
 PCE 395 DIRECTED RESEARCH IN PLASTICS (1-3)\*  
 PCE 402 COOPERATIVE WORK/STUDY (1-9)  
 PCE 495 DIRECTED RESEARCH IN PLASTICS (1-3)\*  
 PCE/MFGE/MSCI 397/497 (VARIABLE)  
 PHYS 300-level and 400-level  
 \*Up to 9 credits of a combination of PCE 395/495 can be used toward the 13 total technical elective credits

## Contact Information for PCE professors:

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