Associate of Science in Pre-Engineering
Pre-Engineering Pre-Major

63 hours required
2016 - 2017

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College of Technology & Computing
Dean: Dr. Michael Savoie
Office: CS 720 Phone: (801) 863-8237

Faculty:
- Associate Professor
  - Masood Amin
  - Sean Tolman

Advisors:
- Monica Ferreyra (Last Names A – M)
  Office: CS 635 Phone (801) 863-8350
- Chelsey Chalk (Last Names N – Z)
  Office: CS 635 Phone (801) 863-5819

For Appointment:
- Go to https://monicaferreyra.youcanbook.me
- Call (801) 863-8648
- Email at MonicaF@uvu.edu

For Appointment:
- Go to https://chelseychalk.youcanbook.me
- Call (801) 863-8648
- Email at CChalk@uvu.edu

Career Opportunities

Engineering is an exciting major in terms of professional career opportunities, job satisfaction and compensation. Career options exist in many engineering fields including: Mechanical, Aerospace, Civil, Environmental, Electrical, Computer, Biological, BioMedical, Chemical, Materials Science, Nuclear, and Petroleum among others.

Program

The pre-engineering program at UVU was created for students who plan to complete the first two to three years of their engineering education at UVU and then transfer to a baccalaureate program at another university to complete their engineering degree. With adequate planning, pre-engineering coursework completed at UVU will 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. Upon completion of the pre-engineering program at UVU, the student applies for professional status at another institution of their choice. The student may select one of two degree programs, the Associate of Pre-Engineering (APE) Degree or the Associate of Science in Pre-Engineering (AS-PE) degree. The APE concentrates on the math, science, and engineering courses required during the first two years of study in baccalaureate university programs. While it does NOT fulfill the general education requirements, the emphasis on math, science, and engineering requirements will put the student in good stead as he/she transfers. If a student adds appropriate general education courses, the AS-PE may be earned. This option normally takes three years, unless the student has previously completed coursework, advanced placement credit or concurrent enrollment credit from a high school.

Pre-engineering programs will vary markedly from student to student depending on several factors including: high school preparation, engineering discipline of interest, and the intended four-year transfer school. The pre-engineering advisor will consider these factors when designing a program to fit the needs of each individual student. It is therefore important that pre-engineering students consult with the Pre-Engineering advisor concerning classes appropriate for their educational experience at UVU. Contact the Pre-Engineering advisor or the Advisement Center for a personal appointment (801-863-8648).

The normal entry level mathematics class for pre-engineering students is Calculus I (MATH 1210). Prerequisites for Calculus I are College Algebra (MATH 1050) and Trigonometry (MATH 1060), or an appropriate grade on the math portion of the SAT (630) / ACT (28), or 90 on the ACCUPLACER or 076-100 on Aleks. Remedial course work is available for students with inadequate high school preparation or achievement. Inadequately prepared students should see the pre-engineering advisor for recommended remedial courses which must be completed in addition to the normal pre-engineering requirements.
Interested in Engineering?

Are you interested in an engineering major? Average starting salaries for engineers with a bachelor's degree are in the $45,000 to $62,000 range. You can add an additional $10,000-$15,000 with a master's degree. In order to be successful in an engineering major you must be prepared to take preparatory math and science courses, love to solve problems, work with computers, and enjoy working on teams.

Students at UVU have several options available to them if they are interested in pursuing an engineering degree. Any of the options listed below may be appropriate depending on personal circumstances and educational objectives. The most important goal is to have an educational plan and know where you are headed, hopefully avoiding unexpected surprises and wasted time and money. Please contact the Advisement Center, at (801) 863-8648 for an appointment to help develop your plan.

**Option 1 – Transfer before completing a degree at UVU**

Complete as many of the required math, science, and engineering courses available at UVU as possible (you must meet all prerequisite requirements for each course you take), along with some general education courses, and then transfer to a university with a bachelor's degree in the engineering field of interest. If you carefully select the general education courses (refer to the transfer institution's transfer articulation guides), many of the courses taken at UVU will transfer. After transferring, complete the general education program and the professional engineering program at the institution granting the engineering degree. If choosing this option see if you qualify for an Associate in Science in University Studies before you leave UVU.

**Option 2 – Complete Associate of Science (AS) then transfer**

Complete an Associate of Science (AS) degree at UVU then transfer to a university with a Bachelor of Science (BS) degree in the engineering field of interest. You will be completing general education requirements at UVU that should transfer to all the universities in Utah to apply towards their BS general education requirements. Many schools outside of Utah also accept an AS degree as fulfilling their general education requirements. You will generally not have time to take (at UVU) all of the pre-professional and math courses required by the transfer institution, so they will have to be completed after transfer. You will usually transfer as a "sophomore" into the pre-professional program at the transfer institution. With this option you will generally carry a lighter load as you finish the BS degree because your general education coursework will already be mostly done.

**Option 3 – Complete AS degree AND Pre-Professional courses, then transfer**

Attend UVU until you complete all of the required pre-professional math, science, and engineering courses, as well as the AS degree so that your general education coursework is also done (If you already have an AS degree from UVU in another subject area, you must instead do the Associate of Pre-Engineering (APE) degree). You will usually transfer as a "junior" – as close as you can get to starting the 3rd year of the engineering program at the transfer institution. There may be some courses you cannot do at UVU because we do not have them – meet with an advisor at the transfer institution to find out how this will work. As you finish your BS degree at the transfer school your course load will be lighter, giving you more time to take extra engineering technical electives or do an internship.

**Option 4 – Do BS in Math, Computer Sci., or Physics + Pre-Professional Courses**

You can attend UVU and complete a BS degree in computer science, mathematics, physics, chemistry, or biology, and take the required pre-professional engineering courses as electives. After completing the BS degree at UVU, you can then transfer to a university with an accredited four-year engineering program and complete wither a second BS degree or possibly a master's degree (with additional engineering coursework at the undergraduate level and usually passing the Fundamentals of Engineering (FE) exam). You will have to check with the transfer institution to find out what their requirements are.
# General Education Requirements (39 credits)

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1010</td>
<td>Introduction to Writing (Fall, Spring, Summer)</td>
<td>3</td>
<td>Placement or ENGL 1000 w/C- or higher</td>
</tr>
<tr>
<td>ENGL 2020</td>
<td>Intermediate Writing – Science and Technology (Fall, Spring, Summer)</td>
<td>3</td>
<td>ENGL 1010 with C- or higher</td>
</tr>
<tr>
<td>MATH 1210</td>
<td>Calculus I (Fall, Spring, Summer)</td>
<td>5</td>
<td>MATH 1050 and MATH 1060 (see advisor)</td>
</tr>
</tbody>
</table>

Complete one of the following options:

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 1700</td>
<td>American Civilization (Fall, Spring, Summer)</td>
<td>3</td>
</tr>
<tr>
<td>HIST 2700 and 2710</td>
<td>US History to 1877 and US History since 1877 (Fall, Spring, Summer)</td>
<td>3/3</td>
</tr>
<tr>
<td>HIST 1740</td>
<td>US Economic History (Fall &amp; Spring)</td>
<td>3</td>
</tr>
<tr>
<td>POLS 1000</td>
<td>American Heritage (Fall, Spring, Summer)</td>
<td>3</td>
</tr>
<tr>
<td>POLS 1100</td>
<td>American National Government (Fall, Spring, Summer)</td>
<td>3</td>
</tr>
</tbody>
</table>

Complete one of the following options:

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 2050</td>
<td>Ethics and Values (Fall, Spring, Summer)</td>
<td>3</td>
<td>ENGL 1010; ENGL 2020/2010 highly recommended</td>
</tr>
</tbody>
</table>

Complete the following:

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLTH 1100</td>
<td>Personal Health and Wellness (Fall, Spring, Summer)</td>
<td>2</td>
</tr>
<tr>
<td>PES 1097</td>
<td>Fitness for Life (Fall, Spring, Summer)</td>
<td>2</td>
</tr>
</tbody>
</table>

Complete the following:

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1210</td>
<td>Principles of Chemistry I (Fall, Spring, Summer)</td>
<td>4</td>
<td>MATH 1050; Coreq CHEM 1215; CHEM 1010 recommended</td>
</tr>
<tr>
<td>PHYS 2210</td>
<td>Physics for Scientists and Engineers I (Fall, Spring, Summer)</td>
<td>4</td>
<td>MATH 1210; Corequisite PHYS 2215</td>
</tr>
</tbody>
</table>

Distribution Courses: complete one course from each category below:

- **Humanities:** See distribution list on last page. (Most offered Fall, Spring, Summer)
- **Fine Arts:** See distribution list on last page. (Most offered Fall, Spring, Summer)
- **Social/Behavioral Sci:** See distribution list on last page. (Most offered Fall, Spring, Summer)
- **Biology:** See distribution list on last page. (Most offered Fall, Spring, Summer)

# Pre-Engineering Core Requirements (24 credits)

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1030 or CS 1400</td>
<td>Introduction to Electro-Mechanical Systems Design (Fall &amp; Spring)</td>
<td>3</td>
<td>ENGR 1000 &amp; 295R; Pre/CoRequisite: MATH 1210; or MATH 1010 or appro, test score; CS 1030 recommended</td>
</tr>
<tr>
<td>MATH 1220</td>
<td>Calculus II (Fall, Spring, Summer)</td>
<td>5</td>
<td>MATH 1210 with C- or higher</td>
</tr>
</tbody>
</table>

Complete ONE of the following sets of courses:

## General Engineering Emphasis Courses

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2215</td>
<td>Physics for Scientists and Engineers I Lab (Fall, Spring, Summer)</td>
<td>1</td>
<td>Designed to accompany PHYS 2210</td>
</tr>
<tr>
<td>ENGR 1000</td>
<td>Principles of Chemistry Laboratory I (Fall, Spring, Summer)</td>
<td>1</td>
<td>Corequisite CHEM 1210</td>
</tr>
<tr>
<td>ENGR 2160</td>
<td>Introduction to Materials Science and Engineering (Fall Only)</td>
<td>3</td>
<td>Prerequisite or Corequisite: MATH 1060 or higher</td>
</tr>
<tr>
<td>CS 2810 or CS 1410</td>
<td>Computer Organization and Architecture (Fall, Spring, Summer)</td>
<td>3</td>
<td>CHEM 1210 (MATH 1210 highly recommended)</td>
</tr>
<tr>
<td>Electives</td>
<td>Electives from approved list (Pre-Engineering Electives)</td>
<td>5</td>
<td>See “Pre-Engineering Electives” section</td>
</tr>
</tbody>
</table>

## Mechanical/Civil Emphasis Courses

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2220</td>
<td>Physics for Scientists and Engineers II (Fall, Spring, Summer)</td>
<td>4</td>
<td>PHYS 2210; MATH 1220; Coreq PHYS 2225</td>
</tr>
<tr>
<td>ENGR 2010</td>
<td>Engineering Statics (Fall &amp; Spring)</td>
<td>3</td>
<td>MATH 1210; Corequisite PHYS 2210 recommended</td>
</tr>
<tr>
<td>ENGR 2030</td>
<td>Engineering Dynamics (Fall &amp; Spring)</td>
<td>3</td>
<td>ENGR 2010; MATH 1220; PHYS 2210</td>
</tr>
<tr>
<td>ENGR 2140 or ENGR 2160</td>
<td>Mechanics of Materials (Fall &amp; Spring) Material Science (Fall only) U of L</td>
<td>3</td>
<td>ENGR 2010; PHYS 2210 or CHEM 1210 or CHEM 1210</td>
</tr>
<tr>
<td>Electives</td>
<td>Electives from approved list (Pre-Engineering Electives)</td>
<td>3</td>
<td>See “Pre-Engineering Electives” section</td>
</tr>
</tbody>
</table>

## Electrical/Computer Emphasis Courses

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2220</td>
<td>Physics for Scientists and Engineers II (Fall, Spring, Summer)</td>
<td>4</td>
<td>PHYS 2210; MATH 1220; Coreq PHYS 2225</td>
</tr>
<tr>
<td>ECE 2250</td>
<td>Circuit Theory (Fall &amp; Spring)</td>
<td>3</td>
<td>ECE 1020; MATH 1210; PHYS 2210</td>
</tr>
<tr>
<td>ECE 2255</td>
<td>Circuit Theory Lab (Spring Only)</td>
<td>1</td>
<td>MATH 1210; PHYS 2210; Coreq ECE 2255</td>
</tr>
<tr>
<td>ECE 2700</td>
<td>Digital Design I (Fall Only)</td>
<td>3</td>
<td>MATH 1050; Coreq ECE 2470</td>
</tr>
<tr>
<td>ECE 2705</td>
<td>Digital Design I Lab (Fall Only)</td>
<td>1</td>
<td>MATH 1050; Coreq ECE 2700</td>
</tr>
<tr>
<td>Electives</td>
<td>Electives from approved list (Pre-Engineering Electives)</td>
<td>4</td>
<td>See “Pre-Engineering Electives” section</td>
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</tbody>
</table>

## Chemical/Biological Emphasis Courses

<table>
<thead>
<tr>
<th>Course Prefix/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2220</td>
<td>Physics for Scientists and Engineers II (Fall, Spring, Summer)</td>
<td>4</td>
<td>PHYS 2210; MATH 1220; Coreq PHYS 2225</td>
</tr>
<tr>
<td>CHEM 1220</td>
<td>Principles of Chemistry II (Fall, Spring, Summer)</td>
<td>4</td>
<td>CHEM 1210; Corequisite CHEM 1225</td>
</tr>
<tr>
<td>CHEM 2310</td>
<td>Organic Chemistry I (Fall, Spring, Summer)</td>
<td>4</td>
<td>CHEM 1210 and CHEM 1220 with C- or higher</td>
</tr>
<tr>
<td>Electives</td>
<td>Electives from approved list (Pre-Engineering Electives)</td>
<td>4</td>
<td>See “Pre-Engineering Electives” section</td>
</tr>
</tbody>
</table>
### Pre-Engineering Electives (Exclusive of General Education)

Note: Students should carefully select electives based on the engineering discipline they are interested in and the college or university they want to attend to finish their BS degree. See your advisor for help with this.

#### Math and Science Electives:

<table>
<thead>
<tr>
<th>Course Pref/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1050</td>
<td>College Algebra (Fall, Spring, &amp; Summer)</td>
<td>4</td>
<td>MAT 1010 or MAT 1000 with C or higher</td>
</tr>
<tr>
<td>MATH 1060</td>
<td>Trigonometry (Fall, Spring, &amp; Summer)</td>
<td>3</td>
<td>MATH 1050 with C or higher</td>
</tr>
<tr>
<td>MATH 2210</td>
<td>Calculus III (Fall &amp; Spring)</td>
<td>3</td>
<td>MATH 1220 with C or higher</td>
</tr>
<tr>
<td>MATH 2250</td>
<td>Linear Algebra &amp; Ordinary Differential Equations (beg. fall 2016)</td>
<td>4</td>
<td>MATH 2210 with C or higher (not in catalog yet)</td>
</tr>
<tr>
<td>MATH 2270</td>
<td>Linear Algebra</td>
<td>3</td>
<td>MATH 1220 with C or higher</td>
</tr>
<tr>
<td>MATH 2280</td>
<td>Ordinary Differential Equations (On Sufficient Demand)</td>
<td>3</td>
<td>MATH 2210 with C or higher</td>
</tr>
<tr>
<td>PHYS 2215</td>
<td>Physics for Scientists and Engineers I Lab (Fall, Spring, &amp; Summer)</td>
<td>1</td>
<td>Designed to accompany PHYS 2210</td>
</tr>
<tr>
<td>PHYS 2225</td>
<td>Physics for Scientists and Engineers II Lab (Fall, Spring, &amp; Summer)</td>
<td>1</td>
<td>Designed to accompany PHYS 2220</td>
</tr>
<tr>
<td>CHEM 1010</td>
<td>Introduction to Chemistry (Fall, Spring, &amp; Summer)</td>
<td>3</td>
<td>MAT 1010 or equivalent</td>
</tr>
<tr>
<td>CHEM 1215</td>
<td>Principles of Chemistry I Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>Corequisite CHEM 1210</td>
</tr>
</tbody>
</table>

#### General Engineering Electives:

<table>
<thead>
<tr>
<th>Course Pref/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1000</td>
<td>Introduction to Engineering (Excel and Solid Works) (Fall &amp; Spring)</td>
<td>3</td>
<td>Prerequisite or Corequisite: MATH 1060 or higher</td>
</tr>
<tr>
<td>ENGR 1020</td>
<td>Survey of Engineering (Fall &amp; Spring)</td>
<td>3</td>
<td>MATH 1010; Coreq MATH 1050 recommended</td>
</tr>
<tr>
<td>ENGR 1030</td>
<td>Introduction to Electro-Mechanical Systems Design (Excel &amp; Matlab)</td>
<td>3</td>
<td>ENGR 1050 &amp; 2050 + (Pre/Coreq MATH 1210)</td>
</tr>
<tr>
<td>ENGR 2160</td>
<td>Introduction to Materials Science and Engineering (Fall Only)</td>
<td>3</td>
<td>CHEM 1210 (MATH 1210 highly recommended)</td>
</tr>
<tr>
<td>ENGR 2300</td>
<td>Engineering Thermodynamics (Spring Only)</td>
<td>3</td>
<td>MATH 1220; PHYS 2210</td>
</tr>
<tr>
<td>ENGR 2450</td>
<td>Computational Methods for Engineering Analysis (Spring Only)</td>
<td>3</td>
<td>ENGR 1030</td>
</tr>
</tbody>
</table>

#### Biological and Chemical Electives:

<table>
<thead>
<tr>
<th>Course Pref/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1610</td>
<td>College Biology I (Fall, Spring, Summer)</td>
<td>4</td>
<td>ACT 21 or higher or ENGL 1010; Coreq BIOL 1615</td>
</tr>
<tr>
<td>BIOL 1615</td>
<td>College Biology I Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>Pre or Corequisite BIOL 1610</td>
</tr>
<tr>
<td>BIOL 2250</td>
<td>College Biology II Laboratory (Fall, Spring, Summer)</td>
<td>3</td>
<td>BIOL 1610; Corequisite BIOL 1625</td>
</tr>
<tr>
<td>BIOL 1625</td>
<td>College Biology II Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>Corequisite BIOL 1620</td>
</tr>
<tr>
<td>BIOL 3400</td>
<td>Cell Biology (Fall &amp; Spring)</td>
<td>3</td>
<td>BIOL 1610; CHEM 1220; Advanced Univ. Standing</td>
</tr>
<tr>
<td>MICR 2060</td>
<td>Microbiology for Health Professions (Fall, Spring, Summer)</td>
<td>3</td>
<td>BIOL 1010 or BIOL 1610; ENGL1010; Coreq MICR 2065</td>
</tr>
<tr>
<td>MICR 2065</td>
<td>Microbiology for Health Professions Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>BIOL 1010 or BIOL 1610; ENGL1010; Coreq MICR 2060</td>
</tr>
<tr>
<td>CHEM 1220</td>
<td>Principles of Chemistry II (Fall, Spring, Summer)</td>
<td>4</td>
<td>CHEM 1210; Corequisite CHEM2225</td>
</tr>
<tr>
<td>CHEM 1225</td>
<td>Principles of Chemistry II Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>CHEM 1215; Corequisite CHEM2220</td>
</tr>
<tr>
<td>CHEM 2315</td>
<td>Organic Chemistry I Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>CHEM 1220; CHEM 1225; Corequisite CHEM2310</td>
</tr>
<tr>
<td>CHEM 2320</td>
<td>Organic Chemistry II (Fall, Spring, Summer)</td>
<td>4</td>
<td>CHEM 2310</td>
</tr>
<tr>
<td>CHEM 2325</td>
<td>Organic Chemistry II Laboratory (Fall, Spring, Summer)</td>
<td>1</td>
<td>CHEM 2315; Corequisite CHEM2320</td>
</tr>
</tbody>
</table>

#### CAD Electives:

<table>
<thead>
<tr>
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<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGD 1040</td>
<td>Computer Aided Drafting—AutoCAD (Fall, Spring)</td>
<td>3</td>
<td>EGD 1000 recommended</td>
</tr>
<tr>
<td>EGD 1071</td>
<td>3 Dimensional Modeling—SolidWorks (Fall, Spring, Summer)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EGD 1200</td>
<td>Mechanical Drafting (Fall, Spring)</td>
<td>3</td>
<td>EGD 1000 and (EGD 1070 or EGD 1071)</td>
</tr>
<tr>
<td>EGD 1400</td>
<td>Surveying Applications &amp; Field Techniques (Fall, Spring, Summer)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

#### Computer and Electrical Electives:

<table>
<thead>
<tr>
<th>Course Pref/Num</th>
<th>Course Title</th>
<th>Cr</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 1400</td>
<td>Fundamentals of Programming (Fall, Spring, Summer)</td>
<td>3</td>
<td>MAT 1010 or approp. test score; CS 1030 recommended</td>
</tr>
<tr>
<td>CS 1410</td>
<td>Object-Oriented Programming (Fall, Spring, Summer)</td>
<td>3</td>
<td>CS 1400</td>
</tr>
<tr>
<td>CS 2300</td>
<td>Discrete Mathematical Structures I (Fall, Spring, Summer)</td>
<td>3</td>
<td>CS 1410 and MATH 1050 or higher</td>
</tr>
<tr>
<td>CS 2420</td>
<td>Introduction to Algorithms and Data Structures (Fall, Spr. Summer)</td>
<td>3</td>
<td>CS 1410</td>
</tr>
<tr>
<td>CS 2600</td>
<td>Computer Networks I (Fall, Spring)</td>
<td>3</td>
<td>CS 2810 or (INFO 1200 and IT 1600)</td>
</tr>
<tr>
<td>CS 2810</td>
<td>Computer Organization and Architecture (Fall, Spring, Summer)</td>
<td>3</td>
<td>CS 1400</td>
</tr>
<tr>
<td>ECE 1020</td>
<td>Computer Eng Prob. Solving with MATLAB &amp; LabVIEW (Fall/Spr)</td>
<td>1</td>
<td>MATH 1050 or higher</td>
</tr>
<tr>
<td>ECE 2210</td>
<td>Fundamentals of Electric Circuit Analysis (Spring Only)</td>
<td>3</td>
<td>MATH 1210; PHYS 2210; Corequisite ECE 2215</td>
</tr>
<tr>
<td>ECE 2250</td>
<td>Circuit Theory (Fall, Spring)</td>
<td>3</td>
<td>MATH 1210; PHYS 2210; ECE 1020; Coreq ECE 2255</td>
</tr>
<tr>
<td>ECE 2255</td>
<td>Circuit Theory Lab (Fall, Spring)</td>
<td>1</td>
<td>MATH 1210; PHYS 2210; Coreq ECE 2250</td>
</tr>
<tr>
<td>ECE 3740</td>
<td>Digital Design II (Spring Only)</td>
<td>3</td>
<td>ECE 2700 &amp; Advanced University Standing</td>
</tr>
</tbody>
</table>

#### Graduation Requirements:

1. Completion of a minimum of 63 or more 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
### DISTRIBUTION LIST of GENERAL EDUCATION COURSES

**HUMANITIES (HH)**
- AMST 2000 Intro to American Studies
- ASL 2020 Intermediate American Sign Lang II
- CHIN 202G Intermediate Chinese II
- CINE 2150 Critical Intro to Cinema Studies
- CINE 217G Race Class & Gender in US Cinema
- COMM 1020 Public Speaking
- COMM 1050 Intro to Speech Communication
- COMM 1500 Intro to Mass Communication
- CINE 217G Race Class & Gender in US Cinema
- ENGL 2030 Writing for Social Change
- ENGL 2130 Science Fiction
- ENGL 2150 Critical Intro to Cinema Studies
- ENGL 217G Race Class & Gender in US Cinema
- ENGL 2200 Introduction to Literature
- ENGL 2210 Introduction to Folklore
- ENGL 2230/223H Myths & Legends in Literature
- ENGL 2250/225H Creative ProImaginative Writing
- ENGL 2300/230H Shakespeare
- ENGL 2310 Technical Communication
- ENGL 2510 American Lit before 1865
- ENGL 2520 American Lit after 1865
- ENGL2600 Critical Intro to Literature
- ENGL 2610 Brit Lit before 1800
- ENGL 2620 Brit Lit after 1800
- ENGL 3760 World Literature
- FREN 202G Intermediate French II
- GER 202G Intermediate German II
- GRK 2020 Intermediate Greek II
- HUM 1010/101H Humanities Through the Arts
- HUM 101G Humanities Through the Arts
- HUM 2010/201H World History Through Arts I
- HUM 2010G World History Through Arts I
- HUM 2020/202H World History Through Arts II
- HUM 2020G World History Through Arts II
- HUM 203G Art Form Focus I
- HUM 204G Art Form Focus II
- HUM 2100/210H* Adventures Ideas Thru 1500
- HUM 2200/220H* Adventures Ideas After 1500
- JPN 202G Intermediate Japanese II
- LATN 2020 Intermediate Latin II
- PHIL 1000/100H Intro to Philosophy
- PHIL 1250 Intro to Logical & Critical Thinking
- PHIL 1610 Intro to Western Religions
- PHIL 1620 Intro to Eastern Religions
- PHIL 2110 Ancient Greek Philosophy
- PHIL 2130 Medieval Philosophy
- PHIL 2150 Early Modern Philosophy
- PORT 202G Intermediate Portuguese II
- RUS 202G Intermediate Russian II
- SPAN 202G Intermediate Spanish II
- * These Courses Have Prerequisites

**FINE ARTS (FF)**
- ART 1010 Introduction to Visual Art
- ART 1020 Basic Drawing for Non-Majors
- ART 1050 Photography I
- ART 1110 Drawing I
- ART 1340 Sculpture I
- ART 1350 Ceramics I
- ART 1650 Watermedia I
- ART 3400 Elementary Art Education Methods
- ARTH 2710 Hist of Art to the Renaissance
- ARTH 271H Hist of Art to the Renaissance
- ARTH 2720 Hist of Art from Renaissance
- ARTH 272H Hist of Art from Renaissance
- DANC 1010 Dance as an Art Form
- DANC 2110 Orientation to Dance
- EGDT 1720 Architectural Rendering
- MUSC 1010/101H Introduction to Music
- MUSC 1030 American Popular Music
- MUSC 1100 Fundamentals of Music
- THEA 1013 Introduction to Theater
- THEA 1023 Introduction to Film
- THEA 1023 Acting I
- THEA 2200 Theatre and Drama in Elem. School
- THEA 2311 Film History I
- Complete 2 of the following to = 1 Fine Arts Course:
  - DANC 3400 Dance in the Elementary School
  - MUSC 3400 Music in the Elementary School

**SOCIAL/BEHAVIORAL SCIENCES (SS)**
- ANTH 101G Social/Cultural Anthropology
- ANTH 1020 Biological Anthropology
- ANTH 1030 World Prehistory
- ANTH 1805 Intro to American Indian Studies
- ARCH 1100 Intro to Archaeology
- BEES 1070 Multicultural Societies
- CJ 1010 Intro to Criminal Justice
- COMM 2110 Interpersonal Communication
- ECON 1010 Economics as a Social Science
- ECON 2010 Microeconomics
- ECON 2020 Macroeconomics
- ES 1150 Community Emergency Preparedness
- FAMS 1150 Marriage and Relationship Skills
- FIN 1050 Personal Finance
- GEOG 130G Survey of World Geography
- GEOG 1400 Introduction to Human Geography
- GEOG 2100 Geography of the United States
- HIST 1500 World History to 1500
- HIST 151G World History from 1500 to Present
- HIST 1700/170H American Civilization
  (If not used as Core GE Requirement)
- HIST 1740 US Economic History
  (If not used as Core GE Requirement)
- HIST 180G Intro to American Indian Studies
- HIST 2700 US History to 1877
  (If not used as Core GE Requirement)
- HIST 2710 US History Since 1877
  (If not used as Core GE Requirement)
- HIST 4320 History of Scientific Thought
- HIST 4330 Machines in the Making of History
- HLTH 2600 Drugs, Behavior & Society
- HLTH 2800 Human Sexuality
- HLTH 3000 Health Concepts Death/Dying
- MGMT 1010 Introduction to Business
- MGMT 2030 Women in Business
- MGMT 2110 Interpersonal Communication
- PRPL 1000 Intro to American Law
- POLS 1000 American Heritage
  (If not used as Core GE Requirement)
- POLS 1010 Intro to Political Science
- POLS 1100 American National Government
  (If not used as Core GE Requirement)
- POLS 2100 Intro International Relations
- POLS 2200 Intro to Comparative Politics
- PSY 1010/101H General Psychology
- PSY 1100 Human Development Life Span
- PSY 2800 Human Sexuality
- SOC 1010/101H Intro to Sociology
- SOC 1200 Sociology of the Family
- TECH 200G Technology and Human Life

**BIOLOGY (BB)**
- BIOL 1010/101H General Biology
- BIOL 1070 Genetics
- BIOL 1200 Prehistoric Life
- BIOL 1500 Biological Anthropology
- BIOL 1610 College Biology I
- BIOL 1620 College Biology II
- BIOL 204R Natural History Excursion
- BIOL 2500 Environment Biology
- BOT 2050 Field Botany
- BOT 2100 Flora of Utah
- BOT 2400 Plant Kingdom
- BTEC 1010 Fundamentals in Biotech I Career Surv.
- HLTH 3400 Human Diseases
- MIRC 2060 Microbiology for Health Prof
- NUTR 2020 Nutrition Through Life Cycle
- ZOOL 1090 Intro to Human Anatomy & Phys.
- ZOOL 2320/232H Human Anatomy
  *May be used as 3rd science only

**PHYSICAL SCIENCES (PP)**
- *For Pre-Engineering: highlighted courses
  - ASTR 1040/104H Elementary Astronomy
  - ASTR 1050 Investigations of the Solar Systems
  - ASTR 1060 Investigation of Stars & Galaxies
  - ASTR 1070/107H Cultural Astronomy in our Lives
  - ASTR 1080 Life in the Universe
  - CHEM 1010 Introduction to Chemistry
  - CHEM 1100 Elementary Chem for Health Sci.
  - CHEM 1120 Elementary Organic Bio-Chemistry
  - CHEM 1210 Principles of Chemistry I
  - CHEM 1220 Principles of Chemistry II
  - ENVT 1110 Intro to Environmental Management
  - GEO 1010/101H Introduction to Geology
  - GEO 1020 Prehistoric Life
  - GEO 1080 Intro to Oceanography
  - GEO 1220 Historical Geology
  - GEO 204R Natural History Excursion*
  - GEOG 1000 Intro to Physical Geography
  - METO 1010 Intro to Meteorology
  - METO 1060 Climate of the Earth
  - PHSC 1000 Survey of Physical Science
  - PHYS 1010 Elementary Physics
  - PHYS 1700 Descriptive Acoustics
  - PHYS 1750 Music Acoustics
  - PHYS 1800 Energy You and the Environment
  - PHYS 2010 College Physics I
  - PHYS 2020 College Physics II
  - PHYS 2210 Physics for Scientists & Engr I
  - PHYS 2220 Physics for Scientists & Engr II
  - TECH 1010 Understanding Technology
  *May be used as 3rd science only

**AMERICAN INSTITUTIONS**
- HIST 1700 American Civilization
- HIST 1740 US Economic History
- POLS 1000 American Heritage
- POLS 1100 American National Government
- HIST 2700 & HIST 2710 US History

**GERMAN STUDIES**
- *For Pre-Engineering MATH 1210
  - MATH 1030 Quantitative Reasoning
  - OR MATH 1040 Introduction to Statistics
  - OR MATH 1050 College Algebra
  - ENGL 1010 Introduction to Writing
  - ENGL 2100 Intermediate Writing + Humanities/Soc. Sci.
  - OR ENGL 2020 Intermediate Writing – Sci./Tech
  - PHIL 2050 Ethics and Values
  - OR PHIL 205G Ethics & Values
  - (Global/Intercultural)
- HLTH 1100 Personal Health and Wellness
- OR PES 1097 Fitness for Life
