BS in Mathematics

58-60 units

The BS in Mathematics (https://www.apu.edu/clas/programs/math-major/) at Azusa Pacific University provides students with a strong foundation in the mathematics of continuous change (calculus and analysis), of pattern and symmetry (linear and abstract algebra), of space (geometry and topology), of chance (probability), and of data (statistics). The major focuses on depth of conceptual understanding, rigorous mathematical proof, and problem-solving strategies. While this major does treat applications of mathematics and includes courses in physics and computer science, the emphasis is on theory. Students who prefer a focus on applications are encouraged to choose the applied mathematics major.

A student who majors in mathematics has the option of obtaining a Bachelor of Arts (BA) or a Bachelor of Science (BS) degree. Both degrees have the same mathematics requirements, but the BS degree requires a minor in physics (http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/math-physics-statistics/physics-minor/), chemistry (http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/biology-chemistry/chemistry-minor/), or computer science (http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/math-physics-statistics/computer-science-minor/) (see these subject areas for requirements and course descriptions).

Career Opportunities

The BS in Mathematics degree program prepares graduates to be quantitative experts in a variety of fields: secondary or university teaching, mathematical research (for business, government, or the academy), cryptography, finance and economics, statistics and data analysis, or operations research and management consulting. Mathematics is also an excellent major for quantitatively minded students who want to go into business (see the finance minor (http://catalog.apu.edu/academics/school-business-management/lp-timothy-leung-school-accounting/finance-minor/)), medicine (see the premedical program (http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/preprofessional-programs/)) or law (see the prelaw minor (http://catalog.apu.edu/academics/college-arts-humanities-theology-sciences/school-humanities-sciences/history-political-science/prelaw-minor/)). Math majors have some of the highest rates of acceptance to graduate schools in all three of these fields.

APU mathematics graduates have advanced to prestigious graduate schools, have accepted choice offers to teach at various secondary schools, have been selected for Teach for America and Math for America, and have moved into attractive industry positions.

Students preparing for a career in actuarial science, industrial mathematics, mathematical physics, or computer science are encouraged to consider the applied mathematics major.

There is a strong demand for mathematics teachers. Students desiring a junior or senior high school teaching credential should note the requirements of the single-subject waiver program for mathematics. Completion of the Secondary Math Education Track (see below) waives the CSET exam requirement for entrance into a credentialing program.

Requirements

Code	Title	Units
Required Courses		
MATH 165	Calculus I	3
MATH 166	Calculus II	3
MATH 167	Sequences and Series [F]	1
MATH 250	Data Analysis [F]	3
MATH 268	Multivariable Calculus	3
MATH 270	Ordinary Differential Equations [S]	4
MATH 280	Discrete Mathematics and Proof [F]	3
MATH 290	Linear Algebra [S]	3
MATH 400	Abstract Algebra [ES]	3
MATH 450	Real Analysis [EF]	3
MATH 480	Writing 3: Mathematical Reading, Writing, and Presentation [F, 1]	3
MATH 496	Mathematics Senior Seminar [S, 2]	3
CS 120	Introduction to Computer Science I [3]	4
PHYC 165 & PHYC 145	Physics for Science and Engineering: Mechanics and Physics Laboratory I [4,F]	5
Total Units		**44**

In addition to the required courses above, complete one of the tracks below. You must also complete a minor in physics, chemistry, computer science, or statistics.

Code	Title	Units
General Mathematics Track		
Complete at least 14 units from the courses below. You must complete MATH 361 and at least one of MATH 460 and MATH 470. You cannot count both PHYC 166 and CS 125.		14
MATH 269	Vector Calculus [OF]	
MATH 340	Geometry [S]	
MATH 361	Introduction to Modeling with Probability	
MATH 390	Number Theory [OF]	
MATH 460	Topology [OS]	
MATH 470	Complex Analysis [ES]	
MATH 495	Advanced Topics in Mathematics	
CS 125	Introduction to Computer Science II	
PHYC 166 & PHYC 146	Physics for Science and Engineering: Electricity and Magnetism and Physics Laboratory II [S]	
Total Units		**14**

Code	Title	Units
Secondary Math Education Track		
Complete all 16 units below. This track meets the requirements of the CTC-approved Single Subject Waiver program.		
MATH 130	Introduction to Statistics [5]	3
MATH 301	Mathematics for Secondary Teachers [OF]	3
MATH 340	Geometry [S]	3
MATH 390	Number Theory [OF]	3
EDLS 202	Introduction to Teaching as a Profession (7-12) [6]	4
Total Units		**16**

1 Meets the General Education Writing 3 requirement.
2 Meets the General Education Integrative and Applied Learning requirement.
3 Meets the General Education Oral Communication requirement if taken with CS 290 and CS 480, or ENGR 240 and ENGR 480.
4 Meets the General Education Natural Sciences requirement. Students must complete both PHYC 165 and PHYC 145 to fulfill the GE Natural Sciences requirement.
5 Meets the General Education Quantitative Literacy requirement.
6 Meets the General Education Civic Knowledge and Engagement requirement.

F	Offered in Fall only
S	Offered in Spring only
F/S	Offered in both Fall and Spring terms
EF	Offered in Fall in even years
ES	Offered in Spring in even years
OF	Offered in Fall in odd years
OS	Offered in Spring in odd years