MATHEMATICS (MAT)

MAT 1010 College Algebra (3 Credits)
Explores inequalities and algebraic functions, including linear, quadratic, polynomial, rational, exponential, and logarithmic.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201010)

MAT 1110 Precalculus (5 Credits)
Explores algebraic, circular and trigonometric equations and identities; and inequalities.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201110)

MAT 1221 Survey of Calculus (5 Credits)
An applications-oriented course with an intuitive approach, including introduction to both differential and integral calculus. Examples drawn from business, economics, biology, and the social and behavioral sciences. This course is not the prerequisite for 1235, nor can credit be received if 1234 or its equivalent has been taken.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201221)

MAT 1234 Calculus I (5 Credits)
First course in calculus, emphasizing limits and derivatives of functions of one variable. Typically offered: Autumn and Winter Quarter.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201234)

MAT 1235 Calculus II (5 Credits)
Second course in calculus, emphasizing integral calculus of functions of one variable.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201235)

MAT 1236 Calculus III (5 Credits)
Third course in calculus. Includes parametric equations, polar coordinates, vectors, sequences, series, and Taylor expansions. Introduces multivariable calculus, including partial derivatives, double integrals, and triple integrals.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201236)

MAT 1300 Introduction to Statistical Reasoning (5 Credits)
A course in statistical literacy emphasizing concepts and reasoning rather than in-depth coverage of traditional methods and formulas. Topics include data sources and sampling, strengths and limitations of basic experimental design, graphical and numerical summaries of data, and conceptual coverage of probability and statistical inference.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201300)

MAT 1521 Introduction to Contemporary Mathematics (5 Credits)
Explores topics that illustrate how mathematical methods and models permeate our economic, political, and personal lives. By investigation of diverse applications, a variety of problem-solving techniques will be introduced, including using the computer as a tool.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201521)

MAT 1560 Numerical Reasoning (4 Credits)
The first in a three-course sequence, this course is a study of numerical reasoning through in-depth explorations of numeration systems, numerical properties and operations, concepts in number theory, and related topics in the history of mathematics. There is an emphasis on problem solving, standards of mathematical practice, and use of appropriate technologies such as calculators and interactive software. The content preparation for teaching K-8 mathematics based on the Common Core State Standards is stressed.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201560)

MAT 1720 Mathematics for Computer Science (5 Credits)
Explores set theory, number systems, logic, proof techniques, basics of counting, discrete probability, networks, digital logic, and digital systems.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%201720)

MAT 2200 Engineering Probability and Statistics (3 Credits)
Introduces students to concepts of probability and statistics along with methodology for applying these to engineering applications.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%202200)

MAT 2360 Introduction to Statistics for the Sciences (5 Credits)
Introduction to the practice of statistics with applications to the sciences. Topics include graphical and numerical summaries of data, probability, estimation, hypothesis testing, linear regression, and one-way analysis of variance. Emphasis on applications, statistical reasoning, and data analysis using statistical software.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%202360)

MAT 2401 Linear Algebra (3 Credits)
Studies vector spaces, matrices, and linear transformations.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%202401)

MAT 2561 Statistical and Algebraic Reasoning (4 Credits)
The second in a three-course sequence, this course is a study of both algebraic and statistical reasoning through in-depth explorations of data, patterns, and related topics in the history of mathematics. There is an emphasis on problem solving, standards of mathematical practice, and use of appropriate technologies such as calculators and interactive software. The content preparation for teaching K-8 mathematics based on the Common Core State Standards is stressed.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%202561)

MAT 2950 Special Topics in Mathematics (1-5 Credit)
Varied special topics in mathematics. See current Time Schedule for topic. Typically offered: Occasionally.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%202950)

MAT 3000 Foundations of Mathematics (5 Credits)
An introduction to methods for writing rigorous mathematical proofs. Topics include formal logic, set theory, mathematical induction, functions, relations, number systems, and cardinality. Additional topics may be selected by the instructor.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203000)

MAT 3237 Differential Equations (3 Credits)
Studies general solutions of first and second order differential equations, Laplace transforms, and series solutions.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203237)

MAT 3238 Vector Calculus (3 Credits)
Additional study of multivariable and vector calculus, including vector-valued functions, vector fields, line integrals, surface integrals, Green's Theorem, Stoke's Theorem, and the Divergence Theorem.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203238)

MAT 3333 Statistical Modeling (5 Credits)
A second course in applied statistics. This course builds on an introductory statistics course, providing students tools to perform more complex data analysis. Topics include linear and nonlinear regression, multiple regression, and analysis of variance. Statistical software will be used extensively. Typically offered: Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203333)

MAT 3360 Probability and Statistics (5 Credits)
Calculus based introduction to probability and statistics. Studies elementary probability, discrete and continuous probability distributions, expectation, moments, sampling distributions, central limit theorem, estimation, and hypothesis testing.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203360)

MAT 3380 Introduction to Data Science (5 Credits)
An introduction to data science using R. This course provides an overview of concepts, skills, and technologies used for working with large, complex, and messy datasets. Provides an introduction to the full data workflow, from data acquisition and cleaning to exploration, analysis, visualization, and communication of final results. Explores ethical and social considerations inherent in working with "big data," including privacy, design, reproducibility, and bias. Using real-world datasets, students will explore, visualize, and pose questions about data.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203380)

MAT 3401 Number Theory (3 Credits)
Studies topics of classical number theory including divisibility, primes and congruences. Typically offered: Autumn, Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203401)

MAT 3562 Geometric Reasoning (4 Credits)
The third in a three-course sequence, this course is a study of geometric reasoning with emphasis on depth of understanding and appropriate use of calculators and computer software. Investigations of mathematical topics include two- and three-dimensional geometry, measurement, proof appropriate for K-8 teachers, and associated history of mathematics. Common Core State Standards-based content preparation for teaching K-8 mathematics.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203562)

MAT 3724 Applied Analysis (3 Credits)
Studies Fourier series, heat, wave, and Laplace's equations, separation of variables, and boundary value problems. Typically offered: Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203724)

MAT 3730 Complex Variables (3 Credits)
Studies theory and applications of complex variables; analytic functions, integrals, and power series applications. Typically offered: Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203730)

MAT 3749 Introduction to Analysis (5 Credits)
Uses the axiomatic method to prove basic results from set theory and real analysis. Topics include functions, set cardinality, the real number system, and the topology of the real line.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%203749)

MAT 4363 Mathematical Statistics (3 Credits)
Studies in greater depth continuous and discrete probability distributions, moment generating functions, probability-generating functions, transformations, and multivariate probability distributions. Typically offered: Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%204363)

MAT 4402 Modern Algebra I (3 Credits)
Studies algebraic structures, including groups, rings, and fields.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%204402)

MAT 4725 Numerical Analysis (5 Credits)
Studies numerical integration, differentiation, solutions of systems of equations, and related topics. Typically offered: Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%204725)

MAT 4830 Mathematical Modeling (5 Credits)
Focuses on construction and analysis of mathematical models for problems in the real world. The problems will be chosen from a variety of fields, including the biological and social sciences. Typically offered: Alternate Years.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%204830)

MAT 4898 Senior Capstone Seminar (2 Credits)
This senior capstone course will explore the culture of mathematics through readings and classroom discussions. Students will reflect on and synthesize mathematical ideas within the context of a Christian worldview. Students are expected to have at least 9 UD credits of MAT courses prior to registering for Math Senior Capstone. Typically offered: Autumn.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%204898)

MAT 4899 Senior Capstone Seminar (3 Credits)
This senior capstone course will explore the culture of mathematics through readings and classroom discussions during the Autumn Quarter. Students will synthesize mathematical ideas within the context of a Christian worldview. The student will complete a substantial mathematical project and make an oral presentation within the following two quarters. Students are expected to have at least 9 UD credits of MAT courses prior to registering for Math Senior Capstone.
Course Schedule (https://catalog.spu.edu/course-search/?details&code=MAT%204899)

MAT 4900 Independent Project/Design in Mathematics (1-3 Credit)
Individual project, library research, or laboratory research. A final written
report or public presentation, such as at an undergraduate conference, of
results is required.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204900)

MAT 4904 Independent Study in Mathematics (1-5 Credit)
Prerequisites: 6 credits in upper-division mathematics.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204904)

MAT 4910 Mathematics Seminar (1-5 Credit)
Investigates topics of current interest through student reports.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204910)

MAT 4920 Mathematical Modeling Contest (1 Credit)
Students will represent SPU in COMAP's Mathematical Contest in
Modeling. Typically offered: Winter.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204920)

MAT 4930 Practicum in Mathematics (1-5 Credit)
Practical experience in a supervised educational setting.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204930)

MAT 4940 Internship in Mathematics (1-5 Credit)
Provides a significant learning experience to be obtained in a closely
supervised work-study program.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204940)

MAT 4950 Special Topics in Mathematics (1-5 Credit)
Special Topics
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204950)

MAT 4960 UG Mathematics Research (1-3 Credit)
The student will conduct research under the supervision of a
mathematics faculty member. A final written report or public presentation,
such as at an undergraduate conference, is required.
Course Schedule (https://catalog.spu.edu/course-search/?
details&code=MAT%204960)