

Department of Mathematics
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Program Description

Mathematics is a unique and valuable science that is enjoyable and rewarding. The Department of Mathematics provides a collection of mathematics courses designed to challenge and stimulate all open minded and thoughtful students regardless of individual backgrounds or major interest areas. This is done by combining flexibility, applicability, and historical perspective in the design of the mathematics curriculum. Furthermore, depth of understanding and appreciation are not sacrificed to quantity; the major emphasis is upon inquiry, creativity, methods, techniques, and thought processes rather than bulk of material.

The classroom goal is to discover both the importance and beauty of mathematics by combining lectures with problem solving recitations, student presentations, writing assignments, computer experience, and any other workable approaches to learning. The Department of Mathematics at CSUB includes a discussion session in every 4-unit mathematics course. A student is encouraged to interpret and communicate mathematically with others, to follow self-direction and in-depth study, and to investigate the interplay of mathematical concepts. A teacher acts as a resource person, stresses the spirit and point of view of mathematics, and provides for feedback of the relative value of classroom activities.

Upon completion of any mathematics course, students are better prepared to be participants in a highly technological, scientifically complex environment. From a subjective point of view, they should have an improved grasp of the art and beauty of rational reasoning and discourse both as an observer and a participant. From an objective point of view, they should have acquired new skills which, alone or in combination with others, will enhance both an understanding of and performance in the scientific world. A detailed description of student learning goals and objectives can be found at http://www.csub.edu/math/files/math_SLOs.pdf

The degree offered is the Bachelor of Science (B.S.) in Mathematics. The B.S. in Mathematics includes five possible concentrations:

- **Applied Concentration**
Includes courses that link mathematics with the sciences. This concentration prepares students for a career or advanced studies in the mathematical sciences.
- **Pure Concentration**
Includes courses in the traditional curriculum of mathematics. This concentration prepares students for a course of graduate study leading to an advanced degree in mathematics.
- **Statistics Concentration**
Includes courses involving the management, analysis, and interpretation of data. This concentration prepares students for a career or advanced studies in the mathematical sciences.
- **Teaching Concentration**
Includes courses that give a deep understanding of the mathematics underlying the middle and high school curricula. This concentration prepares students for a career in teaching high school mathematics.
- **Blended Teaching Concentration**
Includes all math courses required in the teaching concentration and courses required by the California Teaching Credential.

Requirements for the Bachelor of Science Degree in Mathematics

Total Units Required for Graduation	120 units
Major Requirements	56-57 units
Core Curriculum	24
Concentration	29-32
General Education Requirements	45-48 units
First-Year Seminar	2
LD Area A Foundational Skills	9-12*
LD Area B Natural Sciences	6
LD Area C Arts and Humanities	6
LD Area D Social and Behavioral Sciences	6
American Institutions	6
SELF	0**
Junior Year Diversity Requirement	3
UD Thematic Areas C and D	6
Capstone	1
GWAR (Exam) or Class	0**
Additional Units	15- 19 units

*A modification to the standard GE program has been approved that allows the possibility of satisfying some GE requirements through the major. MATH 1040, 1050, 1060, 2010, 2200, 2310, 2510, 3110, 3120 all satisfy Area A4.

**The SELF requirement is met by completing a LD Area B, C, or D course with a SELF component. The GWAR may be satisfied by exam.

MATHEMATICS

Requirements for the Major in Mathematics (56-57 units)

Students seeking a major in Mathematics must complete the following:

1. MATH 2510, 2520, 2530, 2610, 3000, 3200, 3520
2. One of the following concentrations:
 - a. **Applied Mathematics Concentration**
 - (1) MATH 2540, 3300, 3620, 4610, 4908 and CMPS 2010
 - (2) One of MATH 3310, 4300 or 4500
 - b. **Pure Mathematics Concentration**
 - (1) MATH 3620, 4610, 4908 and CMPS 2010
 - (2) One of MATH 4520 or 4620
 - (3) Two of MATH 3400, 3500, or 4600
 - c. **Statistics Concentration**
 - (1) MATH 3620, and 4908
 - (2) MATH 2200, 3210, 4200, 4210, and 4220
 - d. **Teaching Concentration**
 - (1) MATH 3100, 3310, 3400, 3600, 4110, 4120, 4200, and 4910
 - e. **Blended Teaching Concentration**
 - (1) MATH 3100, 3310, 3400, 3600, 4110, 4120, 4200, and 4910
 - (2) EDTE 4100, 3308, 4200, 4310, 4320, 4330, 4340 and 5800
 - (3) EDSE 5100, 5200, 5300, 5400, 5500, and 5800

Honors Option

A student may, with the approval of the Chair of the Department of Mathematics, undertake the Honors Program in Mathematics by completing the following:

1. One of the concentrations as described above.
2. An additional eight hours of upper division courses in mathematics (not to include MATH 3110 or 3120).
3. Included in 1 and 2 above, at least one of these upper division sequences in Mathematics: MATH 3620-4620 Abstract Algebra I and II, MATH 3520-4520 Analysis I and II, MATH 2540-4540 Ordinary and Partial Differential Equations, and MATH 3200-4200 Probability Theory and Mathematical Statistics.
4. MATH 4850 Senior Honors Thesis, and presentation of an Honors thesis to the Department of Mathematics.

Requirements for the Minor in Applied Statistics

Although no minor is required for the BS degree in Mathematics, a minor in Applied Statistics is available, consisting of 16 units chosen from MATH 2200 (or equivalent), 3200, 3210, 4200, 4210 and 4220. A minimum of eight upper division units must be completed at California State University Bakersfield.

Requirements for Minor in Mathematics

Although no minor is required for the BS degree in Mathematics, a minor in Mathematics is available. The requirement is 16 units, at least 8 of which must be upper division. Lower division courses that can count are MATH 2020, 2320, 2520, 2530, and 2540. Upper division course that does not count is MATH 3120. A minimum of eight upper division units must be completed at California State University, Bakersfield.