

# MATHEMATICS



## Associate Degree for Transfer<sup>SM</sup>

### I. MATHEMATICS FOR TRANSFER (AS-T)

This program is designed to prepare students for transfer to a California State University (CSU) with the intent of earning a B.S. degree in Mathematics. Since jobs requiring mathematical skills such as data analysis, problem solving, pattern recognition, statistics, and probability are in high demand, the mathematics major may benefit both educationally and economically from developing and pursuing an interest in mathematics. Mathematical skills and statistical methods are employed regularly by researchers testing hypotheses, by workers applying quality control in manufacturing, and by informed citizens who must evaluate information from the media in tabular, graphical, and report form in order to reach solutions. This major offers a foundation in these necessary skills. The emphasis is to prepare students for transfer to a four-year institution and/or for career preparation in a vocational or professional field.

The following is required for the AS-T in Mathematics for Transfer degree:

1. Minimum of 60 semester or 90 quarter CSU-transferable units.
2. Minimum grade point average (GPA) of at least 2.0 in all CSU-transferable coursework.
3. Minimum of 18 semester or 27 quarter units in the major.
4. A grade of "C" or better in all courses required for the major.
5. Certified completion of the California State University General Education (CSU GE) Breadth pattern OR the Intersegmental General Education Transfer Curriculum (IGETC) pattern; see Degree Requirements and Transfer Information section for more information. Note: If following IGETC, IGETC-CSU must be followed for admission to a CSU.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Apply mathematical reasoning and problem solving strategies to analyze, interpret, and model applications from degree and transfer-level courses and programs in math, science, engineering, business, and technology.
- Select and apply appropriate definitions, postulates, and theorems to prove mathematical statements.

#### Associate in Science Degree Requirements:

##### Core Curriculum:

Course	Title	Units
MATH 180	Analytic Geometry and Calculus I	5
MATH 280	Analytic Geometry and Calculus II	4
MATH 281	Multivariable Calculus	4
		<u>13</u>

##### List A: Select one of the following:

MATH 284	Linear Algebra	3
MATH 285	Differential Equations	3
		<u>3</u>

##### List B: Select one of the following:

CS 181	Intro to C++ Programming	4
MATH 160	Elementary Statistics	4
MATH 245	Discrete Mathematics	3
PHYC 190	Mechanics and Heat	5
Any course from List A not selected above		<u>3</u>
		3-5

Total Units for Major (3-6 units may be double-counted with GE)	19-21
Total Units for CSU GE Breadth or IGETC-CSU	37-39
Total Transferable Elective Units	3-5
Total Units for Degree	60

Please note: SDSU accepts this degree for students transferring into Mathematics (Science Emphasis) B.S.

### II. MATHEMATICS

Since jobs requiring mathematical skills such as data analysis, problem solving, pattern recognition, statistics, and probability are in high demand, the mathematics major may benefit both educationally and economically from developing and pursuing an interest in mathematics. Mathematical skills and statistical methods are employed regularly by researchers testing hypotheses, by workers applying quality control in manufacturing, and by informed citizens who must evaluate information from the media in tabular, graphical, and report form in order to reach solutions. This major offers a foundation in these necessary skills. The emphasis is to prepare students for transfer to a four-year institution and/or for career preparation in a vocational or professional field.

#### Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Apply mathematical reasoning and problem solving strategies to analyze, interpret, and model applications in STEM or business programs.
- Select and apply appropriate definitions, postulates, and theorems to prove mathematical statements.

#### CAREER OPPORTUNITIES

- \* Accountant
- \* Actuary
- Air Traffic Controller
- \* Auditor
- † Bank Officer
- \* Budget Analyst
- Computer Operator
- \* Computer Programmer
- † Cost Estimator
- † Credit and Collection Manager
- Data Processing Manager
- \* Economist
- \* Engineer
- \* Financial Planner
- Insurance Agent/Broker
- Insurance Claim Examiner
- Laboratory Examiner
- Loan Officer
- \* Market Research Analyst
- \* Mathematician
- \* Mathematics Teacher
- \* Securities Trader
- Semiconductor Technician
- \* Statistician
- Surveyor
- \* Systems Analyst
- \* Bachelor Degree or higher required
- † Bachelor Degree normally recommended

#### Associate in Science Degree Requirements:

Course	Title	Units
MATH 180	Analytic Geometry and Calculus I	5
MATH 280	Analytic Geometry and Calculus II	4
MATH 281	Multivariable Calculus	4
MATH 284	Linear Algebra	3
		<u>16</u>

##### Select one of the following:

MATH 245	Discrete Math	3
MATH 285	Differential Equations	3
		<u>3</u>

##### Select one of the following:

ENGR 120	Engineering Computer Applications	3
MATH 160	Elementary Statistics	4
PHYC 190	Mechanics and Heat	5
PHYC 200	Electricity and Magnetism	5
PHYC 210	Wave Motion and Modern Physics	5
		<u>3-5</u>

Total Required 22-24

Plus General Education Requirements

**Recommended Electives:** Students planning to transfer to four-year institutions to complete a bachelor's degree in Pure Mathematics, Applied Mathematics, or Statistics should select an emphasis in an applied discipline such as accounting, chemistry, computer science, economics, engineering, or physics. In particular, transfer students are strongly urged to elect the following physics courses: PHYC 190, 200, 210. Students preparing for a vocational or professional career are strongly encouraged to select an emphasis in a vocational/professional discipline such as business, computer and information science, CADD technology, electronics technology, or environmental health and safety management.

#### Certificate of Achievement

Students who complete only the major requirements above qualify for a Certificate in Mathematics. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.