

## DEPARTMENT OF MATHEMATICS COLLEGE OF ARTS AND SCIENCES

### FACULTY

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### DEPARTMENTAL GOALS

1. To provide the mathematical skills and knowledge needed for a productive life in a rapidly changing world.
2. To strengthen and enrich the general education program.
3. To train quality mathematics teachers for the public schools.
4. To provide a solid foundation for students who will continue mathematics studies at the graduate level.
5. To prepare mathematics students for a wide variety of vocations in business, industry, and government service.
6. To provide a supportive second field of knowledge for students in other areas of study.

Mathematical skills, knowledge, and abilities learned in mathematics courses are applied in a variety of vocations to achieve goals and resolve challenging problems. A broad foundation in basic mathematics courses, emphasizing concepts and problem solving skills together with in-depth knowledge in chosen areas from higher mathematics, prepares students to function successfully in their career fields.

The department firmly believes that a competent user of mathematics must first be a good student of mathematics.

### PROGRAMS OF STUDY

**Majors:** B.S. Mathematics  
B.S.Ed. Mathematics Education  
(Listed in Dept. of Education)

**Minors:** Mathematics  
Statistics

**Master:** M.Ed. Mathematics  
(See the Graduate Catalog for more information.)

The Mathematics Education degree program prepares the student to teach all currently offered junior high and senior high school mathematics courses. The Bachelor of Science in Mathematics degree allows the student to concurrently complete a minor, a double minor, or a second major. Careful selection of minors enables the mathematics degree holder to be well prepared for a wide variety of career options. The mathematics and statistics

minors are excellent choices for any students, particularly those majoring in computer science, business or the sciences.

### PROGRAM GOALS

#### B.S. Mathematics

1. To prepare students to enter a wide variety of vocations in business, industry, and government service that require advanced mathematical skills.
2. To provide instruction for students to develop basic skills and knowledge as they prepare for a productive life in a rapidly changing technological world.
3. To prepare students for study of mathematics at the graduate level.

#### B.S.Ed. Mathematics Education

1. Mastery of mathematics content.
2. Establish learning objectives and plan for student involvement in the learning process.
3. Organize and use several instructional methods, i.e., lecture, group, activity, and discovery.
4. Plan for and use resources: texts, multimedia, microcomputers, and resource personnel.
5. Organize instruction for individual differences.
6. Design a learning environment in the classroom.
7. Demonstrate planning for community involvement and/or personal and professional growth in education.

### GENERAL INFORMATION

Incoming freshmen are placed in their first mathematics course based on their major and their mathematics background. ACT scores and a placement test help with this process. Since a student's success in each mathematics course depends on the knowledge and skills developed in other mathematics courses, the student is expected to work carefully with his/her advisor in planning his/her enrollment in mathematics. Majors must maintain at least a 2.5 GPA in their mathematics coursework.

A student with Advanced Placement Calculus (AB or BC) qualifies for several hours of mathematics credit. Such students should check with the Mathematics Department to determine credit earned and the next course in which to enroll. CLEP examinations are available in College Algebra, Precalculus, and

Calculus I for students who wish to earn credit by examination in any of these courses. The Precalculus CLEP exam may be used to earn credit for College Trigonometry.

A mathematics major or minor will provide students with many job opportunities in fields besides teaching, such as actuarial sciences, energy fields, computer programming, economics, banking, law, computer analysis, and many more. Most job settings require workers to be problem solvers. A mathematics major or minor, when paired with another area of study, enhances job placement in almost any area. Mathematics graduates at SWOSU have been successful in finding jobs in a wide variety of career fields and in pursuing graduate degrees in mathematics and/or computer science and other related fields.

The Mathematics Department promotes the appropriate use of technology in the teaching and learning of mathematics. A networked PC lab with various mathematical and statistical software packages is located within the department.

Several mathematics majors and minors work in our tutor lab to provide students with any extra math help they might need. Opportunities also exist for employment as homework graders.

Southwestern Oklahoma State University has an active chapter of the Mathematics Honor Society, Kappa Mu Epsilon (KME), whose main objective is to further student interest in mathematics and to familiarize the members with advances being made in this subject. Many students in the Mathematics Department have been active in joining KME and in attending regional and national meetings organized by the society and by the Mathematical Association of America (MAA).

The department also supports an active Math Club. Regular meetings are held. Typical activities include problem sessions, faculty talks and math-themed games.

The Mathematics Department partners with the Education Department to train Mathematics Education majors to become highly qualified mathematics teachers at the junior and senior high school levels.

For more information, visit our web site at:  
<https://bulldog.swosu.edu/academics/mathematics/index.php>

## BACHELOR OF SCIENCE MATHEMATICS (MATH.BS)

### GENERAL EDUCATION (Min. 40 hours)

Courses that are required. Courses that are recommended.

**Communication** ..... 9

**ENGL 1113 English Composition I**

**ENGL 1213 English Composition II**

**COMM 1313 Introduction to Public Speaking OR**

**TECH 3143 Technical Presentations (if permitted by degree program)**

**Quantitative Reasoning** ..... 0

Waived due to major requirements

**U. S. History** ..... 3

Select one course.

HIST 1043 U.S. History to 1877

HIST 1053 U.S. History since 1877

**American Government** ..... 3

**POLSC 1103 American Government & Politics**

**Science** ..... 7-8

Select one course from Life Science and one course from Physical

Science. One Science course must be a lab science.

**Life Science** ..... 3-4

BIOL 1004 Biological Concepts w/Lab

BIOL 1013 Current Issues in Biology

BIOL 1054 Principles of Biology I w/Lab

**Physical Science** ..... 3-4

ASTRO 1904 Astronomy

CHEM 1004 General Chemistry w/Lab

GEOL 1934 Physical Geology w/Lab

PHY 1044 Basic Physics I w/Lab

PHY 1063 General Physics (or a higher numbered chemistry or physics course)

SCI 1501 Concepts of Physical Science Lab

SCI 1513 Conc of Phy Science (can be taken w/wo lab)

**Humanities and Social Science** ..... 12

Select one course from each sub-category and one additional course from any subcategory below.

**Humanities** ..... 3

GEOG 1103 World Cultural Geography

HIST 1033 World History

HUM 1103 Introduction to Humanities

**Fine Arts** ..... 3

ART 1223 Art Survey

COMM 1263 Introduction to Theatre

LIT 2333 Introduction to Film

LIT 2413 Introduction to Literature

MUSIC 1013 Introduction to Music I

MUSIC 1103 Music and Culture (Music majors only)

MUSIC 1123 History of Rock-n-Roll

PHILO 1453 Introduction to Philosophy

**Social and Human Sciences** ..... 3

ASL 2163 American Sign Language I

ECONO 2263 Intro to Macroeconomics

ECONO 2363 Intro to Microeconomics

ENTRP 1123 Intro to Business

FINAN 2113 Personal Financial Planning

ITAL 1004 Elementary Italian I

KINES 1133 Wellness Conc & Exercise Applications

LATIN 1054 Elementary Latin I (or higher number)

PSYCH 1003 General Psychology

SOCIO 1003 Introduction to Sociology

SPAN 1054 Elementary Spanish I (or higher number)

TECH 1223 Technology and Society

**Computer Proficiency** ..... 0-3

COMSC 1023 Computers and Info Access, or a department-assigned course which satisfies the Computer Proficiency in the major, or the SWOSU Proficiency Exam, or HS course clearly defined to meet our goals.

**GE Elective** ..... 0-3

Students who meet the computer proficiency by exam or HS course must choose an additional GE course from any category.

### MATHEMATICS MAJOR

**Required Courses** ..... 29-30

MATH 1513 College Algebra **AND**

MATH 1613 College Trigonometry

**OR** MATH 1715 College Algebra and Trigonometry

MATH 1834 Calculus I

MATH 2834 Calculus II

MATH 3653 Linear Algebra

MATH 3834 Calculus III

MATH 4213 Differential Equations I

MATH 4653 Modern Algebra

MATH 4853 Advanced Calculus

**Electives in Math** (Choose from 3000-4000 Level Courses) ..... 6

**Computer Science** ..... 3

Any Scientific Programming Language **OR**

MATH 3533 Tech and Programming in Mathematics

**Minor or Second Major** ..... 18-40

**Free Electives to bring total to 120** ..... 0-24

**TOTAL HOURS** ..... 120

For the minor program only, refer to the Mathematics minor in the Minor Programs of Study.

### REGULATIONS PERTAINING TO GRADUATION

Minimum credit hours for graduation ..... 120

Minimum credit hours in the liberal arts & sciences ..... 55

Minimum credit hours in upper-division (3000/4000 courses) ..... 40

Minimum credit hours (3000/4000 courses) in major completed at SWOSU ..... 8

Minimum credit hours at SWOSU (15 of the last 30) ..... 30

Minimum Grade Point Average in all coursework ..... 2.00

Minimum Grade Point Average in major ..... 2.50

Students should work closely with their advisors to ensure that they take mathematics courses in the appropriate sequence. For example, taking a 1000 level mathematics course after successfully completing Calculus I is usually not recommended. Deviations from the appropriate sequence require departmental approval.

## MATHEMATICS (MATH.BS) Suggested Course Sequence\*

### FIRST YEAR

FIRST SEMESTER	SECOND SEMESTER
1051 SWOSUConnect+ (1) 1023 Comp Info Access (3) 1113 English Comp I (3) 1513 College Algebra (3) 1613 College Trigonometry (3) Gen Educ Crses (3)	1103 American Gov Politics (3) 1213 English Comp II (3) 1834 Calculus I (4) Courses toward minor** (3) Gen Educ Crses (3)
<b>Total (16)</b>	<b>Total (16)</b>

### SECOND YEAR

FIRST SEMESTER	SECOND SEMESTER
2834 Calculus II (4) Courses toward minor** (3-6) Gen Educ Crses (6-7)	3653 Linear Algebra (3) 3834 Calculus III (4) Courses toward minor** (3-6) Gen Educ Crses (3-6)
<b>Total (13-17)</b>	<b>Total (13-19)</b>

### THIRD YEAR

FIRST SEMESTER	SECOND SEMESTER
3113 Foundations in Math (3) Courses toward minor** (3-6) Gen Educ Crses(3-6) Math Elective (3)	4213 Differential Equations I (3) Courses toward minor** (3-6) Gen Educ Crses(3) Math Electives (3-6)
<b>Total (12-18)</b>	<b>Total (12-18)</b>

### FOURTH YEAR

FIRST SEMESTER	SECOND SEMESTER
3533 Tech and Programming Math*** (3) 4653 Modern Algebra (3) Courses toward minor** (3-6) Gen Educ Crses(3)	4853 Advanced Calculus (3) Courses towards minor** (3-6) Gen Educ Crses (3) Math Elective (3)
<b>Total (12-15)</b>	<b>Total (12-15)</b>

+First time entering SWOSU students need to take 1051 SWOSUConnect.

\* Student schedules can vary considerably due to incoming skills, ability to enroll in summer courses, transfers or changes of major, and course availabilities. The above schedule is a guideline only, and students should consult with their advisors regularly to make any needed adjustments.

\*\* Or second major

\*\*\* Any scientific programming language OR MATH 3533 Technology and Programming in Mathematics