

# MATHEMATICS

## SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

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**DEPARTMENT CHAIR:** Peter Herrera, M.A.; Silvia Nadalet, M.A.

### GENERAL DESCRIPTION

In today's highly technological society, the study of mathematics has become increasingly important. Mathematics is a study that provides a foundation for problem solving and logical reasoning skills. It includes arithmetic, algebra, geometry, trigonometry, calculus, statistics, and computer programming, among others. Mathematics is the science of numbers and their operations, interrelations, combinations, generalizations, and abstractions. In addition to college-level mathematics courses (numbered 100 or above) that will meet the lower-division needs of college transfer students, Southwestern College offers developmental courses consisting of arithmetic through intermediate algebra.

Students may opt to take their developmental courses in one of several formats. All formats require students to study and complete assignments outside of class. Traditional lecture sections may include computer-aided instruction or online assignments. Other sections are self-paced and computer-aided, giving students the opportunity to complete more than one course per semester. Hybrid classes meet with an instructor, but with less-frequent campus meetings, and require additional computer-aided instruction outside of class.

Many of the mathematics courses are designated "Requires graphing Calculator" in the class schedule. These classes incorporate hand-held technology into the curriculum. Both traditional and calculator methods of problem solving are taught. Instructors may choose to require or prohibit calculator use on certain assignments. Graphing calculators which perform algebraic manipulation are not permitted in any Southwestern College math course.

### CAREER OPTIONS

Many career options are available for the mathematics major, a few of these require an associate degree, most require a bachelor's degree, and some require a graduate degree. Possible career options include: numerical analyst, teacher, engineering analyst, systems analyst, operations analyst, casualty rater, technical writer, research assistant, statistician, and computer specialist.

DEGREE/CERTIFICATE OPTIONS	MAJOR CODE
<b>Associate in Arts Degree: Transfer Preparation</b> Mathematics	01580
<b>Associate in Science Degree: Transfer Preparation</b> Mathematics (SB 1440)	01585

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

### Websites for mathematics majors:

**SDSU:** <http://www.math.sdsu.edu>  
**UCSD:** <http://www.math.ucsd.edu>  
**CSU, San Marcos:** <http://www.csusm.edu/math/>  
**Articulation:** <http://www.assist.org>

*The program below is undergoing modification and the modification will be placed into an addendum upon Chancellor's Office approval - see your counselor for further information and visit the college website under <http://www.swccd.edu/catalog> link for the latest addenda updates.*

## ASSOCIATE IN ARTS DEGREE

### MATHEMATICS



#### ASSOCIATE IN ARTS DEGREE TRANSFER PREPARATION \* (MAJOR CODE: 01580)

Mathematics has become essential and pervasive in the workplace. Projections indicate that its use will expand as will the need for more workers with knowledge of college-level mathematics.

#### Program Student Learning Outcome Statement:

- Use the basic definitions, properties, theorems, and techniques of Calculus.

#### FIRST SEMESTER

MATH 250 Analytic Geometry and Calculus I 5

#### SECOND SEMESTER

MATH 130 Introduction to Computer Programming \*\* 4  
 MATH 251 Analytic Geometry and Calculus II 4

#### THIRD SEMESTER

MATH 252 Analytic Geometry and Calculus III 4  
**Complete 3-4 units from Electives \*\*\* 3-4**



## FOURTH SEMESTER

Complete 3–4 units from electives \*\*\* 3–4  
**Total units** **23–25**

\*\* **MATH 130** may be taken in any semester; however, it should be noted that MATH 130 is a prerequisite for the elective MATH 140.

\*\*\* **Electives:** MATH 119, 140, 253, 254, 260.

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

\* Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section on page 45 for further information.

## ASSOCIATE IN SCIENCE DEGREE

### MATHEMATICS FOR TRANSFER

**STUDENT TRANSFER  
ACHIEVEMENT REFORM (STAR)  
ACT (SB1440)**



### ASSOCIATE IN SCIENCE DEGREE TRANSFER PREPARATION \* (MAJOR CODE: 01585)

Mathematics has become essential and pervasive in the workplace. Projections indicate that its use will expand as will the need for more workers with knowledge of college-level mathematics. In today's highly technological society, the study of mathematics has become increasingly important, particularly to computer science. Mathematics is a study that provides a foundation for problem solving and logical reasoning skills. It includes arithmetic, algebra, geometry trigonometry, calculus, statistics, and computer programming, etc. Mathematics is the science of numbers and their operations, interrelations, combinations, generalizations, and abstractions, In addition to college-level mathematics courses (numbered 100 or above) that will meet the lower-division needs of college transfer students, Southwestern College offers developmental courses consisting of arithmetic through intermediate algebra.

#### Program Student Learning Outcome Statement:

- Use the basic definitions, properties, theorems, and techniques of Calculus.

MATH 250	Analytic Geometry and Calculus I	5
MATH 251	Analytic Geometry and Calculus II	4
MATH 252	Analytic Geometry and Calculus III	4

**Choose a minimum of 6 units with at least 3 units from Group A**  
 (3 units are required from Group A, no units are required from Group B, however all 6 units can come from Group A)

#### GROUP A:

MATH 253	Introduction to Differential Equations (3) OR	3
MATH 254	Introduction to Linear Algebra (3)	

#### GROUP B:

MATH 119	Elementary Statistics (4) OR	3–4
MATH 260	Discrete Mathematics (3) OR	
PHYS 270	Principles of Physics I (3) AND	3–4
PHYS 271	Principles of Physics Laboratory I (1)	

**Total units** **19–20**

\* Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section for further information.

\*\* The Mathematics Department recommends the MATH 119 be taken as an elective if it is not chosen from Group

# MEDICAL OFFICE PROFESSIONS

## HIGHER EDUCATION CENTER AT NATIONAL CITY

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**DIRECTOR:** Deanna Reinacher, Ed.M., CLS, MT (ASCP)  
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