# MATHEMATICS (BS) - GENERAL TRACK

## Program Overview

The Bachelor of Science in Mathematics features a traditional, rigorous plan of study designed to expose the student to a broad range of mathematics at a level sufficient for graduate studies in math or statistics.

## Career Opportunities

Teacher (with the completion of additional preparation for certification), trade assistant, quantitative analyst, graduate studies

## Program of Study

| Code | Title | Credit Hours |
|---|---|---|
| **Core IMPACTS Area : Institutional Priorities** [1] | | **4-5** |
| Choose one of the following communication options | | 3 |
| COMM 1110 | Public Speaking | |
| Foreign Language Course Options | | |
| AMSL, ARAB, CHIN, FREN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT, SPAN - 1001, 1002, 2001, 2002; SWAH - 1001, 1002. | | |
| Take one of the following courses | | 1-2 |
| ITDS 1779 | Scholarship Across the Disciplines | |
| LEAD 1705 | Introduction to Servant Leadership | |
| PERS 1506 | Perspectives 1-hour | |
| PERS 1507 | Perspectives 2-hour | |
| **Core IMPACTS Area : Mathematics & Quantitative Skills** [1] | | **3-7** |
| DATA 1501 | Introduction to Data Science | 3 |
| MATH 1001 | Quantitative Skills and Reasoning | 3 |
| MATH 1101 | Introduction to Mathematical Modeling | 3 |
| MATH 1111 | College Algebra | 3 |
| MATH 1113 | Pre-Calculus | 4 |
| MATH 1125 | Applied Calculus | 3 |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |
| MATH 1132 | Calculus with Analytic Geometry II | 4 |
| MATH 1165 | Computer-Assisted Problem Solving | 3 |
| MATH 1401 | Introduction to Statistics | 3 |
| MATH 1501 | Calculus I | 4 |
| MATH 2125 | Introduction to Discrete Mathematics | 3 |
| STAT 1401 | Elementary Statistics | 3 |
| **Core IMPACTS Area : Political Science and U.S. History** | | **6** |
| HIST 2111 | U. S. History to 1865 | 3 |
| or HIST 2112 | U. S. History since 1865 | |
| POLS 1101 | American Government | 3 |
| **Core IMPACTS Area : Arts, Humanities, and Ethics** | | **6** |
| Select one Fine Arts course | | 3 |
| ARTH 1100 | Art Appreciation | |
| ARTH 2125 | Introduction to the History of Art I– Prehistoric through Gothic | |
| ARTH 2126 | Introduction to the History of Art II– Renaissance through Modern | |
| MUSC 1100 | Music Appreciation | |
| THEA 1100 | Theatre Appreciation | |
| ITDS 1145 | Comparative Arts [2] | |
| Select one Humanities course | | 3 |
| ENGL 2111 | World Literature I | |
| ENGL 2112 | World Literature II | |
| ITDS 1155 | The Western Intellectual Tradition | |
| ITDS 1774 | Introduction to Digital Humanities | |
| PHIL 2010 | Introduction to Philosophy | |
| ITDS 1145 | Comparative Arts [2] | |
| **Core IMPACTS Area : Communicating in Writing** | | **6** |
| ENGL 1101 | English Composition I | 3 |
| ENGL 1102 | English Composition II | 3 |
| **Core IMPACTS Area : Technology, Mathematics, and Sciences** [1,3] | | **7-11** |
| ANTH 1145 | Human Origins | 3 |
| ASTR 1105 | Descriptive Astronomy: The Solar System | 3 |
| ASTR 1106 | Descriptive Astronomy: Stars and Galaxies | 3 |
| ASTR 1305 | Descriptive Astronomy Lab | 1 |
| ATSC 1112 | Understanding the Weather | 3 |
| ATSC 1112L | Understanding the Weather Lab | 1 |
| BIOL 1125 | Contemporary Issues in Biology Non-Lab | 3 |
| BIOL 1215K | Introductory Biology | 4 |
| BIOL 1225K | Contemporary Issues in Biology with Lab | 4 |
| CHEM 1151 & 1151L | Survey of Chemistry I and Survey of Chemistry I Lab | 4 |
| CHEM 1152 & 1152L | Survey of Chemistry II and Survey of Chemistry II Lab | 4 |
| CHEM 1211 & 1211L | Principles of Chemistry I and Principles of Chemistry I Lab | 4 |
| CHEM 1212 & 1212L | Principles of Chemistry II and Principles of Chemistry II Lab | 4 |
| CPSC 1105 | Introduction to Computing Principles and Technology | 3 |
| CPSC 1301K | Computer Science I | 4 |
| ENVS 1105 | Environmental Studies | 3 |
| ENVS 1105L | Environmental Studies Laboratory | 1 |
| ENVS 1205K | Sustainability and the Environment | 4 |
| GEOG 2215 | Introduction to the Geographic Information Systems | 3 |
| GEOL 1110 | Natural Disasters: Our Hazardous Environment | 3 |
| GEOL 1121 | Introductory Geoscience I: Physical Geology | 3 |
| GEOL 1121L | Introductory Geoscience I: Physical Geology Lab | 1 |
| GEOL 1122 | Introductory Geo-sciences II: Historical Geology | 3 |
| GEOL 1322 | Introductory Geo-sciences II: Historical Geology Lab | 1 |
| GEOL 2225 | The Fossil Record | 4 |
| PHYS 1111 & PHYS 1311 | Introductory Physics I and Introductory Physics I Lab | 4 |
| PHYS 1112 & PHYS 1312 | Introductory Physics II and Introductory Physics II Lab | 4 |
| PHYS 1125 | Physics of Color and Sound | 3 |
| PHYS 1325 | Physics of Color and Sound Lab | 1 |
| PHYS 2211 & PHYS 2311 | Principles of Physics I and Principles of Physics I Lab | 4 |

| | | |
|---|---|---|
| PHYS 2212 & PHYS 2312 | Principles of Physics II and Principles of Physics II Lab | 4 |
| **Core IMPACTS Area : Social Sciences** | | **6** |
| Select one Behavioral Science course | | |
| ECON 2105 | Principles of Macroeconomics | |
| ECON 2106 | Principles of Microeconomics | |
| PHIL 2030 | Moral Philosophy | |
| PSYC 1101 | Introduction to General Psychology | |
| SOCI 1101 | Introduction to Sociology | |
| Select one World Cultures course | | 3 |
| ANTH 1107 | Discovering Archaeology | |
| ANTH 1105 | Cultural Anthropology | |
| ANTH 2105 | Ancient World Civilizations | |
| ANTH 2136 | Language and Culture | |
| ENGL 2136 | Language and Culture | |
| GEOG 1101 | World Regional Geography | |
| HIST 1111 | World History to 1500 | |
| HIST 1112 | World History since 1500 | |
| ITDS 1156 | Understanding Non-Western Cultures | |
| **Core IMPACTS Total Hours** | | **42** |
| **Health and Wellness** | | **3** |
| KINS 1106 | Lifetime Wellness | 2 |
| or PHED 1205 | Concepts of Fitness | |
| Select one of the following | | 1 |
| Any PEDS course | | |
| MUSC 1206 | Body Mapping (Music Majors Only) | |

[1] The hours applied in the Institutional Priorities; Mathematics & Quantitative Skills; and Technology, Mathematics, and Sciences areas must add to 18 credit hours.

[2] ITDS 1145 Comparative Arts, though listed under both Fine Arts and Humanities, may be taken only once.

[3] At least 4 of the credit hours in this area must be in a lab science course.

# Major Requirements

| Code | Title | Credit Hours |
|---|---|---|
| **Core Requirements** | | |
| Complete the core requirements for this program | | 45 |
| Core Total | | 45 |
| **Field of Study Requirements** | | |
| Select the following course (the extra credit is counted in Required for the Major): | | 3 |
| CPSC 1301K | Computer Science I | |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |
| MATH 1132 | Calculus with Analytic Geometry II | 4 |
| MATH 2115 | Introduction to Linear Algebra | 3 |
| MATH 2135 | Calculus with Analytic Geometry 3 | 4 |
| STAT 1401 | Elementary Statistics | 3 |
| Field of Study Requirements Total | | 21 |
| **Required for the Major** | | |
| 1 credit from the following (Field of Study Requirements): | | 1 |
| CPSC 1301K | Computer Science I | |
| MATH 2125 | Introduction to Discrete Mathematics | 3 |
| MATH 3107 | Differential Equations | 3 |
| MATH 3155 | Introduction to Mathematical Proofs | 3 |
| MATH 3175 | Introduction to Probability | 3 |
| MATH 4795 | Senior Seminar in Mathematics | 3 |
| MATH 5111U | Introduction to Abstract Algebra I | 3 |
| MATH 5151U | Introduction to Real Analysis I | 3 |
| MATH 5175U | Mathematical Statistics | 3 |
| Required for the Major Total | | 25 |
| **Major Electives** | | |
| Select 9 credits of MATH or STAT or DATA courses at the 3000 level or higher [2] | | 9 |
| Major Electives Total | | 9 |
| **General Electives** | | |
| Select one of the following options: | | 25-26 |
| Non-Teaching Option: | | |
| Select 9 credits at 3000-level or higher | | |
| Select 16-17 credits at the 1000-level or higher (6 credits in French or German at the 2000-level or higher are recommended) | | |
| UTeach Columbus Teaching Option: [3] | | |
| SPED 4115 | Teaching Math and Science to Exceptional Learners (Minimum grade of B is required for certification) | |
| UTCH 1201 | Step I: Inquiry Approaches to Teaching | |
| UTCH 1202 | Step II: Inquiry-Based Lesson Design | |
| UTCH 2105 | Knowing and Learning in Mathematics and Science | |
| UTCH 2203 | Step III: Technological and Pedagogical Content Knowledge | |
| UTCH 3115 | Functions and Modeling for Secondary Mathematics Teachers | |
| UTCH 3205 | Classroom Interactions | |
| UTCH 4205 | Inquiry-Based Instruction | |
| UTCH 4485 | Student Teaching | |
| UTCH 4795 | Student Teaching Seminar | |
| General Electives Total | | 25-26 |
| **Total Credit Hours** | | **125-126** |

[1] Guided elective will be selected from among freshman and sophomore level courses in science, business, and education based upon student interests and career goals and requiring the approval of a faculty advisor and the Mathematics Department Chair.

[2] STAT 5176U Statistical Design and Analysis of Experiments and STAT 5177U Applied Regression Analysis are recommended for graduate study in statistics. MATH 5135U College Geometry and MATH 5185U History of Mathematics are required for teacher certification.

[3] Only two attempts allowed for each of the following courses.

# Program Map

| Course | Title | Credit Hours |
|---|---|---|
| **First Year** | | |
| **Fall** | | |
| MATH 1113 | Pre-Calculus (minimum grade of C) | 4 |
| | (Apply 3 credits to the area of Mathematics and Quantitative Skills and 1 credit to Program Requirements. | |
| ENGL 1101 | English Composition I (minimum grade of C) | 3 |
| Technology, Mathematics, and Sciences | Lab Science | 4 |
| Institutional Priorities | COMM 1110 Public Speaking or Foreign Language | 3 |
| Social Sciencees | Behavioral Science | 3 |
| | **Credit Hours** | **17** |
| **Spring** | | |
| MATH 1131 | Calculus with Analytic Geometry I (minimum grade of C) | 4 |
| ENGL 1102 | English Composition II (minimum grade of C) | 3 |
| STAT 1401 | Elementary Statistics (minimum grade of C) | 3 |
| CPSC 1301K | Computer Science I (minimum grade of C) | 4 |
| | (Apply 3 credits to Field of Studies Requirements and 1 credit to Program Requirements.) | |
| Institutional Priorities | ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2) | 1 |
| | **Credit Hours** | **15** |
| **Second Year** | | |
| **Fall** | | |
| MATH 1132 | Calculus with Analytic Geometry II (minimum grade of C) [1] | 4 |
| MATH 2125 | Introduction to Discrete Mathematics (minimum grade of C) | 3 |
| MATH 2115 | Introduction to Linear Algebra (minimum grade of C) | 3 |
| Arts, Humanities, and Ethics | Humanities Course [2] | 3 |
| Social Sciences | World Cultures | 3 |
| | **Credit Hours** | **16** |
| **Spring** | | |
| MATH 3107 | Differential Equations (minimum grade of C) | 3 |
| MATH 3155 | Introduction to Mathematical Proofs (minimum grade of C) | 3 |
| MATH 3175 | Introduction to Probability (minimum grade of C) | 3 |
| Arts, Humanities, and Ethics | Fine Arts Course | 3 |
| MATH 2135 | Calculus with Analytic Geometry 3 (minimum grade of C) | 4 |
| | **Credit Hours** | **16** |
| **Third Year** | | |
| **Fall** | | |
| POLS 1101 | American Government | 3 |
| MATH 5151U | Introduction to Real Analysis I (minimum grade of C) | 3 |
| MATH 5175U | Mathematical Statistics (minimum grade of C) | 3 |
| Technology, Mathematics, and Sciences | Lab Science | 4 |
| KINS 1106 or PHED 1205 | Lifetime Wellness or Concepts of Fitness | 2 |
| Health and Wellness | PEDS elective | 1 |
| | **Credit Hours** | **16** |
| **Spring** | | |
| MATH 5111U | Introduction to Abstract Algebra I (minimum grade of C) | 3 |
| Program Electives | Program Elective (minimum grade of C) | 3 |
| Program Electives | Program Elective (minimum grade of C) | 3 |
| General Electives | General Elective [3] | 3 |
| General Electives | Upper Level General Elective [3] | 3 |
| | **Credit Hours** | **15** |
| **Fourth Year** | | |
| **Fall** | | |
| MATH 4795 | Senior Seminar in Mathematics (minimum grade of C) | 3 |
| Program Electives | Program Elective (minimum grade of C) | 3 |
| General Electives | General Elective [3] | 1 |
| General Electives | General Elective [3] | 3 |
| General Electives | Upper Level General Elective [3] | 3 |
| | **Credit Hours** | **13** |
| **Spring** | | |
| General Electives | Upper Level General Elective [3] | 3 |
| General Electives | General Elective [3] | 3 |
| General Electives | General Elective [3] | 3 |
| General Electives | General Elective [3] | 3 |
| HIST 2111 or HIST 2112 | U. S. History to 1865 or U. S. History since 1865 | 3 |
| | **Credit Hours** | **15** |
| | **Total Credit Hours** | **123** |

1. If MATH 1132 is used in Technology, Mathematics, and Sciences, then one extra hour will count in Field of Studies Requirements.
2. ITDS 2125 Historical Perspectives on the Philosophy of Science and Mathematics recommended for the UTeach program.
3. If an elective course is taken to complete the UTeach program or minor, then a C or better is required.

**The student needs to work with his/her advisor to choose appropriate elective courses to make sure that he/she meets the total hours required for the program (123 or 125-128 with UTeach).**

## Admission Requirements

There are no program specific admission requirements.

## Additional Program Requirements

There are no program specific academic regulations.