

Pre-Engineering, APE

Program Description

The pre-engineering degrees prepares 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, or Computer Science can earn the Associates of Pre-Engineering as a milestone to their chosen degree.

Program Curriculum

68 credit hours

DSU General Education Requirements

Code	Title	Hours
Complete at least 9 credits from the following:		
General Education Core Requirements (catalog.dixie.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	Calculus I (MA)	4
MATH 1220	Calculus II (MA)	4
PHYS 2210 & PHYS 2215	Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)	5
PHYS 2220 & PHYS 2225	Physics/Scientists EngineersII and Physics/Scientists Engineers II 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 & ECE 1200	Fundamentals of Programming and MATLAB and Arduino	4

Pre-Engineering Elective Requirements

Code	Title	Hours
Complete at least 28 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

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 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

Graduation Requirements

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

Graduation Plan

1st Year

Fall Semester		Hours
MATH 1210	Calculus I (MA)	4
ENGL 2010	Interm Writing Selected Topics: (EN)	3
Pre-Engineering Elective Credit		10
Hours		17

Spring Semester

PHYS 2210 & PHYS 2215	Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)	5
MATH 1220	Calculus II (MA)	4
Programming Requirement		4
Pre-Engineering Elective Credit		4
Hours		17

2nd Year

Fall Semester		Hours
PHYS 2220 & PHYS 2225	Physics/Scientists Engineers II and Physics/Scientists Engineers II Lab	5
Pre-Engineering Elective Credit		12
Hours		17

Spring Semester

Pre-Engineering Elective Credit		2
General Elective		9
General Education (AI, FA, LH, or SB) (catalog.dixie.edu/programs/generaleducation/#gerequirementstext)		3

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Hours	17
Total Hours	68

Pre-Engineering Program Learning Outcomes

At the successful conclusion of this program, students will be able to:

1. Analyze engineering problems by applying principles of engineering, science, and mathematics.
2. Design solutions that use the engineering design process to meet specified customer needs.
3. Perform experiments on physical systems or processes, analyze experimental data, and make informed conclusions from the data.
4. Communicate effectively with others both orally and in writing to establish goals, plan tasks, meet deadlines, and articulate results.
5. Model, evaluate and prototype physical systems, components or processes.