APPLIED MATHEMATICS, MATHEMATICS (BS)

Degree: Bachelor of Science
Major: Mathematics
Concentration: Applied Mathematics
Program Code: 3437

About This Major . . .

Applied mathematicians use mathematics to solve problems. This program provides mathematics coursework commonly found in applied math settings. Applied mathematics graduates can choose to find work in a variety of areas, or may choose to continue their educations by attending graduate school in areas such as applied mathematics, computer science and engineering.

For more information on what you can do with this major, visit Career Services' What to Do with a Major? (https://www.coloradomesa.edu/career/students/explore/major.html) resource and the Society for Industrial and Applied Mathematics (https://www.siam.org/Students-Education/Programs-Initiatives/Thinking-of-a-Career-in-Applied-Mathematics/) career information web page.

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:

1. Use methods of applied mathematics to model and solve applied problems (Specialized Knowledge, Applied Learning, Quantitative Fluency)
2. Use mathematical software (including calculators) to aid in problem-solving and investigation, and understand its limitations. (Applied Learning)
3. Prove propositions deductively from definitions and theorems, using clear and precise prose. (Critical Thinking)
4. Investigate, discuss, and respond to ethical and social challenges in a mathematical context. (Communication Fluency, Personal and Social Responsibility, Information Literacy)
5. Demonstrate comprehension of applied mathematics and deliver a substantial 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 with a lab	4
Select one Natural Sciences course	3
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

(50-53 semester hours, must maintain a 2.50 cumulative GPA or higher in 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		
CSCI 310	Advanced Programming:	1-3
MATH 240	Introduction to Advanced Mathematics	4
MATH 260	Differential Equations	3
MATH 360	Methods of Applied Mathematics	3
MATH 365	Mathematical Modeling	3
MATH 366	Methods of Applied Mathematics II	3
MATH 466	Methods of Applied Mathematics III	3
Concentration Electives		
Category 1		
Select one of the following:		3
STAT 301	Computational Statistics	
STAT 312	Correlation and Regression	
STAT 425	Design and Analysis of Experiments	
Category 2		
Select one of the following:		3-4
MATH 361	Numerical Analysis	
MATH 362	Fourier Analysis	
MATH 369	Discrete Structures I	
CSCI 380	Operations Research	
Category 3		
Select one of the following:		3
MATH 325	Linear Algebra	
MATH 352	Advanced Calculus	
MATH 450	Complex Variables	
PHYS 471	Computational Physics I	
Total Semester Credit Hours		44-47

General Electives

All college level courses appearing on your final transcript, not listed above that will bring your total semester hours to 120 hours. 28-31 semester hours; 9-12 hours of upper division may be needed.

Code	Title	Semester Credit Hours
MATH 151	Calculus I-GT-MA1	2
Select additional electives		26-29
Total Semester Credit Hours		28-31

Suggested Course Plan

While the sequencing below culminates in a total of 117-123 semester credit hours, students must complete a minimum of 120 semester credit hours as required for completion of this 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
ENGL 112	English Composition II-GTCO2	3
MATH 150	Topics and Careers in Mathematics	1
Select one of the following:		4
CSCI 111	CS1: Foundations of Computer Science	
CSCI 110 & 110L	Beginning Programming and Beginning Programming Laboratory	
CSCI 130	Introduction to Engineering Computer Science	
Essential Learning - Social and Behavioral Sciences		3
	Semester Credit Hours	16
Second Year		
Fall Semester		
Essential Learning - Fine Arts		3
Essential Learning - History		3
MATH 240	Introduction to Advanced Mathematics	4
MATH 253	Calculus III	4
STAT 200	Probability and Statistics-GTMA1	3
	Semester Credit Hours	17
Spring Semester		
Essential Learning - Humanities		3
Essential Learning - Natural Science with Lab		4
General Elective		3
MATH 225	Computational Linear Algebra	3
MATH 260	Differential Equations	3
	Semester Credit Hours	16
Third Year		
Fall Semester		
Concentration Elective		3
CSCI 310	Advanced Programming:	1-3
ESSL 200	Essential Speech	1
ESSL 290	Maverick Milestone	3
General Elective		3
MATH 360	Methods of Applied Mathematics	3
	Semester Credit Hours	14-16
Spring Semester		
MATH 366	Methods of Applied Mathematics II	3
MATH 365	Mathematical Modeling	3
Concentration Elective		3-4
Electives		6
	Semester Credit Hours	15-16
Fourth Year		
Fall Semester		
MATH 466	Methods of Applied Mathematics III	3
MATH 492	Senior Capstone	3
General Electives		6
	Semester Credit Hours	12
Spring Semester		
Concentration Elective		3
General Electives		8-11
	Semester Credit Hours	11-14
	Total Semester Credit Hours	117-123

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.