

MATH 118 INTRODUCTION TO SCHOOL MATHEMATICS II (3)

Prerequisite: MATH 117 or equivalent. This is a continuation of MATH 117 and covers the basic concepts and operations of real numbers as well as various selected topics in mathematics from the recommended Standards of the National Council of Teachers of Mathematics (NCTM) and the PRAXIS exam. Topics include number theory, geometry and measurement, probability, and statistics. This course may not be used to satisfy any of the requirements for the mathematics minor or major.

MATH 211 CALCULUS III (3) *Prerequisite: MATH 104 or equivalent.*

Polar coordinates, infinite series and sequences, multivariable calculus, partial differentiation, multiple integration, three-dimensional analytic geometry and applications are studied.

MATH 222 INTRODUCTORY STATISTICS (3)

This is an introductory statistics course without a calculus prerequisite. Topics include probability, samples, distributions, sampling theory, estimation, hypothesis testing, two-sample tests, Chi-square and contingency tables, regression and correlation, analysis of variance, and decision theory.

MATH 231 THE MATHEMATICS OF COMPUTER SCIENCE (3)

This course introduces the theoretical and mathematical foundations of computer science. Topics include sets, summations and limits, number systems, mathematical induction, logic and Boolean algebra, probability and statistics, automata and grammars, combinatorics, and graph theory.

MATH 260 MATHEMATICAL REASONING AND PROOF (3)

Prerequisite: MATH 104 or the consent of the instructor. This course is an introduction to mathematical reasoning as exemplified in the proof methodology inherent to formal mathematics. This course will include a formal study of logic and the different methods of proof and then use examples from various branches of mathematics to illustrate these ideas. Fields from which the examples will be taken include, but are not limited to, set theory, cardinality, relations and order, functions, elementary group theory, and elementary combinations.

MATH 301 DIFFERENTIAL EQUATIONS (3) *Strongly Recommended:*

MATH 211. This course focuses on existence and uniqueness theorems; first order equations; linear, homogeneous, and non-linear equations; transform methods; numerical methods; and series solutions.

MATH 304 COLLEGE GEOMETRY (3) *Prerequisite: MATH 104.*

This course covers the important aspects of Euclidean Geometry including topics involving angles, triangles, parallel and perpendicular lines, circles, polygons, similarity, areas, volumes, as well as various selected topics in mathematics from the recommended Standards of the National Council of Teachers of Mathematics (NCTM) and the PRAXIS II exam. It is also intended to give students further exposure to the art of formal proof writing in a setting where many steps of the proof can be displayed and explained visually.

MATH 307 LINEAR ALGEBRA (3) *Strongly recommended: MATH 260.*

This course provides a study of linear transformations over vector spaces covering vectors, vector spaces, matrices, determinants, systems of linear equations, and linear transformations.

MATH 310 HISTORY OF MATHEMATICS (3) *Corequisite: MATH 260 or*

permission of instructor. This course will introduce students to mathematics from a historical perspective. Course topics will include number theory, algebra, geometry and calculus.

MATH 311 PROBABILITY THEORY (3) *Prerequisite: MATH 104.*

This course introduces mathematical probability theory using an axiomatic approach and considering numerous applications.

MATH 313 COMPLEX VARIABLES (3) *Prerequisite: MATH 211.*

This course examines properties of complex numbers; elementary functions of a complex variable; complex derivatives and analytic functions; mappings; definite and indefinite integrals; Cauchy's theorem and integral formulas; Taylor and Laurent expansions; singular points and the residue theorem; conformal mapping with applications.

