

# Mathematics

The B.S. in Mathematics prepares students for graduate study; teaching; service in science, government and industry; and supporting roles in the social, biological, and physical sciences. This program emphasizes mathematics and statistics and provides students with considerable flexibility in choosing electives outside the major. It is recommended that students seek the advice of faculty regarding career opportunities and choice of a suitable minor.

## Program Requirements

In addition to University's general requirements, students seeking the B.S. in Mathematics must meet the requirements listed below.

Students should consult with their academic advisor for courses which may satisfy both the general education requirements and prerequisites. A grade of C- or better is required for all Major courses.

## General Education

In addition to the General Education requirements listed on this page, students must satisfy all additional University requirements, including the Gordon Rule, multicultural, and foreign language requirements. With appropriate planning and coordination with an academic advisor, students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the "University Requirements" (<http://catalog.uwf.edu/undergraduate/universityrequirements>) section of this catalog.

## General Education Curriculum:

### Communication

ENC 1101	English Composition I	3
ENC 1102	English Composition II	3

### Mathematics

Choose one course from Group A and one Additional course from either Group A or Group B 6

#### Group A

MAC 1105	College Algebra
MAC 1105C	College Algebra with Lab
MAC 2311	Analytic Geometry and Calculus I
MGF 1106	Mathematics for Liberal Arts I
MGF 1107	Mathematics for Liberal Arts II
STA 2023	Elements of Statistics

#### Group B

MAC 1114	Trigonometry
MAC 1140	Precalculus Algebra
MAC 2233	Calculus with Business Applications
MAC 2312	Analytic Geometry and Calculus II

### Social Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

AMH 2020	United States since 1877
ANT 2000	Introduction to Anthropology
ECO 2013	Principles of Economics Macro

POS 2041	American Politics
PSY 2012	General Psychology
SPM 2010	Sport in Global Society
SYG 2000	Introduction to Sociology
Group B	
AMH 2010	United States to 1877
ANT 2400	Current Cultural Issues
ANT 2100	Introduction to Archaeology
CCJ 2002	Survey of Crime and Justice
CPO 2002	Comparative Politics
DEP 2004	Human Development Across the Lifespan
EUH 1000	Western Perspectives I
EUH 1001	Western Perspectives II
FIN 2104	Personal Financial Planning
GEA 2000	Nations and Regions of the World
GEB 1011	Introduction to Business
IDH 1041	Honors Core 2
INR 2002	International Politics
MMC 2000	Principles of Mass Communication
PLA 2013	Survey of American Law
SOW 2192	Understanding Relationships in the 21st Century
SYG 2010	Current Social Problems

## Humanities

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

ARH 1000	Art Appreciation
LIT 2000	Introduction to Literature
MUL 2010	Music Appreciation
PHI 2010	Introduction to Philosophy
THE 2000	Theatre Appreciation

#### Group B

AML 2010	American Literature I
AML 2020	American Literature II
AML 2072	Sex, Money, and Power in American Literature
ARH 2050	Western Survey I: Prehistory to the Medieval Period
ARH 2051	Western Survey II: Renaissance to Contemporary
ART 1015C	Exploring Artistic Vision
ART 2821	Art and Visual Culture Today
CRW 2001	Introduction to Creative Writing
ENL 2010	History of English Literature I
ENL 2020	History of English Literature II
IDH 1040	Honors Core 1
MUH 2930	The Music Experience: Special Topics
PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions

THE 2300	Survey of Dramatic Literature	
SPC 2608	Basic Communication Skills	

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A		
AST 1002	Descriptive Astronomy	
BSC 1005	General Biology for Non-Majors	
BSC 1085	Anatomy and Physiology I	
BSC 2010	Biology I	
CHM 1020	Concepts in Chemistry *	
CHM 2045	General Chemistry I *	
ESC 2000	Introduction to Earth Science	
EVR 2001	Introduction to Environmental Science	
PHY 1020	Introduction to Concepts in Physics *	
PHY 2048	Calculus-Based Physics I **	
PHY 2048C	University Physics I - Studio	
PHY 2053	Algebra-Based Physics I **	
Group B		
ANT 2511	Biological Anthropology	
BOT 2010	General Botany	
BSC 1050	Fundamentals of Ecology	
BSC 1086	Anatomy and Physiology II *	
BSC 2011	Biology II	
BSC 2311	Introduction to Oceanography and Marine Biology	
CGS 2060	Excursions in Computing	
CHM 1032	Fundamentals of General Chemistry *	
CHM 2046	General Chemistry II *	
CIS 2530	Introduction to Cybersecurity	
GEO 1200	Physical Geography	
GLY 2010	Physical Geology *	
MCB 1000	Fundamentals of Microbiology *	
PHY 2049	Calculus-Based Physics II **	
PHY 2054	Algebra-Based Physics II *	

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

## Multicultural Requirement

### Multicultural Courses

AML 3604	African American Literature	3
AML 3624	Black Women Writers	3
AML 4015	Topics in Nineteenth-Century American Literature	3

ANT 2000	Introduction to Anthropology	3
ANT 3212	Peoples and Cultures of the World	3
ANT 3312	North American Indians	3
ANT 3363	Japanese Culture	3
ANT 3403	Cultural Ecology	3
ARH 1000	Art Appreciation	3
ARH 2050	Western Survey I: Prehistory to the Medieval Period	3
ARH 2051	Western Survey II: Renaissance to Contemporary	3
ARH 3590	Non-Western Art	3
ARH 4302	Late Renaissance Art in Italy	3
ARH 4305	Early Italian Renaissance Art	3
ARH 4412	The Age of Revolution to Romanticism	3
ARH 4450	Modern Art: 1850-1980	3
ARH 4470	Contemporary Art	3
ARH 4653	Art and Archaeology of Mesoamerica	3
CCJ 3678	Race, Gender, Ethnicity, and Crime	3
COM 3014	Gender Communication	3
COM 3461	Intercultural Communication	3
COM 3014	Gender Communication	3
CPO 2002	Comparative Politics	3
CPO 3055	Dictatorships	3
CPO 3103	Politics of Western Europe	3
CPO 3322	Cuba, Castro and the USA	3
CPO 3513	Politics of the Far East-Japan and China	3
CPO 4303	Politics of Spain, Portugal, and Latin America	3
CPO 4792	Geopolitics	3
EDF 2085	Teaching Diverse Populations	3
ENG 4013	Introduction to Literary Theory	3
EUH 1000	Western Perspectives I	3
EUH 1001	Western Perspectives II	3
EUH 3203	Modern Europe	3
EUH 3411	Rome and the Mediterranean World	3
EUH 3576	Soviet Union since 1917	3
EUH 4239	Age of Empires	3
FRE 4955	Supervised Foreign Language Field Experience Abroad	1-3
GEA 2000	Nations and Regions of the World	3
GEA 4405	Geography of Latin America	3
GEB 4361	International Business	3
GEO 3421	Cultural Geography	3
GEO 3471	Geography of World Affairs	3
HIS 4316	Women in the Atlantic World	3
IDH 1041	Honors Core 2	3
INR 2002	International Politics	3
JPN 3270	Supervised Language Experience Abroad	3
LIT 2000	Introduction to Literature	3
LIT 3233	Postcolonial Literature	3
LIT 4385	Feminist Theory	3
MAN 4102	Management of Diversity	3
MAR 4156	Seminar in International Marketing	3

MMC 3601	Minorities and the Mass Media	3
MMC 4300	Global Communication	3
MUH 2930	The Music Experience: Special Topics	3
NUR 4615	Community and Public Health Nursing	3
NUR 4636	Public Health & Community-based Nursing	3
PSY 3680	Positive Psychology	3
REL 3310	Philosophies of the East	3
REL 4592	Development of Christian Thought	3
SOP 3730	Psychology, Culture, and Society	3
SOW 4233	Human Diversity and Social Justice	3
SOW 4941	Immersive Experiences in Social Work	3
SPN 3400	Advanced Stylistics	3
SPN 4500	Spanish Civilization	3
SPN 4520	Latin American Culture and Civilization	3
SPN 4955	Intensive Spanish Abroad	1-5

### Civic Literacy Requirement

1. Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
  - a. Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
    - i Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
    - ii An understanding of the United States Constitution and its application;
    - iii Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
    - iv An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.
2. Achieving the standard score on one of the following assessments:

Assessment	Standard Score
U.S. Citizenship and Immigration Services Naturalization Test	60
Advanced Placement Government and Politics: United States	3
Advanced Placement United States History	4
CLEP American Government	50

\*BOG 8.006 (<http://www.flbog.edu/board/regulations/regulations.php>)

### Common Prerequisites

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual (<https://dlss.flvc.org/admin-tools/common-prerequisites-manuals>) for course substitutions from Florida colleges and universities.

COP XXXX	Computer Language elective	3
MAC 2311	Analytic Geometry and Calculus I <sup>+,*</sup>	4
MAC 2312	Analytic Geometry and Calculus II <sup>+,*</sup>	4

MAC 2313	Analytic Geometry and Calculus III <sup>+,*</sup>	4
MAP 2302	Differential Equations	3
One lab-based science course (BSC, CHM, PHY, or GLY) <sup>+</sup>		4
Total Hours		22

+ Indicates common prerequisites which can be used to satisfy General Education requirements.

\* Requires a grade of C- or better

### Lower Division Electives

Students must complete sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4000) to meet this elective requirement.

### Major

MAS 3105	Linear Algebra <sup>+</sup>	3
STA 3162C	Applied Statistics <sup>+</sup>	4
MHF 3202	Set Theory and Mathematical Logic <sup>+</sup>	3
MAD 4401	Numerical Analysis <sup>+</sup>	3
STA 4321	Introduction to Mathematical Statistics I <sup>+</sup>	3
MAA 4211	Advanced Calculus I <sup>+</sup>	3
MAS 4301	Abstract Algebra <sup>+</sup>	3
MAT 4500	Undergraduate Proseminar in Mathematics/Statistics <sup>+</sup>	1
3000/4000 level advisor-approved mathematics or statistics electives		9
Total Hours		32

+ Courses included in the major GPA

### Upper Division Electives

Student must complete sufficient 3000/4000 level electives to meet UWF's requirement of 48 sh in the upper division or complete all departmental requirements at the 3000/4000 level, whichever is greater.

Total Hours		28
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## B.A. Mathematics Teaching

### General Education

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### General Education Curriculum:

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ENC 1101	English Composition I	3
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MAC 1105	College Algebra
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MAC 2311	Analytic Geometry and Calculus I
MGF 1106	Mathematics for Liberal Arts I
MGF 1107	Mathematics for Liberal Arts II
STA 2023	Elements of Statistics

### Group B

MAC 1114	Trigonometry
MAC 1140	Precalculus Algebra
MAC 2233	Calculus with Business Applications
MAC 2312	Analytic Geometry and Calculus II

## Social Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

### Group A

AMH 2020	United States since 1877
ANT 2000	Introduction to Anthropology
ECO 2013	Principles of Economics Macro
POS 2041	American Politics
PSY 2012	General Psychology
SPM 2010	Sport in Global Society
SYG 2000	Introduction to Sociology

### Group B

AMH 2010	United States to 1877
ANT 2400	Current Cultural Issues
ANT 2100	Introduction to Archaeology
CCJ 2002	Survey of Crime and Justice
CPO 2002	Comparative Politics
DEP 2004	Human Development Across the Lifespan
EUH 1000	Western Perspectives I
EUH 1001	Western Perspectives II
FIN 2104	Personal Financial Planning
GEA 2000	Nations and Regions of the World
GEB 1011	Introduction to Business
IDH 1041	Honors Core 2
INR 2002	International Politics
MMC 2000	Principles of Mass Communication
PLA 2013	Survey of American Law
SOW 2192	Understanding Relationships in the 21st Century
SYG 2010	Current Social Problems

## Humanities

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### Group A

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LIT 2000	Introduction to Literature

MUL 2010	Music Appreciation
PHI 2010	Introduction to Philosophy
THE 2000	Theatre Appreciation

### Group B

AML 2010	American Literature I
AML 2020	American Literature II
AML 2072	Sex, Money, and Power in American Literature
ARH 2050	Western Survey I: Prehistory to the Medieval Period
ARH 2051	Western Survey II: Renaissance to Contemporary
ART 1015C	Exploring Artistic Vision
ART 2821	Art and Visual Culture Today
CRW 2001	Introduction to Creative Writing
ENL 2010	History of English Literature I
ENL 2020	History of English Literature II
IDH 1040	Honors Core 1
MUH 2930	The Music Experience: Special Topics
PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions
THE 2300	Survey of Dramatic Literature
SPC 2608	Basic Communication Skills

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

### Group A

AST 1002	Descriptive Astronomy
BSC 1005	General Biology for Non-Majors
BSC 1085	Anatomy and Physiology I
BSC 2010	Biology I
CHM 1020	Concepts in Chemistry *
CHM 2045	General Chemistry I *
ESC 2000	Introduction to Earth Science
EVR 2001	Introduction to Environmental Science
PHY 1020	Introduction to Concepts in Physics *
PHY 2048	Calculus-Based Physics I **
PHY 2048C	University Physics I - Studio
PHY 2053	Algebra-Based Physics I **

### Group B

ANT 2511	Biological Anthropology
BOT 2010	General Botany
BSC 1050	Fundamentals of Ecology
BSC 1086	Anatomy and Physiology II *
BSC 2011	Biology II
BSC 2311	Introduction to Oceanography and Marine Biology *
CGS 2060	Excursions in Computing
CHM 1032	Fundamentals of General Chemistry *
CHM 2046	General Chemistry II *
CIS 2530	Introduction to Cybersecurity

GEO 1200	Physical Geography
GLY 2010	Physical Geology *
MCB 1000	Fundamentals of Microbiology *
PHY 2049	Calculus-Based Physics II **
PHY 2054	Algebra-Based Physics II *

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

## Multicultural Requirement:

### Multicultural Courses

An important component of a liberal education is the study of cultures other than one's own. As such, multiculturalism encompasses the appreciation of the values, expressions, and modes of organization of diverse cultural communities. To further such study, the University of West Florida requires all students pursuing a bachelor's degree to complete at least one course that explores one or more of the dimensions of another culture (language, religion, socio-economic structures, etc.). Students are exempt from this requirement if they have completed an A.A. degree, the general education program at a Florida public institution, or a baccalaureate degree.

The requirement is satisfied by the successful completion of a multicultural course designated on the following list. Several of the selections are General Education courses, and students may enroll in these to meet both the General Education and the multicultural requirements.

\*Faculty Senate 11/8/2002

This list is continually updated and students are encouraged to check with their advisors for alternative options.

AML 2010	American Literature I	3
AML 2020	American Literature II	3
AML 3604	African American Literature	3
AML 3624	Black Women Writers	3
AML 4015	Topics in Nineteenth-Century American Literature	3
ANT 2000	Introduction to Anthropology	3
ANT 3212	Peoples and Cultures of the World	3
ANT 3312	North American Indians	3
ANT 3363	Japanese Culture	3
ANT 3403	Cultural Ecology	3
ANT 4006	Anthropology of Human Rights	3
ARH 1000	Art Appreciation	3
ARH 2050	Western Survey I: Prehistory to the Medieval Period	3
ARH 2051	Western Survey II: Renaissance to Contemporary	3
ARH 3590	Non-Western Art	3
ARH 4302	Late Renaissance Art in Italy	3
ARH 4305	Early Italian Renaissance Art	3
ARH 4412	The Age of Revolution to Romanticism	3
ARH 4450	Modern Art: 1850-1980	3
ARH 4470	Contemporary Art	3
ARH 4653	Art and Archaeology of Mesoamerica	3
CCJ 3678	Race, Gender, Ethnicity, and Crime	3
COM 3014	Gender Communication	3
COM 3461	Intercultural Communication	3
CPO 2002	Comparative Politics	3
CPO 3055	Dictatorships	3
CPO 3103	Politics of Western Europe	3
CPO 3322	Cuba, Castro and the USA	3
CPO 3513	Politics of the Far East-Japan and China	3
CPO 4303	Politics of Spain, Portugal, and Latin America	3
CPO 4792	Geopolitics	3
CRW 2001	Introduction to Creative Writing	3
EDF 2085	Teaching Diverse Populations	3
ENG 4013	Introduction to Literary Theory	3
ENL 2020	History of English Literature II	3
EUH 1000	Western Perspectives I	3
EUH 1001	Western Perspectives II	3
EUH 3203	Modern Europe	3
EUH 3411	Rome and the Mediterranean World	3
EUH 3576	Soviet Union since 1917	3
EUH 4239	Age of Empires	3
FRE 4955	Supervised Foreign Language Field Experience Abroad	1-3
GEA 2000	Nations and Regions of the World	3
GEA 4405	Geography of Latin America	3
GEB 4361	International Business	3
GEO 3421	Cultural Geography	3
GEO 3471	Geography of World Affairs	3
HIS 4316	Women in the Atlantic World	3
IDH 1041	Honors Core 2	3
INR 2002	International Politics	3
JPN 3270	Supervised Language Experience Abroad	3
LIT 2000	Introduction to Literature	3
LIT 2030	Introduction to Poetry	3
LIT 3233	Postcolonial Literature	3
LIT 4385	Feminist Theory	3
MAN 4102	Management of Diversity	3
MAR 4156	Seminar in International Marketing	3
MMC 3601	Minorities and the Mass Media	3
MMC 4300	Global Communication	3
MUH 2930	The Music Experience: Special Topics	3
NUR 4615	Community and Public Health Nursing	3
PSY 3680	Positive Psychology	3
REL 3142	New Perspectives on the Religious Self	3
REL 4420	Contemporary Theology	3
REL 3310	Philosophies of the East	3

REL 4592	Development of Christian Thought	3
SOP 3730	Psychology, Culture, and Society	3
SOW 4233	Human Diversity and Social Justice	3
SOW 4941	Immersive Experiences in Social Work	3
SPN 3400	Advanced Stylistics	3
SPN 4500	Spanish Civilization	3
SPN 4520	Latin American Culture and Civilization	3
SPN 4955	Intensive Spanish Abroad	1-5
SYO 4530	Inequality in America	3

## Civic Literacy Requirement

- Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
  - Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
    - Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
    - An understanding of the United States Constitution and its application;
    - Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
    - An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.
- Achieving the standard score on one of the following assessments:

Assessment	Standard Score
U.S. Citizenship and Immigration Services Naturalization Test	60
Advanced Placement Government and Politics: United States	3
Advanced Placement United States History	4
CLEP American Government	50

\*BOG 8.006 (<http://www.flbog.edu/board/regulations/regulations.php>)

## Common Prerequisites

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual (<https://dlss.flvc.org/admin-tools/common-prerequisites-manuals>) for course substitutions from Florida colleges and universities.

COP XXXX		3
MAC 2311	Analytic Geometry and Calculus I	4
MAC 2312	Analytic Geometry and Calculus II	4
MAC 2313	Analytic Geometry and Calculus III	4
MAP 2302	Differential Equations	3
Lab based science course (BSC, CHM, PHY)		4
Total Hours		22

## Lower Division Electives

Students must complete sufficient 1000/2000 level electives to satisfy at least 60 sh in the lower division. Current UWF students may use elective courses at any level (1000-4000) to meet this elective requirements

### Major

MAA 4211	Advanced Calculus I <sup>+</sup>	3
MAD 4401	Numerical Analysis <sup>+</sup>	3
MHF 3202	Set Theory and Mathematical Logic <sup>+</sup>	3
MAS 3105	Linear Algebra <sup>+</sup>	3
MAS 4301	Abstract Algebra <sup>+</sup>	3
MAT 4500	Undergraduate Proseminar in Mathematics/Statistics <sup>+</sup>	1
STA 3162C	Applied Statistics <sup>+</sup>	4
STA 4321	Introduction to Mathematical Statistics I <sup>+</sup>	3
Total Hours		23

<sup>+</sup> Courses counted toward the Major GPA

## Upper Division Electives

Student must complete sufficient 3000/4000 level electives to meet UWF's requirement of 48 semester hours in the upper division or complete all departmental requirements at the 3000/4000 level, whichever is greater

### Teaching core: 27 hours

EDG 2041	Exploring Inquiry Teaching	3
EDF 3234	Applied Foundations of Education	3
EDG 3323	Methods of K-12 Literacy Instruction	3
EDG 4948	Apprenticeship Teaching	6
ESE 4322	Instruction, Management, and Assessment: Secondary Education	3
ESE 4940	Secondary Practicum	3
MAE 4320	Teaching Mathematics in the Middle and Secondary Schools	3
TSL 4080	ESOL Principles and Practices	3
Total Hours		27

## Mathematics

A Minor in Mathematics requires completion of the calculus sequence in addition to the completion of 15 sh approved by the Department of Mathematics and Statistics in courses beyond the level of MAC 2313 Analytic Geometry and Calculus III. A list of approved courses may be obtained from the department. A grade of C- or better is required for each of these courses, including the calculus sequence. Mathematics majors may not earn this minor.

## Statistics

The minor in statistics requires completion of STA 2023 Elements of Statistics and MAC 2311 Analytic Geometry and Calculus I, in addition to the completion of 15 sh chosen from among the following courses:

Complete 5 of the seven courses		15
STA 3162C	Applied Statistics	
STA 4173	Biostatistics	
STA 4321	Introduction to Mathematical Statistics I	
STA 4051	Nonparametric Statistics	

STA 4222	Sampling Theory	
STA 4234	Regression Analysis	
COP 4710	Database Systems	
Total Hours		15