

Pre-Engineering, APE

Program Description

The pre-engineering degrees prepare students to pursue a Bachelor of Science degree in an engineering field of their choice by requiring foundational courses common among engineering disciplines. Students interested in pursuing Mechanical Engineering, Computer Engineering, Electrical Engineering, Mechatronics, or Computer Science can earn the Associates of Pre-Engineering as a milestone to their chosen degree.

Program Curriculum

68 credit hours

Utah Tech General Education Requirements

| Code | Title | Hours |
|--|------------------------------|-------|
| Complete at least 9 credits from the following: | | |
| General Education Core Requirements (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext) | | |
| | English | 0-7 |
| | American Institutions | 0-6 |
| | Life Sciences | 0-3 |
| | Fine Arts | 0-3 |
| | Literature/Humanities | 0-3 |
| | Social & Behavioral Sciences | 0-3 |

Math and Science Requirements

| Code | Title | Hours |
|---|--|-------|
| MATH 1210 or ENGR 2050 | Calculus I (MA) Fundamentals of Engineering Mathematics | 3-4 |
| PHYS 2210 & PHYS 2215 or PHYS 2010 & PHYS 2015 | Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB) College Physics I (PS) and College Physics I Lab (LAB) | 5 |

Programming Requirements

| Code | Title | Hours |
|--|-----------------------------|-------|
| Complete one of the following sets of courses: | | |
| MECH 1200 & MECH 1205 | Coding and Coding Lab | 4 |
| CS 1400 | Fundamentals of Programming | 3 |

Pre-Engineering Elective Requirements

| Code | Title | Hours |
|--|---|-------|
| Complete at least 16 credits from the following: | | |
| CHEM 1210 & CHEM 1215 | Principles of Chemistry I (PS) and Principles of Chemistry I Lab (LAB) | 5 |
| CHEM 1220 & CHEM 1225 | Principles of Chemistry II and Principles of Chemistry II Lab | 5 |
| CS 1410 | Object Oriented Programming | 3 |
| CS 2420 | Introduction to Algorithms and Data Structures | 3 |
| CS 2450 | Software Engineering | 3 |
| CS 2810 | Computer Organization and Architecture | 3 |

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|---|--|-----|
| ECE 1200 | MATLAB and Arduino | 1 |
| ECE 2100 | Semiconductor Devices | 3 |
| ECE 2280 & ECE 2285 | Microelectronics and Microelectronics Lab | 4 |
| ECE 2700 & ECE 2705 | Digital Circuits and Digital Circuits Lab | 4 |
| MATH 1220 | Calculus II (MA) | 4 |
| MATH 2200 | Discrete Mathematics | 3 |
| MATH 2210 | Multivariable Calculus (MA) | 4 |
| MATH 2250 | Differential Equations and Linear Algebra | 4 |
| MATH 2270 | Linear Algebra | 3 |
| MATH 2280 | Ordinary Differential Equations | 3 |
| MECH 1000 & MECH 1005 | Introduction to Design & Rapid Prototyping and Introduction to Design & Rapid Prototyping Lab | 3 |
| MECH 1100 | Manufacturing Processes | 3 |
| MECH 1150 | Prototyping Techniques | 2.5 |
| MECH 2010 | Statics | 3 |
| MECH 2160 | Materials Science | 3 |
| MECH 2030 | Dynamics | 3 |
| MECH 2210 & MECH 2215 | Circuits and Circuits Lab | 4 |
| MECH 2250 & MECH 2255 | Sensors & Actuators and Sensors & Actuators Lab | 4 |
| MTRN 2200 & MTRN 2205 | Industrial Wiring for Automated Systems and Industrial Wiring for Automated Systems Lab | 3 |
| MTRN 2300 & MTRN 2305 | Introduction to Programmable Logic Controllers and Introduction to Programmable Logic Controllers Lab | 4 |
| MTRN 2350 & MTRN 2355 | Advanced PLC Programming and Applications and Advanced PLC Programming and Applications Lab | 4 |
| MTRN 2400 | Mechanical Components | 4 |
| PHYS 2220 & PHYS 2225 or PHYS 2020 & PHYS 2025 | Physics/Scientists Engineers II and Physics/Scientists Engineers II Lab College Physics II and College Physics II Lab | 5 |

Graduation Requirements

1. Complete a minimum of 68 college-level credits (1000 and above).
2. Complete at least 20 semester hours of credits at Utah Tech for institutional residency.
3. Cumulative GPA of 2.0 or higher.
4. Grade C- or higher in all Math and Science Requirements, Programming Requirements, and Pre-Engineering Elective Requirements.