

# Engineering

## Engineering

The Engineering department is in the [Scott M. Smith College of Engineering](#). To find the most up-to-date information, including Program Learning Outcomes for degree programs offered by the Engineering department, visit their website.

[Engineering department](#)

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## Degrees & Programs

### Associate in Pre-Engineering - Biological and Chemical Engineering Emphasis, A.P.E.

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#### Requirements

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 and then 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.

#### Total Program Credits: 69

General Education Requirements:		28 Credits
	<a href="#">ENGL 1010</a> Introduction to Academic Writing CC	3

or	<a href="#">ENGH 1005</a>	Literacies and Composition Across Contexts CC (5)	
	<a href="#">ENGL 2010</a>	Intermediate Academic Writing CC	3
Complete the following Natural and Physical Science courses:			
	Biology		3
	<a href="#">CHEM 1210</a>	Principles of Chemistry I PP	4
	<a href="#">CHEM 1215</a>	Principles of Chemistry I Laboratory	1
	<a href="#">PHYS 2210</a>	Physics for Scientists and Engineers I PP	4
	<a href="#">PHYS 2215</a>	Physics for Scientists and Engineers I Lab	1
Complete any combination of the following with no more than 1 course each from Humanities, Fine Arts, and Social/Behavioral Science:			6
	Humanities (from list)		
	Fine Arts (from list)		
	Social/Behavioral Sciences (from list)		
Complete any American Institutions course:			3
	<a href="#">POLS 1000</a>	American Heritage SS (3)	
	<a href="#">HIST 2700</a>	US History to 1877 AS (3)	
and	<a href="#">HIST 2710</a>	US History since 1877 AS (3)	
	<a href="#">HIST 1700</a>	American Civilization AS (3)	
	<a href="#">HIST 1740</a>	US Economic History AS (3)	
	<a href="#">POLS 1100</a>	American National Government AS (3)	
Discipline Core Requirements:			18 Credits
	<a href="#">MATH 1210</a>	Calculus I QL	4
	<a href="#">MATH 1220</a>	Calculus II	4
	<a href="#">ENGR 1030</a>	Engineering Programming	3
or	<a href="#">CS 1400</a>	Fundamentals of Programming (3)	
	<a href="#">PHYS 2220</a>	Physics for Scientists and Engineers II PP	4
	<a href="#">PHYS 2225</a>	Physics for Scientists and Engineers II Lab	1
Emphasis Requirements:			5 Credits
	<a href="#">CHEM 1220</a>	Principles of Chemistry II PP	4
	<a href="#">CHEM 1225</a>	Principles of Chemistry II Laboratory	1
Emphasis Elective Requirements:			20 Credits
Students should carefully select electives from the following list, based on the engineering discipline (Biological or Chemical) they are interested in and the college or university they want to attend to finish their BS degree. See your advisor.			20
	<a href="#">BIOL 1610</a>	College Biology I BB (4)	
	<a href="#">BIOL 1615</a>	College Biology I Laboratory (1)	
	<a href="#">BIOL 1620</a>	College Biology II (3)	
	<a href="#">BIOL 1625</a>	College Biology II Laboratory (1)	
	<a href="#">BIOL 3400</a>	Cell Biology (3)	
	<a href="#">CHEM 2310</a>	Organic Chemistry I (4)	
	<a href="#">CHEM 2315</a>	Organic Chemistry I Laboratory (1)	
	<a href="#">CHEM 2320</a>	Organic Chemistry II (4)	

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	CHEM 2325	Organic Chemistry II Laboratory (1)	
	CS 1400	Fundamentals of Programming (3)	
	ECE 1000	Introduction to Electrical and Computer Engineering (3)	
	ENGR 1000	Introduction to Engineering WE (3)	
	ENGR 1020	Survey of Engineering (1)	
	ENGR 2160	Introduction to Materials Science and Engineering (3)	
	ENGR 2300	Engineering Thermodynamics (3)	
	ENGR 2450	Computational Methods for Engineering Analysis (3)	
	MATH 2210	Calculus III (4)	
	MATH 2250	Differential Equations and Linear Algebra (4)	
or	MATH 2270	Linear Algebra (3)	
and	MATH 2280	Ordinary Differential Equations (3)	

## Graduation Requirements:

1. Completion of a minimum of 69 semester credits.
2. Overall grade point average of 2.0 (C) or above. 2.5 or above in Math, Science, and Engineering
3. Residency hours -- minimum of 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.

## Associate in Pre-Engineering - Biological and Chemical Engineering Emphasis, A.P.E.

### Careers

1. Ability to apply knowledge of mathematics, science, and engineering

### Related Careers

- NO MATCH

## Associate in Pre-Engineering - Civil and Mechanical Engineering Emphasis, A.P.E.

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### Requirements

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### Total Program Credits: 69

General Education Requirements:		28 Credits
	ENGL 1010	Introduction to Academic Writing CC 3
or	ENGL 1005	Literacies and Composition Across Contexts CC (5)

	ENGL 2010	Intermediate Academic Writing CC	3
Complete the following Natural and Physical Science courses:			
	Biology		3
	CHEM 1210	Principles of Chemistry I PP	4
	CHEM 1215	Principles of Chemistry I Laboratory	1
	PHYS 2210	Physics for Scientists and Engineers I PP	4
	PHYS 2215	Physics for Scientists and Engineers I Lab	1
Complete any combination of the following with no more than 1 course each from Humanities, Fine Arts, and Social/Behavioral Science:			6
	Humanities (from list)		
	Fine Arts (from list)		
	Social/Behavioral Sciences (from list)		
Complete any American Institutions course:			3
	POLS 1000	American Heritage SS (3)	
	HIST 2700	US History to 1877 AS (3)	
and	HIST 2710	US History since 1877 AS (3)	
	HIST 1700	American Civilization AS (3)	
	HIST 1740	US Economic History AS (3)	
	POLS 1100	American National Government AS (3)	
Discipline Core Requirements:			16 Credits
	MATH 1210	Calculus I QL	4
	MATH 1220	Calculus II	4
	ENGR 1030	Engineering Programming	3
or	CS 1400	Fundamentals of Programming (3)	
	PHYS 2220	Physics for Scientists and Engineers II PP	4
	PHYS 2225	Physics for Scientists and Engineers II Lab	1
Emphasis Requirements:			9 Credits
	ENGR 2010	Engineering Statics	3
	ENGR 2030	Engineering Dynamics	3
	ENGR 2140	Mechanics of Materials	3
or	ENGR 2160	Introduction to Materials Science and Engineering (3)	
or	ENGR 2450	Computational Methods for Engineering Analysis (3)	
Emphasis Elective Requirements:			16 Credits
Students should carefully select electives from the following list, based on the engineering discipline (Civil or Mechanical) they are interested in and the college or university they want to attend to finish their BS degree. See your advisor.			16
	ECE 1000	Introduction to Electrical and Computer Engineering (3)	
	ECE 2210	Fundamentals of Electric Circuit Analysis (3)	
	EGDT 1040	Fundamentals of Technical Engineering Drawing (3)	

	EGDT 1071	3 Dimensional Modeling--Solidworks (3)	
	EGDT 1400	Surveying Applications and Field Techniques I (3)	
	ENGR 1000	Introduction to Engineering WE (3)	
	ENGR 1020	Survey of Engineering (1)	
	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)	
	MATH 2210	Calculus III (4)	
	MATH 2250	Differential Equations and Linear Algebra (4)	
or	MATH 2270	Linear Algebra (3)	
and	MATH 2280	Ordinary Differential Equations (3)	

**Graduation Requirements:**

1. Completion of a minimum of 69 semester credits.
2. Overall grade point average of 2.0 (C) or above. 2.5 or above in Math, Science, and Engineering
3. Residency hours -- minimum of 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.

**Associate in Pre-Engineering - Civil and Mechanical Engineering Emphasis, A.P.E.****Careers**

1. Ability to apply knowledge of mathematics, science, and engineering.
2. Know the basic knowledge and fundamental principles of engineering.
3. Be able to apply these principles to solving various engineering problems.
4. Value mathematics, science, and their application in engineering design.

**Related Careers**

- NO MATCH

**Associate in Pre-Engineering - Computer and Electrical Engineering Emphasis, A.P.E.**

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**Requirements**

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**Total Program Credits: 69**

General Education Requirements:			28 Credits
	ENGL 1010	Introduction to Academic Writing CC	3
or	ENGL 1005	Literacies and Composition Across Contexts CC (5)	
	ENGL 2010	Intermediate Academic Writing CC	3
Complete the following Natural and Physical Science courses:			
	Biology		3
	CHEM 1210	Principles of Chemistry I PP	4
	CHEM 1215	Principles of Chemistry I Laboratory	1
	PHYS 2210	Physics for Scientists and Engineers I PP	4
	PHYS 2215	Physics for Scientists and Engineers I Lab	1
Complete any combination of the following with no more than 1 course each from Humanities, Fine Arts, and Social/Behavioral Science:			6
	Humanities (from list)		
	Fine Arts (from list)		
	Social/Behavioral Sciences (from list)		
Complete any American Institutions course:			3
	POLS 1000	American Heritage SS (3)	
	HIST 2700	US History to 1877 AS	
and	HIST 2710	US History since 1877 AS (6)	
	HIST 1700	American Civilization AS (3)	
	HIST 1740	US Economic History AS (3)	
	POLS 1100	American National Government AS (3)	
Discipline Core Requirements:			16 Credits
	MATH 1210	Calculus I QL	4
	MATH 1220	Calculus II	4
	ENGR 1030	Engineering Programming	3
or	CS 1400	Fundamentals of Programming (3)	
	PHYS 2220	Physics for Scientists and Engineers II PP	4
	PHYS 2225	Physics for Scientists and Engineers II Lab	1
Emphasis Requirements:			11 Credits
	ECE 1000	Introduction to Electrical and Computer Engineering	3
	ECE 2250	Circuit Theory	3
	ECE 2255	Circuit Theory Lab	1
	ECE 2700	Digital Design I	3
	ECE 2705	Digital Design I Lab	1
Emphasis Elective Requirements:			14 Credits
Students should carefully select electives from the following list (or other advisor approved courses), based on the engineering discipline (Computer or Electrical) they are interested in and the college or university they want to attend to finish their BS degree. See your advisor.			14
	CS 1410	Object-Oriented Programming (3)	

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	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)	
	ENGR 1000	Introduction to Engineering WE (3)	
	ENGR 2450	Computational Methods for Engineering Analysis (3)	
	ENGR 1020	Survey of Engineering (1)	
	MATH 2210	Calculus III (4)	
	MATH 2250	Differential Equations and Linear Algebra (4)	
or	MATH 2270	Linear Algebra (3)	
and	MATH 2280	Ordinary Differential Equations (3)	

## Graduation Requirements:

1. Completion of a minimum of 69 semester credits.
2. Overall grade point average of 2.0 (C) or above. 2.5 or above in Math, Science, and Engineering.
3. Residency hours -- minimum of 20 credit hours through course attendance at UVU.
4. Completion of GE and specified departmental requirements.

## Associate in Pre-Engineering - Computer and Electrical Engineering Emphasis, A.P.E.

### Careers

1. Ability to apply knowledge of mathematics, science, and engineering.

### Related Careers

- NO MATCH

## Pre-Engineering, A.S.

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### Requirements

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### Total Program Credits: 61

General Education Requirements:		38 Credits
	ENGL 1010	Introduction to Academic Writing CC 3
or	ENGL 1005	Literacies and Composition Across Context CC (5)
	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	US History to 1877 AS (3)
and	HIST 2710	US History since 1877 AS (3)
	HIST 1740	US Economic History AS (3)
	POLS 1000	American Heritage SS (3)
	POLS 1100	American National Government AS (3)
Complete the following:		
	PHIL 2050	Ethics and Values IH 3
	HLTH 1100	Personal Health and Wellness TE (2)
or	EXSC 1097	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	
Discipline Core Requirements:		24 Credits
	ENGR 1030	Engineering Programming 3
or	CS 1400	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	Computer Organization and Architecture (3)
or	CS 1410	Object Oriented Programming (3)
	Also, complete five credits of Pre-Engineering electives	
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 (3)
or	ENGR 2450	Computational Methods for Engineering Analysis (3)
	Also, complete three credits of Pre-Engineering electives	
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 four credits of Pre-Engineering electives			
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)	
Complete five credits of Pre-Engineering electives			
Elective Requirements:			
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)	
or	MATH 2270	Linear Algebra (3)	
and	MATH 2280	Ordinary Differential Equations (3)	
	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 (3)	
	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.

**Pre-Engineering, A.S.****Careers**

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.



# Engineering

## Related Careers

- NO MATCH

## Civil Engineering, B.S.

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### Requirements

Civil engineering is the oldest engineering discipline. The Bachelor of Science in Civil Engineering prepares graduates to apply mathematical and scientific principles to the design and supervision of infrastructure components including: buildings, roads, bridges, dams, tunnels, mass transit systems, and airports. Civil engineers are also involved in environmental studies and the design and supervision of municipal water supplies and sewage systems.

### Total Program Credits: 126

Matriculation Requirements:			
<ol style="list-style-type: none"> <li>To be admitted to the BSCE program, a student must complete the foundation courses in Mathematics (MATH 1210, 1220, 2210, 2250); Physics and Chemistry (PHYS 2210, 2215, CHEM 1210, with 1215 and PHYS 2220 with 2225 or CHEM 1220 with 1225); English (ENGL 1010 or ENGL 1005, ENGL 2010); Engineering (ENGR 1000, 2010, 2030, 2140, 2160); Computer Aided Drafting (EGDT 1040), and Surveying Applications and Field Techniques I (EGDT 1400) with a minimum grade of C in these courses.</li> <li>Must complete courses with a grade point average of 2.5 or above.</li> <li>A student not meeting all of the admission requirements, may request in writing, a provisional admission status for a semester from the department. The provisional admission status must be approved by the civil engineering program coordinator.</li> </ol>			
General Education Requirements:		38 Credits	
	ENGL 1010	Introduction to Academic Writing CC	3
or	ENGL 1005	Literacies and Composition Across Contexts CC (5.0)	
	ENGL 2010	Intermediate Academic Writing CC	3
	MATH 1210	Calculus I QL	4
Complete one of the following:			3
	HIST 2700	US History to 1877 AS (3.0)	
and	HIST 2710	US History since 1877 AS (3.0)	
	HIST 1700	American Civilization AS (3.0)	
	HIST 1740	US Economic History AS (3.0)	
	POLS 1000	American Heritage SS (3.0)	
	POLS 1100	American National Government AS (3.0)	
Complete the following:			
	HLTH 1100	Personal Health and Wellness TE	2
or	EXSC 1097	Fitness for Life TE (2.0)	
	PHIL 205G	Ethics and Values IH GI	3
or	PHIL 2050	Ethics and Values IH (3)	
Distribution Courses:			
	Fine Arts		3
	Biology		3

	Humanities (COMM 1020 and recommended)		3
	Social/Behavioral Science (COMM 2110 recommended)		3
	PHYS 2210	Physics for Scientists and Engineers I PP	4
	CHEM 1210	Principles of Chemistry I PP	4
Discipline Core Requirements:			72 Credits
	CHEM 1215	Principles of Chemistry I Laboratory	1
	EGDT 1040	Fundamentals of Technical Engineering Drawing	3
	EGDT 1400	Surveying Applications and Field Techniques I	3
	ENGR 1000	Introduction to Engineering WE	3
	ENGR 2010	Engineering Statics	3
	ENGR 2030	Engineering Dynamics	3
	ENGR 2140	Mechanics of Materials	3
	ENGR 2160	Introduction to Materials Science and Engineering	3
	MATH 1220	Calculus II	4
	MATH 2210	Calculus III	4
	MATH 2250	Differential Equations and Linear Algebra	4
	CIVE 2130	Engineering Economics and Statistics	3
	CIVE 2450	Numerical Methods with Excel and VBA	3
or	ENGR 2450	Computational Methods for Engineering Analysis	
	CIVE 3010	Introduction to Transportation Engineering	3
	CIVE 3130	Introduction to Structural Engineering	3
	CIVE 3210	Introduction to Geotechnical Engineering	3
	ME 3310	Fluid Mechanics	3
	CIVE 3320	Introduction to Water Resources	3
	CIVE 3335	Hydrology and Hydraulics Lab WE	2
	CIVE 4135	Civil Engineering Materials Lab WE	2
	CIVE 4510	Civil Engineering Seminar	1
	CIVE 4810	Civil Engineering Capstone I	3
	CIVE 4820	Civil Engineering Capstone II	3
	PHYS 2215	Physics for Scientists and Engineers I Lab	1
	PHYS 2220	Physics for Scientists and Engineers II PP	4
or	CHEM 1220	Principles of Chemistry II PP (4)	
	PHYS 2225	Physics for Scientists and Engineers II Lab	1
or	CHEM 1225	Principles of Chemistry II Laboratory (1)	
Elective Requirements:			15 Credits
Elective Courses (15 credit hours are required; two courses may be taken from Technical Elective list; at least six credit hours must be at 4000 level)			15

CIVE Elective Courses		
CIVE 3140	Structural Steel Design I (3)	
CIVE 3150	Reinforced Concrete Design I (3)	
CIVE 3610	Environmental Engineering (3)	
CIVE 4010	Traffic Engineering (3)	
CIVE 4020	Highway Design (3)	
CIVE 4210	Foundation Design (3)	
CIVE 4220	Ground Improvement Methods (3)	
CIVE 4310	Storm Water Management (3)	
CIVE 4320	Open Channel Flow (3)	
ME 4420	Finite Element Methods (3)	
CIVE 4610	Water and Wastewater (3)	
CIVE 490R	Advanced Current Topics in Civil Engineering (1-3)	
Technical Elective Courses		
CIVE 481R	Internship (1-3)	
CMGT 2025	Heavy Civil Plans and Specifications (3)	
CMGT 2060	Construction Job Site Management (3)	
CMGT 2080	Principles of Construction Scheduling (3)	
CMGT 3030	Principles of Construction Estimating (3)	
CMGT 3050	Construction Equipment/Planning and Logistics (3)	
CMGT 3160	Building Information Modeling (3)	
CMGT 4010	Construction Contracts (3)	
CMGT 4020	Construction Project Management (3)	
CMGT 405G	Global Sustainability and the Built Environment GI WE(3)	
LEGL 3000	Business Law (3)	
ENVT 3280	Environmental Law (3)	
ENVT 3290	Environmental Reporting WE (3)	
ENVT 3330	Water Resources Management (3)	
ENVT 3850	Environmental Policy WE (3)	
GEO 3000	Environmental Geochemistry (3)	
Students may also take upper level computer, electrical, and mechanical engineering classes as technical electives in consultation with their faculty advisors and approval of the department offering the courses.		

**Graduation Requirements:**

1. Completion of a minimum of 125 semester credits, with a minimum of 40 upper-division credits.
2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.
3. Residency hours - minimum of 30 credit hours through course attendance at UVU. Ten of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CIVE courses.
4. All transfer credits must be approved in writing by UVU and the civil engineering program coordinator.

5. No more than 80 semester hours and no more than 20 hours in CIVE courses of transfer credit.
6. No more than 6 semester hours may be earned through independent study.
7. Successful completion of at least one Global/Intercultural course.
8. Have taken the NCEES Fundamentals of Engineering Exam.

**Civil Engineering, B.S.****Careers**

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

**Related Careers**

- Architectural and Engineering Managers
- Chemical Engineers
- Engineering Teachers, Postsecondary

**Computer Engineering, B.S.**

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**Requirements**

Computer Engineering encompasses the science and technology of design, construction, implementation, testing, and maintenance of integrated software and hardware components of modern computing systems and computer-controlled equipment (cell phones, video games, laptops).

**Total Program Credits: 124**

Matriculation Requirements:
To be admitted to the BSCE program a student must complete the following courses with a minimum grade of C in these courses and a grade point average of 2.5 or above. A student not meeting all of the admission requirements, may request in writing, a provisional admission status for a semester from the department. The provisional admission status must be approved by the computer engineering program coordinator.
<ul style="list-style-type: none"> <li>• MATH 1210 Calculus I QL (4)</li> <li>• MATH 1220 Calculus II (4)</li> <li>• PHYS 2210 Physics for Scientists and Engineers I PP (4)</li> <li>• PHYS 2215 Physics for Scientists and Engineers I Lab (1)</li> <li>• PHYS 2220 Physics for Scientists and Engineers II PP (4)</li> <li>• PHYS 2225 Physics for Scientists and Engineers II Lab (1)</li> <li>• CS 1400 Fundamentals of Programming (3)</li> <li>• ECE 1000 Introduction to Electrical and Computer Engineering (3)</li> <li>• ECE 2700 Digital Design I (3)</li> </ul>

# Engineering

- ECE 2705 Digital Design I Lab (1)
- ECE 2250 Circuit Theory (3)
- ECE 2255 Circuit Theory Lab (1)

General Education Requirements:		38 Credits
	<a href="#">ENGL 1010</a> Introduction to Academic Writing CC	3
or	<a href="#">ENGL 1010</a> Literacies and Composition Across Contexts CC (5)	
	<a href="#">ENGL 2010</a> Intermediate Academic Writing CC	3
	<a href="#">MATH 1210</a> Calculus I QL	4
American Institutions: Complete one of the following:		3
	<a href="#">HIST 2700</a> US History to 1877 AS (3)	
and	<a href="#">HIST 2710</a> US History since 1877 AS (3)	
	<a href="#">HIST 1700</a> American Civilization AS (3)	
	<a href="#">HIST 1740</a> US Economic History AS (3)	
	<a href="#">POLS 1000</a> American Heritage SS (3)	
	<a href="#">POLS 1100</a> American National Government AS (3)	
Complete the following:		
	<a href="#">HLTH 1100</a> Personal Health and Wellness TE	2
or	<a href="#">EXCS 1097</a> Fitness for Life TE (2)	
	<a href="#">PHIL 205G</a> Ethics and Values IH GI	3
Distribution Courses:		
	<a href="#">COMM 1020</a> Public Speaking HH	3
	<a href="#">COMM 2110</a> Interpersonal Communication SS	3
	Fine Arts (Choose from list)	3
	Biology (Choose from list)	3
	<a href="#">PHYS 2210</a> Physics for Scientists and Engineers I PP	4
	<a href="#">CHEM 1210</a> Principles of Chemistry I PP	4
Discipline Core Requirements:		86 Credits
	<a href="#">ECE 1000</a> Introduction to Electrical and Computer Engineering	3
	<a href="#">ECE 2250</a> Circuit Theory	3
	<a href="#">ECE 2255</a> Circuit Theory Lab	1
	<a href="#">ECE 2700</a> Digital Design I	3
	<a href="#">ECE 2705</a> Digital Design I Lab	1
	<a href="#">ECE 2750</a> Engineering Analysis	3
	<a href="#">ECE 3710</a> Applied Probability and Statistics for Engineers and Scientists	3
	<a href="#">ECE 3730</a> Embedded Systems I	3
	<a href="#">ECE 3740</a> Digital Design II	3
	<a href="#">ECE 3760</a> Electronic Systems	3
	<a href="#">ECE 3765</a> Electronic Systems Lab	1
	<a href="#">ECE 3770</a> Signals and Systems	3
	<a href="#">ECE 3780</a> Communication Systems and Circuits	3
	<a href="#">ECE 3785</a> Communication Systems and Circuits Lab	1
	<a href="#">ECE 4700</a> Computer Architecture for Engineering Applications	3
	<a href="#">ECE 4730</a> Embedded Systems II	3

<a href="#">ECE 4750</a>	Digital Signal Processing	3
<a href="#">ECE 4755</a>	Digital Signal Processing Lab	1
<a href="#">ECE 4760</a>	VLSI Design	3
<a href="#">ECE 4765</a>	VLSI Design Laboratory	1
<a href="#">ECE 4900</a>	Electrical and Computer Engineering Capstone I WE	3
<a href="#">ECE 4950</a>	Electrical and Computer Engineering Capstone II WE	3
<a href="#">CS 1400</a>	Fundamentals of Programming	3
<a href="#">CS 1410</a>	Object-Oriented Programming	3
<a href="#">CS 2300</a>	Discrete Mathematical Structures I	3
<a href="#">CS 2370</a>	C Plus Plus Programming WE	3
<a href="#">CS 2420</a>	Introduction to Algorithms and Data Structures	3
<a href="#">CS 3060</a>	Operating Systems Theory	3
<a href="#">PHYS 2215</a>	Physics for Scientists and Engineers I Lab	1
<a href="#">PHYS 2220</a>	Physics for Scientists and Engineers II PP	4
<a href="#">PHYS 2225</a>	Physics for Scientists and Engineers II Lab	1
<a href="#">CHEM 1215</a>	Principles of Chemistry I Laboratory	1
<a href="#">MATH 1220</a>	Calculus II	4
Elective Requirements:		3 Credits
Complete 3 credits from the following:		3
<a href="#">ECE 4780</a>	Wireless and Mobile Communications (3)	
<a href="#">ECE 4850</a>	Machine Learning (3)	
<a href="#">ECE 481R</a>	Electrical and Computer Engineering Internship (1-3)	
<a href="#">ECE 4260</a>	Smart Power Grids (3)	

## Graduation Requirements:

1. Completion of a minimum of 124 semester credits, with a minimum of 40 upper-division credits.
2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.
3. Residency hours - minimum of 30 credit hours through course attendance at UVU. 10 of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CS + ECE courses.
4. All transfer credit must be approved in writing by UVU.
5. No more than 80 semester hours and no more than 20 hours in CS and ECE courses of transfer credit.
6. No more than 6 semester hours may be earned through independent study.
7. Successful completion of at least one Global/Intercultural course.
8. Taking Fundamentals of Engineering (FE) (NCEES - Electrical and Computer Engineering) exam.

## Computer Engineering, B.S. Careers

1. Computer Engineering students will demonstrate proficiency in the areas of programming languages, algorithms, operating



systems, computer architecture, digital and analog circuits, and engineering design.

- Students will demonstrate proficiency in relevant aspects of mathematics as well as the appropriate concepts from physics and electrical circuits and devices.
- Students will successfully apply these principles and practices to a variety of problems.
- Students will demonstrate an understanding of differential and integral calculus, advanced engineering mathematics, discrete structures, probability and statistics, physics, and other areas of science pertinent to engineering.
- Students will apply modern engineering tools necessary for computer engineering practice including computer based analysis, design, and simulation tools.
- Students will have the ability to work with others and on multidisciplinary teams in both classroom and laboratory environments.
- Students will demonstrate critical and abstract thinking.
- Students will demonstrate an ability to communicate effectively.
- Students will obtain familiarity with basic ideas and contemporary issues in the social sciences and the humanities.
- Students will obtain an understanding of social, professional, and ethical issues related to engineering.
- The majority of the graduates will be immediately employed in high-technology companies that utilize their computer engineering skills.
- Strong graduates from the program will be prepared to enter graduate programs.

### Related Careers

- Architectural and Engineering Managers
- Computer Hardware Engineers
- Engineering Teachers, Postsecondary

## Electrical Engineering, B.S.

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### Requirements

A Bachelor of Science in Electrical Engineering provides a broad foundation in electrical engineering through combined classroom and laboratory work and prepares students for entering the profession of electrical engineering as well as further study at the graduate level. The core courses will provide students with a strong background in mathematics, physical science, and fundamentals of engineering.

### Total Program Credits: 125

#### Matriculation Requirements:

To be admitted to the BSEE program a student must complete the following courses with a minimum grade of C in these courses and grade point average of 2.5 or above. A student not meeting all of the admission requirements, may request in writing, a provisional admission status for a semester from the department. The provisional admission status must be approved by the electrical engineering program coordinator.

- MATH 1210 Calculus I QL
- MATH 1220 Calculus II
- PHYS 2210 Physics for Scientists and Engineers I PP
- PHYS 2215 Physics for Scientists and Engineers I Lab
- PHYS 2220 Physics for Scientists and Engineers II PP
- PHYS 2225 Physics for Scientists and Engineers II Lab
- CS 1400 Fundamentals of Programming
- ECE 1000 Introduction to Electrical and Computer Engineering
- ECE 2700 Digital Design I
- ECE 2705 Digital Design I Lab

- ECE 2250 Circuit Theory
- ECE 2255 Circuit Theory Lab

General Education Requirements:		38 Credits
	ENGL 1010	Introduction to Academic Writing CC 3
or	ENGL 1005	Literacies and Composition Across Contexts CC (5)
	ENGL 2010	Intermediate Academic Writing CC 3
	MATH 1210	Calculus I QL 4
American Institutions: Complete one of the following:		3
	HIST 2700	US History to 1877 AS (3)
and	HIST 2710	US History since 1877 AS (3)
	HIST 1700	American Civilization AS (3)
	HIST 1740	US Economic History AS (3)
	POLS 1000	American Heritage SS (3)
	POLS 1100	American National Government AS (3)
Complete the following:		
	PHIL 2050	Ethics and Values IH 3
	HLTH 1100	Personal Health and Wellness TE 2
or	EXSC 1097	Fitness for Life TE (2)
Distribution Courses:		
	COMM 1020	Public Speaking HH 3
	COMM 2110	Interpersonal Communication SS 3
	Fine Arts (Choose from list) 3	
	Biology (Choose from list) 3	
	PHYS 2210	Physics for Scientists and Engineers I PP 4
	CHEM 1210	Principles of Chemistry I PP 4
Discipline Core Requirements:		81 Credits
	ECE 1000	Introduction to Electrical and Computer Engineering 3
	CS 1400	Fundamentals of Programming 3
	ECE 2250	Circuit Theory 3
	ECE 2255	Circuit Theory Lab 1
	ECE 2700	Digital Design I 3
	ECE 2705	Digital Design I Lab 1
	ECE 2750	Engineering Analysis 3
	ECE 3250	Energy Conversion 3
	ECE 3350	Control Systems 3
	ECE 3450	Electromagnetics and Transmission Lines 3
	ECE 3710	Applied Probability and Statistics for Engineers and Scientists 3
	ECE 3730	Embedded Systems I 3
	ECE 3740	Digital Design II 3
	ECE 3760	Electronic Systems 3
	ECE 3765	Electronic Systems Lab 1
	ECE 3770	Signals and Systems 3
	ECE 3780	Communication Systems and Circuits 3

# Engineering

ECE 3785	Communication Systems and Circuits Lab	1
ECE 4700	Computer Architecture for Engineering Applications	3
ECE 4730	Embedded Systems II	3
ECE 4750	Digital Signal Processing	3
ECE 4755	Digital Signal Processing Lab	1
ECE 4760	VLSI Design	3
ECE 4765	VLSI Design Laboratory	1
ECE 4900	Electrical and Computer Engineering Capstone I WE	3
ECE 4950	Electrical and Computer Engineering Capstone II WE	3
PHYS 2215	Physics for Scientists and Engineers I Lab	1
PHYS 2220	Physics for Scientists and Engineers II PP	4
PHYS 2225	Physics for Scientists and Engineers II Lab	1
CHEM 1215	Principles of Chemistry I Laboratory	1
MATH 1220	Calculus II	4
MATH 2210	Calculus III	4
Elective Requirements:		6 Credits
Complete a minimum of six credits from the following:		6
ECE 4780	Wireless and Mobile Communications (3)	
ECE 4250	Power Systems Engineering (3)	
ECE 4850	Machine Learning (3)	
ECE 4260	Smart Power Grids (3)	
ECE 481R	Electrical and Computer Engineering Internship (1-3)	

## Graduation Requirements:

1. Completion of a minimum of 125 semester credits, with a minimum of 40 upper-division credits.
2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.
3. Residency hours - minimum of 30 credit hours through course attendance at UVU. 10 of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CS + ECE courses.
4. All transfer credit must be approved in writing by UVU and the electrical engineering program coordinator.
5. No more than 80 semester hours and no more than 20 hours in CS and ECE courses of transfer credit.
6. No more than 6 semester hours may be earned through independent study.
7. Successful completion of at least one Global/Intercultural course.
8. Taking Fundamentals of Engineering (FE) (NCEES - Electrical and Computer Engineering) exam.

## Electrical Engineering, B.S.

### Careers

1. Demonstrated their ability to perform electrical engineering analysis to solve problems and to communicate technical information effectively in an engineering or a professional team environment

2. Advanced professionally by given more responsibilities; or have successfully completed a graduate level degree
3. Continued their professional development through workshops; or earning professional licensure
4. Served in their professional organizations and/or local communities.

### Related Careers

- Architectural and Engineering Managers
- Aerospace Engineers
- Electrical Engineers
- Electronics Engineers, Except Computer
- Engineering Teachers, Postsecondary

## Mechanical Engineering, B.S.

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### Requirements

Mechanical engineering, which has evolved over the years as new technologies have emerged, is one of the broadest engineering disciplines. The Bachelor of Science in Mechanical Engineering prepares graduates to apply mathematical and scientific principles to the design, development, testing, and manufacturing of machines, robots, tools, biomedical devices, power generating equipment such as steam and gas turbines, wind turbines, solar systems, internal combustion engines, and heating, cooling, and refrigeration equipment.

### Total Program Credits: 126

Matriculation Requirements:			
<ol style="list-style-type: none"> <li>1. To be admitted to the BSME program, a student must complete the foundation courses in Mathematics (MATH 1210, 1220, 2210, 2250); Physics (PHYS 2210, 2215, 2220, 2225); Chemistry (CHEM 1210, 1215); English (ENGL 1005 or ENGL 1010, 2010); and Engineering (EGDT 1071, ENGR 1000, 1030, 2010, 2030, 2140, 2160, 2450) with a minimum grade of C.</li> <li>2. Students need a grade point average of 2.5 or above.</li> <li>3. A student not meeting all of the admission requirements, may request in writing, a provisional admission status for a semester from the department. The provisional admission status must be approved by the mechanical engineering program coordinator.</li> </ol>			
General Education Requirements:			38 Credits
	ENGL 1010	Introduction to Academic Writing CC	3
or	ENGL 1005	Literacies and Composition Across Contexts CC (5.0)	
	ENGL 2010	Intermediate Academic Writing CC	3
	MATH 1210	Calculus I QL	4
Complete one of the following:			3
	HIST 1700	American Civilization AS (3.0)	
	HIST 1740	US Economic History AS (3.0)	
	HIST 2700	US History to 1877 AS (3.0)	
and	HIST 2710	US History since 1877 AS (3.0)	
	POLS 1000	American Heritage SS (3.0)	
	POLS 1100	American National Government AS (3.0)	
Complete the following:			
	PHIL 2050	Ethics and Values IH	3
or	PHIL 205G	Ethics and Values IH GI	3

	HLTH 1100	Personal Health and Wellness TE	2
or	EXSC 1097	Fitness for Life TE (2.0)	
Distribution Courses:			
	Biology		3
	Fine Arts		3
	Humanities (COMM 1020 Recommended)		3
	Social/Behavioral Science (COMM 2110 Recommended)		3
	PHYS 2210	Physics for Scientists and Engineers I PP	4
	CHEM 1210	Principles of Chemistry I PP	4
Discipline Core Requirements:			78 Credits
	CHEM 1215	Principles of Chemistry I Laboratory	1
	ENGR 1000	Introduction to Engineering WE	3
	ECE 2210	Fundamentals of Electric Circuit Analysis	3
	EGDT 1071	3 Dimensional Modeling--Solidworks	3
	ENGR 2010	Engineering Statics	3
	ENGR 2030	Engineering Dynamics	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
	MATH 1220	Calculus II	5
	MATH 2210	Calculus III	3
	MATH 2250	Differential Equations and Linear Algebra	4
	ME 3010	System Dynamics I	3
	ME 3140	Machine Design	3
	ME 3210	Manufacturing Processes for Engineers	3
	ME 3310	Fluid Mechanics	3
	ME 3320	Heat Transfer	3
	ME 3335	Thermal/Fluid Experimentation WE	2
	ME 4010	System Dynamics II	3
	ME 4015	Control and Vibration Experimentation	2
	ME 4410	Computer Aided Engineering	3
	ME 4510	Mechanical Engineering Seminar	1
	ME 4810	Mechanical Engineering Capstone I	3
	ME 4820	Mechanical Engineering Capstone II	3
	PHYS 2215	Physics for Scientists and Engineers I Lab	1
	PHYS 2220	Physics for Scientists and Engineers II PP	4
	PHYS 2225	Physics for Scientists and Engineers II Lab	1
Elective Requirements:			9 Credits

Choose 9 credits from the following. One course may be taken from Technical Elective list. At least six credit-hours must be at 4000 level.		9
ME Elective Courses		
ME 3130	Kinematics (3)	
ME 3160	Intermediate Materials (3)	
ME 3170	Introduction to Plastics and Composites (3)	
ME 3300	Applied Thermodynamics (3)	
ME 4180	Compliant Mechanisms (3)	
ME 4380	Design of Thermal/Fluid Systems (3)	
ME 4390	Heating Ventilating and Air Conditioning Design (3)	
ME 4420	Finite Element Methods (3)	
ME 4550	Global Engineering (3)	
ME 490R	Advanced Current Topics in Mechanical Engineering (1)	
Technical Elective Courses		
ME 481R	Mechanical Engineering Internship (1-3)	
ECE 3710	Applied Probability and Statistics for Engineers and Scientists (3)	
TECH 3400	Project Management WE (3)	
TECH 3850	Quality Management in Technology (3)	
Students may also take upper level computer, electrical, and mechanical engineering classes as technical electives in consultation with their faculty advisors and approval of the department offering the courses.		

**Graduation Requirements:**

1. Completion of a minimum of 125 semester credits, with a minimum of 40 mechanical engineering upper-division credits.
2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.
3. Residency hours - minimum of 30 credit hours through course attendance at UVU. Ten of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved ME courses.
4. All transfer credits must be approved in writing by UVU and the mechanical engineering program coordinator.
5. No more than 80 semester hours and no more than 20 hours in ME courses of transfer credit.
6. No more than 6 semester hours may be earned through independent study.
7. Successful completion of at least one Global/Intercultural course.

**Mechanical Engineering, B.S.****Careers**

1. Demonstrated their ability to perform mechanical engineering analysis to solve problems and to communicate technical information effectively in an engineering or a professional team environment.
2. Advanced professionally by being given more responsibilities and/or have completed a graduate level degree.
3. Continued their professional development through workshops and/or have earned professional licensure.
4. Served in their professional organizations and/or local communities.

# Engineering

## ***Related Careers***

- Architectural and Engineering Managers
- Cost Estimators
- Aerospace Engineers
- Mechanical Engineers
- Engineering Teachers, Postsecondary