

San Diego State University  
Department of Mathematics and Statistics

SINGLE SUBJECT TEACHING COURSE LIST

**LOWER DIVISION**

Department	Course	Units	Description
Math	150	4	Algebraic and transcendental functions. Continuity and limits. The derivative and its applications. The integral and the fundamental theorem of calculus.
Math	151	4	Techniques and applications of integration. Improper integrals. Differential equations. Infinite series. Conic sections. Curves in parametric form, polar coordinates.
Math	241	1	Geometers Sketchpad workshop for single subject majors <i>only</i> .
Math	245	3	Logic, methods of proof, set theory, number theory, equivalence and order relations, counting (combinations and permutations), solving recurrence relations.
Math	252	4	Functions of several variables. Vectors. Partial derivatives and multiple integrals. Line integrals and Green's Theorem.
Math	254	3	Matrix algebra, Gaussian elimination, determinants, vector spaces, linear transformations, orthogonality, eigenvalues, and eigenvectors.
Stat	250	3	Descriptive statistics, data displays, measures of central tendency and variability, random variables, sampling distribution. Estimation and hypothesis tests for means and proportions, linear regression and correlation.
TE	211	1	Guided classroom observations for prospective middle and high school mathematics teachers. Mathematics education and strategies that promote professional development. Teaching in culturally and linguistically diverse school settings.

**UPPER DIVISION**

Math	302	3	Selected topics in mathematics to emphasize proof writing and problem solving. Intended for those planning to teach secondary school mathematics.
Math	303	3	Major currents in the development of mathematics from ancient Egypt and Babylon to late nineteenth century Europe.
Math	414	3	Historical development of mathematics and mathematics curriculum. Principles and procedures of mathematics instruction in secondary schools. For secondary and postsecondary teachers and teacher candidates.
Math	510,	3	The foundations of Euclidean and hyperbolic geometries. Highly recommended for all prospective teachers of high school geometry.

Math	521A	3	Abstract algebra, including elementary number theory, groups, and rings.
Math	534A	3	Completeness of the real numbers and its consequences, sequences of real numbers, continuity, differentiability and integrability of functions of one real variable.
Stat	550	3	Computation of probabilities via enumeration and simulation, discrete and continuous distributions, moments of random variables. Markov chains, counting and queuing processes, and selected topics.
Math	<i>Elective</i>	3	<p>Students often choose one of the following:</p> <p>Math 509:    COMPUTERS IN TEACHNG MATH Solving mathematical tasks using an appropriate computer interface, and problem-based curricula. Intended for those interested in mathematics teaching.</p> <p>Math 337:    MATH 337 ELEM DIFF EQUATIONS Integration of first-order differential equations, initial and boundary value problems for second-order equations, series solutions and transform methods, regular singularities.</p> <p>Math 522:    NUMBER THEORY Theory of numbers to include congruences, Diophantine equations, and a study of prime numbers; cryptography.</p> <p>Math 336:    INTRO TO MATH MODELING Models from the physical, natural, and social sciences including population models and arms race models. Emphasis on classes of models such as equilibrium models and compartment models.</p>

**Notes:**

- 1) Maximum 48 units of mathematics applicable toward BA.
- 2) Applicants to some credential programs such as SDSU also need to take ED 451, TE 280, and SPED 450. These are required to be eligible to apply to the credential program, but they are NOT required for graduation with the Single Subject Major degree.