



COLLEGE OF LETTERS AND SCIENCES

SUBJECT MATTER AUTHORIZATION IN INTRODUCTORY MATHEMATICS FOR SINGLE OR MULTIPLE SUBJECT TEACHING CREDENTIAL AUTHORIZATION

Give an Inspiring Introduction to Math

Learn how to use language and mathematical symbols to communicate mathematical ideas and lead an inspired classroom by earning a Subject Matter Authorization in Introductory Mathematics for Single or Multiple Subject Teaching Credential Authorization. Holders of a Single or Multiple Subject Teaching Credential issued by the California Commission on Teacher Credentialing (CTC) may add a Subject Matter Authorization in Introductory Mathematics. Introductory subjects authorize the holder to teach the subject matter content typically included in curriculum guidelines and textbooks approved for study in

grades 9 and below. A teacher with an introductory authorization can teach a class in which the curriculum is for grades 9 and below (but the students in the class may be in grades 10-12).

Program highlights:

- Gain reasoning skills and effective strategies for solving problems
- Understand how to employ algebra and number theory ideas
- Inspire students to improve their math skills

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SUBJECT MATTER AUTHORIZATION IN INTRODUCTORY MATHEMATICS FOR SINGLE OR MULTIPLE SUBJECT TEACHING CREDENTIAL

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Holders of a Single or Multiple Subject Teaching Credential issued by the California Commission on Teacher Credentialing (CTC) may add a Subject Matter Authorization in Introductory Mathematics. Introductory subjects authorize the holder to teach the subject matter content typically included in curriculum guidelines and textbooks approved for study in grades 9 and below. A teacher with an introductory authorization can teach a class in which the curriculum is for grades 9 and below (but the students in the class may be in grades 10-12).

For additional information on credential requirements, please see the Sanford College of Education Credential Information section of the catalog.

Program Learning Outcomes

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

- Employ reasoning skills and effective strategies for solving problems.
- Use language and mathematical symbols to communicate mathematical ideas.
- Employ algebra and number theory ideas.

Program Requirements

An applicant will qualify for an Introductory Mathematics subject matter authorization upon the completion of 48 quarter units of non-remedial collegiate coursework as specified. The introductory subject matter authorization (included within the forty-eight quarter units) requires a minimum of four quarter units (or three semester units) in each of the specific content areas listed under the subject below:

Introductory Mathematics requirements include:

- Algebra
- Advanced Algebra
- Geometry
- Probability or Statistics
- Development of the Real Number System or Introduction to Mathematics

The following are required:

1. Course work must be college-level mathematics or higher.
2. Algebra courses must be for credit, applicable towards a degree and, if completed at the community college level, transferable to a four-year institution to be acceptable. Note: elementary algebra courses may not be used to meet these requirements. If the course in question is titled elementary algebra or similar then the student will need to submit a course description/syllabus to verify the acceptability.
3. As both algebra and advanced algebra are required, there are several options available to meet both areas. The requirement is algebra content at two different levels:
 - a. An individual completes a college algebra course; the “advanced” course may be another level of algebra such as linear algebra. An individual may not use another college algebra course, an elementary algebra course, or the same level algebra course completed at another college or university.
 - b. An individual completes a college or other level algebra course (other than elementary algebra); the “advanced” course may be a “higher” level math course such as trigonometry or calculus.
4. Courses in calculus will clear the specific course requirements (one for each content area being cleared) in algebra, advanced algebra, geometry, and development of the real number system, but the applicant must still have the required 48 quarter units.
5. If the applicant has only one or two courses in calculus and no course work in algebra, geometry, or real number systems, the applicant will need to either submit course descriptions so that it can be confirmed whether or not those areas were covered by the calculus course(s) or complete additional course work in the required content areas.
6. Personal enrichment-type mathematics courses are not acceptable.
7. One mathematics-based computer course is acceptable as additional units toward the required 48 quarter units.

The following courses are strongly recommended to satisfy the requirements for the Introductory Mathematics Authorization. The listed sequences are general and are subject to change depending on the applicant’s transcript and choice. All applicants must submit

his/her transcript (s) via an Admissions or Credential Advisor for faculty evaluation before starting any course work. The transcript will then be analyzed by the Mathematics Lead Faculty and an appropriate sequence will be identified and communicated to the applicant in writing and placed in the student’s educational record.

Introductory Mathematics Requirement Areas

Algebra and Advanced Algebra

(3 courses; 7.5-12 quarter units)

Sequence 1

MTH 204 Mathematics for Science
Prerequisite: MTH 12A and MTH 12B or Accuplacer test placement

AND

MTH 215 College Algebra & Trigonometry
Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B

OR

MTH 216A College Algebra I (3 quarter units)
Prerequisite: Accuplacer test placement evaluation MTH 12A and MTH 12B

AND

MTH 216B College Algebra II (3 quarter units)
Prerequisite: MTH 216A

OR

Sequence 2

MTH 215 College Algebra & Trigonometry
Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B

OR

MTH 216A College Algebra I (3 quarter units)
Prerequisite: Accuplacer test placement evaluation MTH 12A and MTH 12B

AND

MTH 216B College Algebra II (3 quarter units)
Prerequisite: MTH 216A

MTH 220 Calculus I
Prerequisite: Accuplacer test placement or MTH 216B or MTH 215

Geometry

(1 course; 4.5 quarter units)

MTH 301 Fundamentals of Mathematics II
Prerequisite: MTH 209A or Accuplacer test placement evaluation

OR

MTH 311 Topics from Geometry
Prerequisite: Accuplacer test placement or MTH 216B or MTH 215

Probability and Statistics

(1 course; 4.5 quarter units)

MTH 210 Probability and Statistics
Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B

Development of the real number system or introduction to mathematics

(1 course; 4.5 quarter units)

MTH 209A Fundamentals of Mathematics I
Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B

OR

MTH 411 Number Theory
Prerequisite: MTH 216B or MTH 215 or MTH 301

Elective Course requirements

(5-6 courses; 22.5-27 quarter units)

The following are recommended elective courses that could be selected as needed to reach a total of 48 quarter units.

MTH 220 Calculus I
Prerequisite: Accuplacer test placement or MTH 216B or MTH 215

- MTH 221 Calculus II
Prerequisite: MTH 220
- MTH 222 Calculus III
Prerequisite: MTH 221
- MTH 223 Calculus IV
Prerequisite: MTH 222
- MTH 317 Mathematical Modeling
Prerequisite: MTH 215 or MTH 216A and MTH 216B and MTH 210
- MTH 325 Discrete Mathematics
Prerequisite: MTH 215 or MTH 216A and MTH 216B
- MTH 410 Technology in Math Education
Prerequisite: MTH 215 or MTH 216A and MTH 216B or MTH 301
- MTH 412 History of Mathematics
Prerequisite: MTH 215 or MTH 301 or MTH 216A and MTH 216B
- MTH 418 Statistical Analysis
Prerequisite: MTH 210 and MTH 220
- MTH 435 Linear Algebra
Prerequisite: MTH 220 and MTH 325
- MTH 417 Foundations of Geometry
Prerequisite: MTH 216A and MTH 216B or MTH 215 and MTH 311