MATHEMATICS (BS)

Degree: Bachelor of Science
Major: Mathematics
Program Code: 3424

About This Major . . .

Mathematics majors get jobs in a wide variety of areas. Our graduates have worked for local businesses, have run their own businesses, and have worked for scientific companies. Other graduates have continued their educations by attending graduate school (in mathematics, computer science and engineering), law school, medical school, and veterinary school.

For more information on what you can do with this major, visit Career Services' What to Do with a Major? resource and the Mathematics website.

All CMU baccalaureate graduates are expected to demonstrate proficiency in specialized knowledge/applied learning, quantitative fluency, communication fluency, critical thinking, personal and social responsibility, and information literacy. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

a. Construct multi-step problem-solving strategies and communicate solutions effectively in written form. (Specialized Knowledge, Quantitative Fluency)
b. Use mathematical software (including calculators) to aid in problem-solving and investigation, and recognize its limitations. (Applied Learning)
c. Prove propositions deductively from definitions and theorems, using clear and precise prose. (Critical Thinking)
d. Investigate, discuss, and respond to ethical and social challenges in a mathematical context. (Communication Fluency, Personal and Social Responsibility, Information Literacy)
e. Research an advanced topic in mathematics and deliver written and oral presentations. (Specialized Knowledge, Communication Fluency, Information Literacy)

Requirements

Each section below contains details about the requirements for this program. Select a header to expand the information/requirements for that particular section of the program's requirements.

To print or save an overview of this program's information, including the program description, learning outcomes, requirements, suggested course sequencing (if applicable), and advising and graduation information, scroll to the bottom of the left-hand navigation menu and select "Print Options." This will give you the options to either "Send Page to Printer" or "Download PDF of This Page." The "Download PDF of This Page" option prepares a much more concise presentation of all program information. The PDF is also printable and may be preferable due to its brevity.

Institutional Degree Requirements

The following institutional degree requirements apply to all CMU baccalaureate degrees. Specific programs may have different requirements that must be met in addition to institutional requirements.

- 120 semester hours minimum.
- Students must complete a minimum of 30 of the last 60 hours of credit at CMU, with at least 15 semester hours in major discipline courses numbered 300 or higher.
- 40 upper-division credits (an alternative credit limit applies to the Bachelor of Applied Science degree).
- 2.00 cumulative GPA or higher in all CMU coursework.
- A course may only be used to fulfill one requirement for each degree/certificate.
- No more than six semester hours of independent study courses can be used toward the degree.
- Non-traditional credit, such as advanced placement, credit by examination, credit for prior learning, cooperative education and internships, cannot exceed 30 semester credit hours for a baccalaureate degree. A maximum of 15 of the 30 credits may be for cooperative education, internships, and practica.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Degree Requirements.
- The Catalog Year determines which program sheet and degree requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

Essential Learning Requirements

(31 semester hours)

See the current catalog for a list of courses that fulfill the requirements below. If a course is an Essential Learning option and a requirement for your major, you must use it to fulfill the major requirement and make a different selection for the Essential Learning requirement.

Code	Title	Semester Credit Hours
English [1]		
ENGL 111	English Composition I-GTCO1	3
ENGL 112	English Composition II-GTCO2	3
Mathematics [1]		
MATH 151	Calculus I-GT-MA1 [2]	3
History		
Select one History course		3
Humanities		
Select one Humanities course		3
Social and Behavioral Sciences		
Select one Social and Behavioral Sciences course		3
Select one Social and Behavioral Sciences course		3
Fine Arts		
Select one Fine Arts course		3
Natural Sciences		
Select one Natural Sciences course		3

Select one Natural Sciences course with a lab		4
Total Semester Credit Hours		**31**

[1] Must receive a grade of "C" or better and must be complete by the time the student has 60 semester hours.

[2] This is a 5 credit course. 3 credits apply to the Essential Learning requirements and 2 credits apply to electives.

Other Lower Division Requirements

Code	Title	Semester Credit Hours
Wellness Requirement		
KINE 100	Health and Wellness	1
Select one Activity course		1
Essential Learning Capstone [1]		
ESSL 290	Maverick Milestone	3
ESSL 200	Essential Speech	1
Total Semester Credit Hours		**6**

[1] Essential Learning Capstone must be taken after completion of the Essential Learning English and Mathematics requirements, and when a student has earned between 45 and 75 hours.

Foundation Courses

Code	Title	Semester Credit Hours
MATH 152	Calculus II	5
STAT 200	Probability and Statistics-GTMA1	3
Total Semester Credit Hours		**8**

Program Specific Degree Requirements

(43-46 semester hours, must maintain a 2.5 cumulative GPA in the coursework in this area. At most one “D” may be used in completing major requirements.)

Code	Title	Semester Credit Hours
Core Courses		
MATH 150	Topics and Careers in Mathematics	1
MATH 225	Computational Linear Algebra	3
MATH 253	Calculus III	4
MATH 492	Senior Capstone	3
Select one of the following:		4
CSCI 110 & 110L	Beginning Programming and Beginning Programming Laboratory	
CSCI 111	CS1: Foundations of Computer Science	
CSCI 130	Introduction to Engineering Computer Science	
Concentration Courses		
MATH 240	Introduction to Advanced Mathematics	4
MATH 310	Number Theory	3
MATH 352	Advanced Calculus	3
MATH 452	Intro to Real Analysis I	3
MATH 490	Abstract Algebra I	3
Total Semester Credit Hours		**31**

Code	Title	Semester Credit Hours
Concentration Electives		
Select four of the following: [1]		12-15
MATH 260	Differential Equations	
or MATH 236	Differential Equations and Linear Algebra	
MATH 325	Linear Algebra	
MATH 360	Methods of Applied Mathematics	
MATH 361	Numerical Analysis	
MATH 362	Fourier Analysis	
MATH 365	Mathematical Modeling	
MATH 366	Methods of Applied Mathematics II	
MATH 369	Discrete Structures I	
MATH 370	Discrete Structures II	
MATH 386	Geometries	
MATH 396	Topics	
or MATH 496	Topics	
MATH 420	Introduction to Topology	
MATH 430	Mathematical Logic	
MATH 450	Complex Variables	
MATH 460	Advanced Linear Algebra	
MATH 453	Intro to Real Analysis II	
MATH 466	Methods of Applied Mathematics III	
MATH 491	Abstract Algebra II	
STAT 301	Computational Statistics	
or STAT 350	Mathematical Statistics I	
Total Semester Credit Hours		**12-15**

[1] At least one selected course must be at the 400-level. At most one topics course, which must be 3 semester hours, can be used as one of these four courses.

General Electives

All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 29-32 semester hours; 10-15 hours of upper division may be needed.

Code	Title	Semester Credit Hours
MATH 151	Calculus I-GT-MA1	2
Select additional electives		27-30
Total Semester Credit Hours		**29-32**

Suggested Course Plan

While the sequencing below culminates in a total of 117-124 semester credit hours, students must complete a minimum of 120 semester credit hours as required for completion of the degree, including satisfactory

completion of all required courses. Plan to complete requirements with varying hour options accordingly.

First Year		
Fall Semester		**Semester Credit Hours**
MATH 151	Calculus I-GT-MA1	5
ENGL 111	English Composition I-GTCO1	3
KINA Activity		1
KINE 100	Health and Wellness	1
Essential Learning - Natural Science		3
Essential Learning - Social and Behavioral Sciences		3
	Semester Credit Hours	**16**
Spring Semester		
MATH 152	Calculus II	5
MATH 150	Topics and Careers in Mathematics	1
ENGL 112	English Composition II-GTCO2	3
Select one of the following:		4
CSCI 110 & 110L	Beginning Programming and Beginning Programming Laboratory	
CSCI 111	CS1: Foundations of Computer Science	
CSCI 130	Introduction to Engineering Computer Science	
Essential Learning - Social and Behavioral Sciences		3
	Semester Credit Hours	**16**
Second Year		
Fall Semester		
MATH 240	Introduction to Advanced Mathematics	4
MATH 253	Calculus III	4
Essential Learning - Fine Arts		3
Essential Learning - History		3
STAT 200	Probability and Statistics-GTMA1	3
	Semester Credit Hours	**17**
Spring Semester		
MATH 225	Computational Linear Algebra	3
MATH 352	Advanced Calculus	3
Essential Learning - Natural Science with Lab		4
Essential Learning - Humanities		3
General Elective		3
	Semester Credit Hours	**16**
Third Year		
Fall Semester		
ESSL 200	Essential Speech	1
ESSL 290	Maverick Milestone	3
General Electives		6
MATH 310	Number Theory	3
MATH 452	Intro to Real Analysis I	3
	Semester Credit Hours	**16**
Spring Semester		
MATH 490	Abstract Algebra I	3
Concentration Elective		3-4
General Electives		9
	Semester Credit Hours	**15-16**
Fourth Year		
Fall Semester		
Concentration Elective		3-4
Concentration Elective, 400-level		3-4
General Elective		3
MATH 492	Senior Capstone	3
	Semester Credit Hours	**12-14**
Spring Semester		
Concentration Elective		3-4
General Electives		6-9
	Semester Credit Hours	**9-13**
	Total Semester Credit Hours	**117-124**

Advising and Graduation

Advising Process and DegreeWorks

Documentation on the pages related to this program is intended for informational purposes to help determine what courses and associated requirements are needed to earn a degree. The suggested course sequencing outlines how students could finish degree requirements. Some courses are critical to complete in specific semesters, while others may be moved around. Meeting with an academic advisor is essential in planning courses and altering the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for her/his intended degree(s).

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a degree and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process

Students must complete the following in the first two months of the semester prior to completing their degree requirements:

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found at http://www.coloradomesa.edu/registrar/graduation.html.

If a student's petition for graduation is denied, it will be her/his responsibility to consult the Registrar's Office regarding next steps.