

Mathematics

School of Mathematics, Science, and Engineering

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General Description

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.

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. Variable sections are self-paced and computer-aided, have no fixed class meetings, and may permit a student to complete more than one course per semester. Interactive sections have regular class meeting with an instructor who uses computer-aided instruction. Hybrid classes meet with an instructor, but with less-frequent campus meetings, and require additional computer-aided instruction outside of class. Traditional lecture sections may include computer-aided instruction or online assignments.

Many of the mathematics courses are designated "Requires graphing Calculator" in the class schedule. These classes incorporate new 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. Students do not need to be proficient with their calculators before enrolling to do well.

However, students are encouraged to acquire and learn to use the graphing calculator prior to enrolling in college-level courses which require a graphing calculator. Graphing calculators which perform algebraic manipulation are not permitted in any Southwestern College math course.

Career Options

Below is a sample of the career options available for the mathematics major. A few of these require an associate degree, most require a bachelor's degree, and some require a graduate-level degree: numerical analyst, teacher, engineering analyst, systems analyst, operations analyst, casualty rater, technical writer, research assistant, statistician, and computer specialist. In addition, there is presently a great need for high school and college mathematics instructors with this area of employment continuing to grow as society becomes more technological in business, industry, government, and education.

Degree/Certificate Options

Associate in Arts Degree: Transfer Preparation

Mathematics

Major Code

01580

Associate in Science Degree: Transfer Preparation

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.

Web sites for mathematics majors:

SDSU: <http://www.math.sdsu.edu>

UCSD: <http://www.math.ucsd.edu>

CSU, San Marcos: <http://www2.csusm.edu/math/>

Articulation: <http://www.assist.org>

ASSOCIATE IN ARTS DEGREE



Mathematics

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.

First Semester

MATH 250	Analytic Geometry and Calculus I	5
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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
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Total units	23–25
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** 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 49.

* 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 32 for further information.



Some courses within this program may require additional coursework that must be completed prior to enrollment in those courses. Please consult the individual course listings for prerequisites and any other limitations on enrollment.

ASSOCIATE IN SCIENCE DEGREE



Mathematics Student Transfer Achievement Reform (STAR) Act (SB1440)

Transfer Preparation * (Major Code: 01585)



Associate Degree
for Transfer
*A Degree with a Guarantee.***

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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) 6–7

Group A:

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

Group B:

MATH 119	Elementary Statistics	4
OR		
MATH 260	Discrete Mathematics	3
OR		
PHYS 270	Principles of Physics I	3
AND		
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 on page 32 for further information.

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

Medical Assistant— Administrative and Clinical

Higher Education Center at National City

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Director Luis A. Nunez, M.A.

Faculty Luis Osuna, M.D.

General Description

Designed to respond to the ever-increasing need for well-trained, skilled personnel to fill positions in the allied healthcare industry as medical assistants. Today's healthcare industry demands a higher level of thinking and performance skills than ever before. The medical assistant programs prepare students for careers as administrative medical or clinical assistants or as medical office managers. The administrative medical assistant provides service to patients within the front office environment. The clinical medical assistant provides some administrative services to patients with primary duties in a clinical (back office) environment.

Career Options

The U.S. Bureau of Labor and Statistics has placed medical offices and healthcare facilities among the top ten industries expected to generate the largest number of new jobs. Employment in health services is expected to grow quickly during the coming decades because of the expanding healthcare needs of an aging population. Few fields are as immune to recession as healthcare. Potential employers include, but are not limited to hospitals and doctors' offices, urgent care, outpatient surgery, industrial and sports medicine clinics; insurance companies, skilled nursing facilities, state and federal health agencies, and medical research institutions.

Career options available for the medical assistant and medical office management major. Some require a certificate of achievement and most require an associate in science degree or higher degree: medical assistant—administrative or clinical, medical, office clerk, medical secretary, medical transcriptionist, medical records clerk, medical records coder, medical records technician, registered records administrator, health insurance specialist, health information administrator, medical office manager, quality assurance specialist, and medical interpreter.