Mathematics, BA/BS

Program Description
The Utah Tech University Mathematics Department helps students to achieve their academic, career, and life goals, including those related to basic computational skills, mathematical processes, and knowledge that develops real-life applications, modeling, and problem solving. The Department’s comprehensive and integrated offerings help students master mathematical competencies for future career and educational endeavors. As part of an open-admissions institution, the Department offers a broad spectrum of Mathematics classes that are useful for skill levels from developmental to selected four-year degree requirements. The Mathematics faculty is dedicated to providing opportunities that promote student success. The Utah Tech Mathematics Department also offers all coursework necessary to obtain a Utah Secondary Education Math Endorsement.

Program Curriculum

120 credits

Utah Tech General Education Requirements
All Utah Tech General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to Utah Tech’s minimum General Education standards in American Institutions, English, and Mathematics.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>General Education Core Requirements (<a href="catalog.utah.edu/programs/generaleducation/#gerequirementstext">catalog.utah.edu/programs/generaleducation/#gerequirementstext</a>)</td>
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<tr>
<td>English</td>
<td>3-5</td>
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<tr>
<td>Mathematics</td>
<td>3-5</td>
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<tr>
<td>American Institutions</td>
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<tr>
<td>Life Sciences</td>
<td>3-10</td>
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<td>Physical Sciences</td>
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<td>Laboratory Science</td>
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<tr>
<td>Fine Arts</td>
<td>3</td>
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<tr>
<td>Literature/Humanities</td>
<td>3</td>
<td></td>
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<tr>
<td>Social &amp; Behavioral Sciences</td>
<td>3</td>
<td></td>
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<tr>
<td>Exploration</td>
<td>3-5</td>
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</table>

Bachelor of Arts: Foreign Language Requirement
Complete one of the following:
- Complete 16 credits in a single foreign language, through earned credit (grade C or higher), credit by examination, or vertical credit from the courses listed on the GE Foreign Language Requirement page
- Complete a 2020 or higher foreign language course (grade C or higher)
- Complete a 3060 foreign language course listed below (grade C or higher)
- Receive 16 transfer credits for GEFL 1000 (8) and GEFL 2000 (8) in a single foreign language (grade C or higher)

OR
Complete a 1010 course listed below in a second foreign language (grade C or higher) AND one of the following:
1. In a language not taught at Utah Tech, receive 12 FLATS exam credits for FLAT 1000 (8) and FLAT 2000 (4)
   or
2. In a language not taught at Utah Tech, receive 12 transfer credits articulated as GEFL 1000 (8) and GEFL 2000 (4) (all grade C or higher)

OR
Available only to students who are nonnative English speakers, complete one of the following:
- Complete 16 credits of ESL courses listed below (grade B or higher)
- Complete ESL 2750 or ESL 2760 (grade B or higher).
- Submit one of the following test scores required for unconditional Utah Tech admission: TOEFL (61 iBT, 173 CBT, or 500 PBT); or Michigan (70); or USU-IELE equivalent score. Other tests may be accepted for admission to Utah Tech but will not fulfill this requirement. Official scores must be submitted to the Registrar’s Office.

Total Hours 3-16
General Education Foreign Language Classes may be found on the General Education page. (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)

### Mathematics Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 1210</td>
<td>Calculus I (MA)</td>
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<tr>
<td>MATH 1220</td>
<td>Calculus II (MA)</td>
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<tr>
<td>MATH 2200</td>
<td>Discrete Mathematics</td>
<td>3</td>
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<tr>
<td>MATH 2210</td>
<td>Multivariable Calculus (MA)</td>
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<tr>
<td>MATH 2270</td>
<td>Linear Algebra</td>
<td>3</td>
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<tr>
<td>MATH 2280</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
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<tr>
<td>MATH 3200</td>
<td>Introduction to Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3400</td>
<td>Probability &amp; Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3900</td>
<td>Number Theory</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4000</td>
<td>Foundations of Algebra</td>
<td>3</td>
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<tr>
<td>MATH 4900</td>
<td>Senior Capstone Seminar (ALUR)</td>
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### Mathematics Elective Requirements

Complete 12 credits from the following:

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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MATH 2600</td>
<td>Introduction to Modeling and Simulation</td>
<td>3</td>
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<tr>
<td>MATH 3000</td>
<td>History of Mathematics</td>
<td>3</td>
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<tr>
<td>MATH 3100</td>
<td>Euclidean / Non-Euclidean Geom</td>
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<tr>
<td>MATH 3150</td>
<td>Introduction to Partial Differential Equations</td>
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<tr>
<td>MATH 3210</td>
<td>Introduction to Analysis II</td>
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<tr>
<td>MATH 3450</td>
<td>Statistical Inference</td>
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<tr>
<td>MATH 3500</td>
<td>Numerical Analysis</td>
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<td>MATH 3700</td>
<td>Mathematical Modeling I</td>
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<td>MATH 4010</td>
<td>Abstract Algebra</td>
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<tr>
<td>MATH 4100</td>
<td>Introduction to Topology</td>
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<tr>
<td>MATH 4200</td>
<td>Introduction to Complex Analysis</td>
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<tr>
<td>MATH 4250</td>
<td>Programming for Scientific Computation</td>
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<td>MATH 4550</td>
<td>Scientific Computation</td>
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<td>MATH 4800</td>
<td>Industrial Careers in Mathematics</td>
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<td>MATH 4890R</td>
<td>Independent Research</td>
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### Mathematics Program Requirements

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<tr>
<td>CS 1400</td>
<td>Fundamentals of Programming</td>
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<tr>
<td>PHYS 2210</td>
<td>Physics/Scientists Engineers I (PS)</td>
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<tr>
<td>&amp; PHYS 2215</td>
<td>and Physics/Scientists Engineers I Lab (LAB)</td>
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<tr>
<td>PHYS 2220</td>
<td>Physics/Scientists EngineersII</td>
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<tr>
<td>&amp; PHYS 2225</td>
<td>and Physics/Scientists Engineers II Lab</td>
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### Graduation Requirements

1. Complete a minimum of 120 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at Utah Tech for institutional residency
4. Grade C or higher (not C-) required in each Core Discipline Requirement, Mathematics Required Elective, and Mathematics Program Requirement course.
5. Cumulative GPA 2.0 or higher
## Graduation Plan

### 1st Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Hours</th>
<th>Spring Semester</th>
<th>Hours</th>
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<tr>
<td>First Year Recommended Elective</td>
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<td>2 MATH 1220</td>
<td>4</td>
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<tr>
<td>MATH 1210</td>
<td>4</td>
<td>ENGL 1010</td>
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<tr>
<td>General Education (American</td>
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<td>General Education (Life Sciences)</td>
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<tr>
<td>General Education (Fine Arts)</td>
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<td>General Education (Social &amp; Behavioral Sciences)</td>
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<td>(catalog.utahtech.edu/programs/ generaleducation/#gerequirementstext)</td>
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### 2nd Year

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<thead>
<tr>
<th>Fall Semester</th>
<th>Hours</th>
<th>Spring Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 2200</td>
<td>3</td>
<td>3 MATH 2210</td>
<td>4</td>
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<tr>
<td>MATH 2270</td>
<td>3</td>
<td>MATH 2280</td>
<td>3</td>
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<tr>
<td>ENGL 2010</td>
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<td>CS 1400</td>
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<td>PHYS 2210 &amp; PHYS 2215</td>
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<td>PHYS 2220 &amp; PHYS 2225</td>
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<td>General Elective</td>
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### 3rd Year

<table>
<thead>
<tr>
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<th>Hours</th>
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<tr>
<td>MATH 4000</td>
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<td>3 MATH 3400</td>
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<td>MATH Elective (MATH Elective (see</td>
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<td>Upper Division Elective</td>
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### 4th Year

<table>
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<th>Spring Semester</th>
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<tbody>
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<td>MATH 3200</td>
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<td>3 MATH 3900</td>
<td>3</td>
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<tr>
<td>MATH Elective (Approved MATH</td>
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<td>MATH 4900</td>
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<tr>
<td>Upper Division Elective</td>
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<td>General Education (Literature/</td>
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<td>Humanities) (catalog.utahtech.edu/</td>
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Total Hours 120

*NOTE: Please see Math Department Advisor for degree plan

**Mathematics Program Learning Outcomes**

At the successful conclusion of this program, students will be able to:
1. Employ mathematical techniques in computational problems.
2. Interpret mathematical models.
3. Construct quantitative and logical arguments.
4. Apply mathematical knowledge to real world problems.
5. Communicate in mathematical language through the use of proper notation and terminology.
6. Explore and analyze mathematical concepts using technology as appropriate.