

# MATHEMATICS, BACHELOR OF ARTS

## Program Goals

- Educate students to effectively use quantitative and analytical methods and the language of mathematics.
- Prepare students for professional careers and graduate studies in areas requiring advanced analytical skills, including actuarial science, computer science, engineering, operations research, biomathematics, cryptography, finance, pure and applied mathematics and teaching.
- Promote a scholarly attitude of mind that enables students to effectively use mathematics with the ability to think critically, synthesize their knowledge and move to higher levels of independent thinking.

## Expected Student Outcomes

Upon successful completion of the mathematics major, students will:

- Learn, understand and apply mathematics from the core mathematical disciplines of calculus, abstract algebra, analysis, modeling, differential equations, geometry, probability, and statistics.
- Formulate and solve problems using mathematical tools, while working alone or in groups on routine problems, non-routine and open-ended problems, problems involving applications to other fields, problems involving real-world data, and abstract problems within mathematics.
- Create, analyze and apply mathematical abstraction to real problems by understanding and producing formal mathematical arguments with an appreciation for the mathematical standards of rigor, elegance, and beauty.
- Learn independently, locate and use appropriate sources of technical material, and make use of modern computational tools.
- Produce convincing, precise verbal and written communications of technical material.

## Outcomes Assessment Activities

- Faculty advisors meet individually with students on a regular basis to help with schedule planning and to discuss the student's progress toward educational and career goals. Advisors maintain a record of each student's performance in his/her program of study.
- During the senior year, each major takes the Mathematics Field Achievement Test. This test measures a student's achievement level in comparison with students throughout the country.

## Specific Program Requirements

- All mathematics majors must complete the mathematics core curriculum: MATH 126 Calculus & Analytic Geometry I (GT-MA1) (5 c.h.), MATH 224 Calculus and Analytic Geometry II (5 c.h.), MATH 307 Introduction to Linear Algebra (4 c.h.), MATH 325 Intermediate Calculus (4 c.h.), MATH 350 Probability (3 c.h.), MATH 421 Introduction to Analysis (4 c.h.), and MATH 427 Abstract Algebra (4 c.h.). Majors are expected to complete core courses numbered above MATH 325 Intermediate Calculus (4 c.h.) at CSU Pueblo.
- All majors must complete a physics course numbered 200 or above.

- Mathematics majors and minors must complete the mathematics courses in their program with grades of C or better.
- MATH 337 Differential Equations I (3 c.h.) is a required elective for all mathematics majors not pursuing secondary education endorsement.
- All majors are required to complete an approved two-term sequence in a laboratory science (CHEM 121 General Chemistry I (GT-SC2) (4 c.h.)/CHEM 121L General Chemistry Lab I (GT-SC1) (1 c.h.) and CHEM 122 General Chemistry II (GT-SC2) (4 c.h.)/CHEM 122L General Chemistry Lab II (GT-SC1) (1 c.h.), or PHYS 221 General Physics I (4 c.h.)/PHYS 221L General Physics I Lab (1 c.h.) and PHYS 222 General Physics II (4 c.h.)/PHYS 222L General Physics II Lab (GT-SC1) (1 c.h.)).
- Mathematics majors must demonstrate proficiency in "an approved" computer language. It is strongly recommended that students complete this requirement within the first 60 credit hours.
- Students seeking the Bachelor of Arts should consult the catalog for the options to complete the foreign language requirement.

Course	Title	Credits
<b>MATH Courses</b>		
MATH 126	Calculus & Analytic Geometry I (GT-MA1)	5
MATH 224	Calculus and Analytic Geometry II	5
MATH 307	Introduction to Linear Algebra	4
MATH 325	Intermediate Calculus	4
MATH 337	Differential Equations I	3
MATH 350	Probability	3
MATH 356	Statistics for Engineers & Scientists	3
MATH 421	Introduction to Analysis	4
MATH 427	Abstract Algebra	4
<b>Electives</b>		
Select 9 credits in Upper-division MATH Electives <sup>1</sup>		9
<b>Other Requirements</b>		
Select 10 credits in a Laboratory Science Sequence		10
Select 4 credits in Computer Programming		4
<b>General Education</b>		
General Education credits		24
<b>Electives</b>		
Select 38 credits		38
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Excluding MATH 360 Elementary Mathematics Concepts I (3 c.h.), MATH 361 Elementary Mathematics Concepts II (3 c.h.), MATH 477 Methods for Teaching Secondary Math (4 c.h.).

## Planning Sheet

Disclaimer: The Planning Sheet is designed as a guide for student's planning their course selections. The information on this page provides only a suggested schedule. Actual course selections should be made with the advice and consent of an academic advisor. While accurately portraying the information contained in the college catalog, this form is not considered a legal substitute for that document. Students should become familiar with the catalog in effect at the time in which they entered the institution.

## 2 Mathematics, Bachelor of Arts

Course	Title	Credits
<b>Year 1</b>		
<b>Fall</b>		
ENG 101	Rhetoric & Writing I (GT-CO1)	3
MATH 126	Calculus & Analytic Geometry I (GT-MA1)	5
General Education		3
Elective		3
<b>Credits</b>		<b>14</b>
<b>Spring</b>		
ENG 102	Rhetoric & Writing II (GT-CO2)	3
MATH 224	Calculus and Analytic Geometry II	5
PHYS 221 or CHEM 121	General Physics I or General Chemistry I (GT-SC2)	4
PHYS 221L or CHEM 121L	General Physics I Lab or General Chemistry Lab I (GT-SC1)	1
<b>Credits</b>		<b>13</b>
<b>Year 2</b>		
<b>Fall</b>		
MATH 325	Intermediate Calculus	4
MATH 337	Differential Equations I	3
PHYS 222 or CHEM 122	General Physics II or General Chemistry II (GT-SC2)	4
PHYS 222L or CHEM 122L	General Physics II Lab (GT-SC1) or General Chemistry Lab II (GT-SC1)	1
Elective		3
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
MATH 307	Introduction to Linear Algebra	4
MATH 350	Probability	3
General Education	<sup>3</sup> credits must be World Language course.	6
Elective		3
<b>Credits</b>		<b>16</b>
<b>Year 3</b>		
<b>Fall</b>		
MATH 356	Statistics for Engineers & Scientists	3
General Education	<sup>3</sup> credits must be World Language course.	6
Elective		6
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
General Education		3
Elective		12
<b>Credits</b>		<b>15</b>
<b>Year 4</b>		
<b>Fall</b>		
MATH 421	Introduction to Analysis	4
Elective	<sup>6</sup> credits must be upper division Mathematics course.	12
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 427	Abstract Algebra	4
Elective	<sup>3</sup> credits must be upper division Mathematics course.	11
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>119</b>