

# Pre-Engineering, A.S.

The pre-engineering program at UVU has been created for students who plan to complete the first two to three years of their engineering education at the ABET accredited UVU, then either continue at UVU or transfer to a baccalaureate university to complete their engineering degree. With adequate planning, pre-engineering coursework completed at UVU will be sufficient for students to remain at UVU or to transfer to all of the Utah universities with baccalaureate engineering degrees. All students who declare pre-engineering as their major are automatically accepted into pre-engineering status. After completion of the pre-engineering program at UVU, the student applies for professional status at UVU or at an institution of the student's choice.

## Program Requirements

Code	Title	Credit Hours
<b>Total Credit Hours</b>		<b>61</b>
<b>General Education Requirements</b>		<b>38 Credits</b>
ENGL 1010 or ENGL 1005	Introduction to Academic Writing CC Literacies and Composition Across Contexts CC	3
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1210	Calculus I QL	4
Complete one of the following:		3
HIST 1700	American Civilization AS (3)	
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
HIST 1740	US Economic History AS (3)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
PHIL 2050	Ethics and Values IH	3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE Fitness for Life TE	2
Distribution Courses:		
CHEM 1210	Principles of Chemistry I PP	4
PHYS 2210	Physics for Scientists and Engineers I PP	4
Humanities		3
Fine Arts		3
Social/Behavioral Science		3
Biology		3
<b>Discipline Core Requirements</b>		<b>23 Credits</b>
ENGR 1030 or CS 1400	Engineering Programming Fundamentals of Programming	3
MATH 1220	Calculus II	4
Complete one of the following sets of courses:		16
General Engineering Focus:		
PHYS 2215	Physics for Scientists and Engineers I Lab (1)	
CHEM 1215	Principles of Chemistry I Laboratory (1)	
ENGR 1000	Introduction to Engineering WE (3)	
ENGR 2160	Introduction to Materials Science and Engineering (3)	
CS 2810 or CS 1410	Computer Organization and Architecture (3) Object Oriented Programming	
Also complete 5 credits from the Pre-Engineering elective list		
Mechanical/Civil Engineering Focus:		
PHYS 2220	Physics for Scientists and Engineers II PP (4)	
ENGR 2010	Engineering Statics (3)	

ENGR 2030	Engineering Dynamics (3)
ENGR 2140	Mechanics of Materials (3)
or ENGR 2300	Engineering Thermodynamics
or ENGR 2450	Computational Methods for Engineering Analysis

Also complete three credits from the Pre-Engineering elective list

#### Electrical/Computer Engineering Focus:

PHYS 2220	Physics for Scientists and Engineers II PP (4)
ECE 1000	Introduction to Electrical and Computer Engineering (3)
ECE 2700	Digital Design I (3)
ECE 2705	Digital Design I Lab (1)

Also complete five credits from the Pre-Engineering elective list

#### Chemical/Biological Engineering Focus:

PHYS 2220	Physics for Scientists and Engineers II PP (4)
CHEM 1220	Principles of Chemistry II PP (4)
CHEM 2310	Organic Chemistry I (4)

Also complete four credits from the Pre-Engineering elective list

#### Pre-Engineering Elective List:

Students should carefully select electives based on the engineering discipline they are interested in. See your advisor.

##### Math and Science Electives:

MATH 1050	College Algebra QL (4)
MATH 1060	Trigonometry QL (3)
MATH 2210	Calculus III (4)
MATH 2250	Differential Equations and Linear Algebra (4)
MATH 2270 & MATH 2280	Linear Algebra and Ordinary Differential Equations (6)
PHYS 2215	Physics for Scientists and Engineers I Lab (1)
PHYS 2225	Physics for Scientists and Engineers II Lab (1)
CHEM 1010	Introduction to Chemistry PP (3)
CHEM 1215	Principles of Chemistry I Laboratory (1)

##### General Engineering Electives:

ENGR 1000	Introduction to Engineering WE (3)
ENGR 1020	Survey of Engineering (1)
ENGR 1030	Engineering Programming (3)
ENGR 2140	Mechanics of Materials (3)
ENGR 2160	Introduction to Materials Science and Engineering (3)
ENGR 2300	Engineering Thermodynamics (3)
ENGR 2450	Computational Methods for Engineering Analysis (3)

##### CAD Electives:

EGDT 1040	Fundamentals of Technical Engineering Drawing (3)
EGDT 1071	3 Dimensional Modeling--Solidworks (3)
EGDT 1400	Surveying Applications and Field Techniques I (3)
EGDT 1200	Mechanical Drafting and Design (3)

##### Computer and Electrical Electives:

CS 1400	Fundamentals of Programming (3)
CS 1410	Object Oriented Programming (3)
CS 2300	Discrete Mathematical Structures I (3)
CS 2420	Introduction to Algorithms and Data Structures (3)
CS 2600	Computer Networks I (3)
CS 2810	Computer Organization and Architecture (3)
ECE 1000	Introduction to Electrical and Computer Engineering (undefined)
ECE 2210	Fundamentals of Electric Circuit Analysis (3)

##### Biological and Chemical Electives:

BIOL 1610	College Biology I BB (4)
BIOL 1615	College Biology I Laboratory (1)
BIOL 1620	College Biology II (3)
BIOL 1625	College Biology II Laboratory (1)
BIOL 3400	Cell Biology (3)
MICR 2060	Microbiology for Health Professions BB (3)
MICR 2065	Microbiology for Health Professions Laboratory (1)
CHEM 1220	Principles of Chemistry II PP (4)
CHEM 1225	Principles of Chemistry II Laboratory (1)
CHEM 2315	Organic Chemistry I Laboratory (1)
CHEM 2320	Organic Chemistry II (4)
CHEM 2325	Organic Chemistry II Laboratory (1)

## Graduation Requirements

1. Completion of a minimum of 61 semester credits.
2. Overall grade point average of 2.0 (C) or above. 2.5 or above in Math, Science, and Engineering courses.
3. Residency hours: minimum of 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.

## Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

### First Year

Semester 1		Credit Hours
CS 1400 or ENGR 1030	Fundamentals of Programming or Engineering Programming	3
CHEM 1210	Principles of Chemistry I PP	4
Area Focus Elective		1
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC or Literacies and Composition Across Contexts CC	3
Humanities		3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE or Fitness for Life TE	2
<b>Credit Hours</b>		<b>16</b>

### Semester 2

MATH 1210	Calculus I QL	4
Area Focus course		4
Area Focus Elective		1
ENGL 2010	Intermediate Academic Writing CC	3
Biology		3
<b>Credit Hours</b>		<b>15</b>

### Second Year

Semester 3		Credit Hours
PHYS 2210	Physics for Scientists and Engineers I PP	4
Area Focus Elective		1
Area Focus course		4
PHIL 2050	Ethics and Values IH	3
Fine Arts		3
<b>Credit Hours</b>		<b>15</b>

### Semester 4

MATH 1220	Calculus II	4
Area Focus course		4
Area Focus Elective		1
Any American Institutions course		3

Any approved Social/Behavioral Science	3
<b>Credit Hours</b>	<b>15</b>
<b>Total Credit Hours</b>	<b>61</b>

## Program Learning Outcomes

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. A recognition of the need for, and an ability to engage in life-long learning.
9. A knowledge of contemporary issues.
10. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.