MAE

Mathematics Teacher Preparation

MAE 301: Foundations of Secondary School Mathematics

A re-examination of elements of school mathematics, including topics in algebra, geometry, and elementary functions. Competence in basic secondary-level ideas and techniques are tested.

Prerequisites: MAT 200 and 211; admission to mathematics or applied mathematics secondary teacher preparation program
Corequisite: MAE 311

3 credits

MAE 302: Methods and Materials for Teaching Secondary School Mathematics

The goals of mathematics education, learning theories, mathematics curricula, lesson planning, evaluation and teaching strategies. Lesson plans are drawn up and presented to the group.

Prerequisites: MAE 301 and C or higher in MAE 311
Pre- or Corequisite: MAE 312

SBC: CER, EXP+, SPK

3 credits

MAE 311: Introduction to Methods of Teaching Secondary School Mathematics

Aspects of teaching mathematics on the secondary school level, including lesson designs based on the NCTM standards, cooperative learning, and technology in mathematics education. Students observe classes in middle school and high school settings.

Prerequisites: MAT 211; admission to mathematics or applied mathematics secondary teacher preparation program; department consent
Corequisite: MAE 301

3 credits

MAE 312: Micro-Teaching

Twice-weekly supervised classroom experience, tutoring, or working with small groups of students as a teacher's aide.

Prerequisite: C or higher in MAE 311
Pre- or Corequisite: MAE 302

SBC: CER, EXP+, SPK

2 credits

MAE 330: Technology in Mathematics Education

Introduces students in the secondary mathematics teacher preparation program to techniques and requirements for effective use of technology in the mathematics classroom. Emphasis on projects. Use of graphing calculators and computer software such as Geometer's Sketchpad.

Prerequisites: MAE 301 and 311

SBC: TECH

3 credits

MAE 400: Experiential Learning, Speak Effectively, Practice Critical and Ethical Reasoning

A zero credit course that may be taken in conjunction with any MAE course that provides opportunity to achieve the learning outcomes of the Stony Brook Curriculum's CER, EXP+, and SPK learning objectives.

Pre- or corequisite: WRT 102 or equivalent; permission of the instructor

SBC: CER, EXP+, SPK

0 credit, S/U grading

MAE 412: Issues in Teaching and Learning in Collegiate Mathematics

Investigation of the issues involved in the teaching and learning of introductory collegiate mathematics. A supervised teaching internship of undergraduate mathematics accompanies this seminar.

Prerequisite: MAE 302

4 credits

MAE 447: Directed Readings in Mathematics Education

Tutorial studies concerning current issues in mathematics education, including recent research and topics in the history of mathematics and their relation to teaching practice.

Pre- or Corequisite: MAE 312

1 credit

MAE 451: Supervised Teaching - Middle School Level Grades 7-9

Intensive supervised teaching in secondary schools. Students work in the school under the supervision of an experienced teacher.

Prerequisites: MAE 312; MAT 312, 319 and 360; AMS 310; permission of director of mathematics teacher education program
Corequisites: MAE 452 and 454

SBC: CER, EXP+, SPK

6 credits, S/U grading

MAE 452: Supervised Teaching - High School Grades 10-12

Intensive supervised teaching in secondary schools. Students work in the school under the supervision of an experienced teacher.

Prerequisites: MAE 312; MAT 312, 319 and 360; AMS 310; permission of director of mathematics teacher education program
Corequisites: MAE 451 and 454

SBC: CER, EXP+, SPK

6 credits, S/U grading

MAE 454: Student Teaching Seminar

Weekly discussions of teaching techniques and experiences, learning theory, curriculum content, and classroom problems.

Corequisites: MAE 451 and 452

SBC: CER, EXP+, SPK

3 credits

MAP

Mathematics Proficiency

MAP 101: Fundamentals of Arithmetic and Algebra

Arithmetic: fractions, decimals, and percent. Algebra: signed numbers, monomials, linear equations in one unknown, and word problems. This course is intended for students who have never studied algebra. Does not satisfy the entry skill in mathematics requirement or the D.E.C. category C requirement. Students who have otherwise satisfied D.E.C. category C may not register for this course. Overqualified students as determined by a placement test may be deregistered and directed to transfer to another course. Does not count toward graduation. A through C/Unsatisfactory grading only. The Pass/No Credit option may not be used.

3 credits

MAP 103: Proficiency Algebra

An intensive review of high school algebra as preparation for calculus and other mathematics. Facility with exponents, basic graphing, solving linear and quadratic equations in one variable, solving linear systems in two variables, polynomials, factorization of algebraic expressions, binomial theorem, and inequalities. Algebraic manipulations, analytic geometry of lines. Does not count toward graduation. A through C/Unsatisfactory grading only. The Pass/No Credit option may not be used. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering

for HD/CA courses for the first time will have priority to do so.

Prerequisite: Level 2 on the mathematics placement examination or MAP 101

DEC: S1

3 credits

MAT

Mathematics

MAT 118: Mathematical Thinking

Development of quantitative thinking and problem solving abilities through a selection of mathematical topics: logic and reasoning; numbers, functions, and modeling; combinatorics and probability; growth and change. Other topics may include geometry, statistics, game theory, and graph theory. Through their engagement in problem solving, students develop an appreciation of the intellectual scope of mathematics and its connections with other disciplines.

Prerequisite: C or better in MAP 103 or level 2+ or higher on the mathematics placement examination
(Prerequisite must be met within one year of beginning this course.)

DEC: C
SBC: QPS

3 credits

MAT 122: Overview of Calculus with Applications

The basics of calculus in a self-contained, one-semester course. Properties and applications of polynomial, exponential, and logarithmic functions. Derivatives: slopes, rates of change, optimization, integrals, area, cumulative change, and average. The fundamental theorem of calculus. Emphasis on modeling examples from economics. Students who subsequently wish to enroll in MAT 125 or 131 will be required to take MAT 130 as a pre- or corequisite to either course or to score level 4 on the mathematics placement examination before taking either course. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or better in MAP 103 or level 3 on the mathematics placement exam
(Prerequisite must be met within one year prior to beginning the course.)

DEC: C
SBC: QPS

3 credits

MAT 123: Precalculus

Comprehensive preparation for the regular calculus sequences. Careful development of rational, exponential, logarithmic, and trigonometric functions, and their applications. Asymptotics and curve sketching. General modeling examples. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or better in MAP 103 or level 3 on the mathematics placement exam
(Prerequisite must be met within one year prior to beginning the course.)

DEC: C
SBC: QPS

3 credits

MAT 125: Calculus A

Differential calculus, emphasizing conceptual understanding, computations and applications, for students who have the necessary background from 12th-year high school mathematics. Limits and continuous functions. Differentiation of elementary algebraic, trigonometric, exponential and logarithmic functions; graphing; modeling; and maximization. L'Hospital's rule. May not be taken for credit in addition to MAT 131 or 141 or AMS 151. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or higher in MAT 123; or level 4 on the mathematics placement examination; or MAT 122 and coregistration in MAT 130

DEC: C
SBC: QPS

3 credits

MAT 126: Calculus B

A continuation of MAT 125, covering integral calculus: the fundamental theorem, symbolic and numeric methods of integration, area under a curve, volume, applications such as work and probability, improper integrals. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or higher in MAT 125 or 131 or 141 or AMS 151 or level 6 on the mathematics placement examination

DEC: C
SBC: QPS

3 credits

MAT 127: Calculus C

A continuation of MAT 126, covering: sequences, series, Taylor series, differential equations and modeling. May not be taken for credit in addition to MAT 132, MAT 142, MAT 171, or AMS 161. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or higher in MAT 126 or level 8 on the mathematics placement examination

DEC: C
SBC: QPS

3 credits

MAT 131: Calculus I

The differential calculus and integral calculus, emphasizing conceptual understanding, computations and applications, for students who have the necessary background from 12th-year high school mathematics. Differentiation of elementary algebraic; trigonometric, exponential, and logarithmic functions; graphing; modelling and maximization; L'Hospital's rule; the Riemann integral; and the fundamental theorem. May not be taken for credit in addition to MAT 125 or 141 or AMS 151. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: B or higher in MAT 123 or level 5 on the mathematics placement examination

DEC: C
SBC: QPS

4 credits

MAT 132: Calculus II

A continuation of MAT 131, covering symbolic and numeric methods of integration; area under a curve; volume; applications such as work and probability; sequences; series; Taylor series; differential equations; and modelling. May not be taken for credit in addition to MAT 127, MAT 142, MAT 171, or AMS 161. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or higher in AMS 151 or MAT 131 or 141, or level 7 on the mathematics placement examination

DEC: C
SBC: QPS

4 credits

MAT 141: Analysis I

A careful study of the theory underlying calculus. The development of the real number system, limits and infinite sequences, functions of one real variable, continuity, differentiability, the Riemann integral, and the Fundamental Theorem of Calculus. Full attention to proofs is given. All topics in MAT131 are included, although the presentation differs significantly. May not be taken for credit in addition to MAT 125, MAT 131, or AMS 151. A student who successfully completes both MAT 141 and 142 will receive equivalency for MAT 320. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: Level 5 on the mathematics placement examination; priority given to students in the University's honors programs

DEC: C
SBC: QPS

4 credits

MAT 142: Analysis II

A continuation of MAT 141 in the same spirit, including the topics of MAT 132 but with attention to theory and including proofs of major theorems: techniques and applications of integration, infinite series, Taylor series, modelling and elementary differential equations. A student who successfully completes both MAT 141 and MAT 142 will receive a waiver for MAT 320. May not be taken for credit in addition to MAT 127, MAT 171, or AMS 161. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.

Prerequisite: C or higher in MAT 141 or permission of the Advanced Track Committee

SBC: QPS

4 credits

MAT 150: Introduction to Advanced Mathematics

An introduction to the advanced track mathematics program. Provides the core of basic logic, elementary set theory and a large collection of short important self-contained subjects mostly independent from each other. They come from various parts of mathematics: number theory, geometry, combinatorics, topology, optimization theory, etc. No preliminary knowledge of advanced mathematics is required. MAT 150 serves as an alternative to MAT 200 for students in the Advanced Track.

Prerequisite: Level 4 on the mathematics placement examination or permission of the

Advanced Track Committee. Priority given to students in the University's honors programs.

SBC: QPS

3 credits

MAT 160: Mathematical Problems and Games

Intended for students interested in sharpening their problem-solving skills and in developing their ability to express mathematical ideas.

1 credit, S/U grading

MAT 171: Accelerated Single-Variable Calculus

A single semester, honors-level, course which reviews the material in MAT 131 in a few weeks, then concentrates on the topics covered in MAT 132, with additional attention paid to the underlying theory. Primarily intended for students who have had calculus in high school. May not be taken for credit in addition to MAT 126, MAT 127, MAT 132, MAT 142, or AMS 161.

Prerequisites: Level 5 on the AB Calculus AP exam, Level 3 on the BC Calculus exam, A or A- in MAT 131 or AMS 151, MAT 141, or level 7 on the mathematics placement exam. Priority given to students in the University's honors programs.

DEC: C
SBC: QPS

4 credits

MAT 200: Logic, Language and Proof

A basic course in the logic of mathematics, the construction of proofs and the writing of proofs. The mathematical content is primarily set theory, combinatorics and Euclidean geometry. There is considerable focus on writing.

Prerequisite: Level 4 on the mathematics placement examination or equivalent course or permission of the instructor

SBC: STEM+

3 credits

MAT 203: Calculus III with Applications

Vector algebra in two and three dimensions, multivariate differential and integral calculus, optimization, vector calculus including the theorems of Green, Gauss, and Stokes. Applications to economics, engineering, and all sciences, with emphasis on numerical and graphical solutions; use of graphing calculators or computers. May not be taken for credit in addition to AMS 261.

Prerequisite: C or higher in MAT 127 or 132 or 142 or AMS 161 or level 9 on the mathematics placement examination

SBC: STEM+

4 credits

MAT 211: Introduction to Linear Algebra

Introduction to the theory of linear algebra with some applications; vectors, vector spaces, bases and dimension, applications to geometry, linear transformations and rank, eigenvalues and eigenvectors, determinants and inner products. May not be taken for credit in addition to AMS 210.

Prerequisite: C or higher in AMS 151 or MAT 131 or 141 or coregistration in MAT 126 or level 7 on the mathematics placement examination

SBC: STEM+

3 credits

MAT 220: Vector Geometry

Vectors and vector algebra. Dot product. Cross product and triple product. Isometry, similarity transformations, affine transformations on a plane and in 3-space. Analytical geometry. Vector equations of lines and planes. Curves and surfaces of degree two. Complex numbers and quaternions and their geometric interpretations.

Prerequisite: Level 4 on the mathematics placement examination or equivalent course or permission of the instructor

SBC: STEM+

3 credits

MAT 260: Problem Solving in Mathematics

Students actively solve challenging problems in plane geometry, basic number theory, and calculus, and write precise arguments. Relevant preparation for problem-solving is provided in the course.

Prerequisite: Permission of instructor

1 credit

MAT 303: Calculus IV with Applications

Homogeneous and inhomogeneous linear differential equations; systems of linear differential equations; series solutions; Laplace transforms; Fourier series. Applications to economics, engineering, and all sciences with emphasis on numerical and graphical solutions; use of computers. May not be taken for credit in addition to AMS 361 or MAT 308.

Prerequisite: C or higher in MAT 127 or 132 or 142 or AMS 161 or level 9 on the mathematics placement examination

SBC: STEM+

4 credits

MAT 307: Multivariable Calculus with Linear Algebra

Introduction to linear algebra: vectors, matrices, systems of linear equations, bases and dimension, dot product, determinants. Multivariate differential and integral calculus, divergence and curl, line and surface integrals, theorems of Green, Gauss, and Stokes. More theoretical and intensive than MAT 203, this course is primarily intended for math majors. Together with MAT 308, it forms a 2-semester sequence covering the same material as the 3-semester sequence of MAT 203, MAT 211 and MAT 305. May not be taken for credit in addition to MAT 203 or AMS 261.

Prerequisite: MAT 127 or MAT 132

SBC: *STEM+*

4 credits

MAT 308: Differential Equations with Linear Algebra

Linear algebra: determinants, eigenvalues and eigenvectors, diagonalization. Differential equations; existence and uniqueness of solutions. First- and second-order equations; linear versus nonlinear equations. Systems of linear equations. Laplace transform. Applications to physics. More theoretical and intensive than MAT 303, this course is primarily intended for math majors. Together with MAT 307, it forms a 2-semester sequence covering the same material as the 3-semester sequence of MAT 205, MAT 211 and MAT 305. May not be taken for credit in addition to MAT 303 or AMS 361.

Prerequisite: MAT 307 or permission of instructor

SBC: *STEM+*

4 credits

MAT 310: Linear Algebra

Finite dimensional vector spaces, linear maps, dual spaces, bilinear functions, inner products. Additional topics such as canonical forms, multilinear algebra, numerical linear algebra.

Prerequisite: C or higher in MAT 211 or 308 or AMS 210; C or higher in MAT 200 or permission of instructor

4 credits

MAT 311: Number Theory

Congruences, quadratic residues, quadratic forms, continued fractions, Diophantine equations, number-theoretical functions, and properties of prime numbers.

Prerequisites: C or higher in MAT 312 or 313; C or higher in MAT 200 or permission of instructor

3 credits

MAT 312: Applied Algebra

Topics in algebra: groups, informal set theory, relations, homomorphisms. Applications: error correcting codes, Burnside's theorem, computational complexity, Chinese remainder theorem. This course is offered as both AMS 351 and MAT 312.

Prerequisite: C or higher in AMS 210 or MAT 211

Advisory Prerequiste: MAT 200 or CSE 113

3 credits

MAT 313: Abstract Algebra

Groups and rings together with their homomorphisms and quotient structures. Unique factorization, polynomials, and fields.

Prerequisite: C or higher in MAT 310 or 312; C or higher in MAT 200 or permission of instructor

3 credits

MAT 314: Abstract Algebra II

This course is a continuation of MAT 313, Abstract algebra. It covers modules over rings, including structure theorem for modules over PID, theory of fields and field extensions and introduction to Galois theory. It is intended for math majors, in particular math majors in advanced track program.

Prerequisite: MAT 313 or permission of instructor

3 credits

MAT 315: Advanced Linear Algebra

Finite dimensional vector spaces over a field, linear maps, isomorphisms, dual spaces, quotient vector spaces, bilinear and quadratic functions, inner products, canonical forms of linear operators, multilinear algebra, tensors.

Prerequisite: B or higher in MAT 150 or MAT 200, or permission of the instructor

4 credits

MAT 319: Foundations of Analysis

A careful study of the theory underlying topics in one-variable calculus, with an emphasis on those topics arising in high school calculus. The real number system. Limits of functions and sequences. Differentiations, integration, and the fundamental theorem. Infinite series.

Prerequisite: C or higher in MAT 200 or permission of instructor; C or higher in one of the following: MAT 203, 211, 307, AMS 261, or A- or higher in MAT 127, 132, 142, or AMS 161

4 credits

MAT 320: Introduction to Analysis

A careful study of the theory underlying calculus. The real number system. Basic properties of functions of one real variable. Differentiation, integration, and the inverse theorem. Infinite sequences of functions and uniform convergence. Infinite series.

Prerequisite: C or higher in MAT 200 or permission of instructor; C or higher in one of the following: MAT 203, 211, 307, AMS 261, or A- or higher in MAT 127, 132, 142, or AMS 161

4 credits

MAT 322: Analysis in Several Dimensions

Continuity, differentiation, and integration in Euclidean n-space. Differentiable maps. Implicit and inverse function theorems. Differential forms and the general Stokes's theorem.

Prerequisites: C or higher in MAT 203, 205, or AMS 261; C or higher in MAT 211 or AMS 210; B or higher in MAT 320
Advisory Pre- or Corequisite: MAT 310

3 credits

MAT 324: Real Analysis

Metric spaces, including compactness, connectedness, completeness, and continuity. Introduction to Lebesgue integration. Aspects of Fourier series, function spaces, Hilbert spaces, Banach spaces.

Prerequisites: C or higher in MAT 203 or 205 or 307 or AMS 261; B or higher in MAT 320

3 credits

MAT 331: Computer-Assisted Mathematical Problem Solving

Exploration of the use of the computer as a tool to gain insight into complex mathematical problems through a project-oriented approach. Students learn both the relevant mathematical concepts and ways that the computer can be used (and sometimes misused) to understand them. The particular problems may vary by semester; past topics have included cryptography, fractals and recursion, modeling the flight of a glider, curve fitting, the Brachistochrone, and computer graphics. No previous experience with computers is required.

Prerequisite: C or higher in MAT 203 or 205 or 307 or AMS 261

SBC: *TECH*

3 credits

MAT 336: History of Mathematics

A survey of the history of mathematics from the beginnings through the 19th century, with special attention to primary sources

and to the interactions between culture and mathematics. Emphasis on topics germane to the high school curriculum. Mesopotamian, Egyptian, and Greek mathematics; non-European mathematics; early Renaissance mathematics; the birth and flowering of calculus; the beginnings of probability theory; and the origin of non-euclidean gemetrics and the modern concept of number.

Prerequisite: MAT 200 or MAT 203 or MAT 307 or AMS 261

DEC: H
SBC: SPK, STAS, WRTD

3 credits

MAT 341: Applied Real Analysis

Partial differential equations of mathematical physics: the heat, wave, and Laplace equations. Solutions by techniques such as separation of variables using orthogonal functions (e.g., Fourier series, Bessel functions, Legendre polynomials). D'Alambert solution of the wave equation.

Prerequisites: C or higher in the following: MAT 203 or 205 or 307 or AMS 261; MAT 303 or 305 or AMS 361
Advisory Prerequisite: MAT 200

3 credits

MAT 342: Applied Complex Analysis

Complex numbers, analytic functions, the Cauchy-Riemann and Laplace equations, the Cauchy integral formula and applications. Fundamental Theorem of Algebra and the the Maximum Principle. The Cauchy residue theorem and applications to evaluating real integrals. Conformal mappings.

Prerequisites: C or higher in the following: MAT 203 or 205 or 307 or AMS 261; MAT 303 or 305 or 308 or AMS 361
Advisory Prerequisite: MAT 200

3 credits

MAT 351: Differential Equations: Dynamics and Chaos

A study of the long-term behavior of solutions to ordinary differential equations or of iterated mappings, emphasizing the distinction between stability on the one hand and sensitive dependence and chaotic behavior on the other. The course describes examples of chaotic behavior and of fractal attractors, and develops some mathematical tools for understanding them.

Prerequisites: C or higher in the following: MAT 203 or 205 or 307 or AMS 261; MAT 303 or 305 or 308 or AMS 361; MAT 200 or permission of instructor

3 credits

MAT 360: Geometric Structures

Formal geometries and models. Topics selected from projective, affine, Euclidean, and non-Euclidean geometries.

Pre- or Corequisites: C or higher in the following: MAT 203 or 205 or 307 or AMS 261; MAT 211 or AMS 210; MAT 200 or permission of instructor

3 credits

MAT 362: Differential Geometry of Surfaces

The local and global geometry of surfaces: geodesics, parallel transport, curvature, isometries, the Gauss map, the Gauss-Bonnet theorem.

Prerequisite: C or higher in MAT 319 or 320 or 364

3 credits

MAT 364: Topology and Geometry

A broadly based introduction to topology and geometry, the mathematical theories of shape, form, and rigid structure. Topics include intuitive knot theory, lattices and tilings, non-Euclidean geometry, smooth curves and surfaces in Euclidean 3-space, open sets and continuity, combinatorial and algebraic invariants of spaces, higher dimensional spaces.

Prerequisites: MAT 203 or 205 or 307 or AMS 261
Advisory Prerequisite: MAT 319 or 320

3 credits

MAT 371: Logic

A survey of the logical foundations of mathematics: development of propositional calculus and quantification theory, the notions of a proof and of a model, the completeness theorem, Goedel's incompleteness theorem. This course is offered as both CSE 371 and MAT 371.

Prerequisite: CSE 150 or CSE 215 or MAT 200

3 credits

MAT 373: Analysis of Algorithms

Mathematical analysis of a variety of computer algorithms including searching, sorting, matrix multiplication, fast Fourier transform, and graph algorithms. Time and space complexity. Upper-bound, lower- bound, and average-case analysis. Introduction to NP completeness. Some machine computation is required for the implementation and comparison of algorithms. This course is offered as CSE 373 and MAT 373.

Prerequisites: C or higher in MAT 211 or AMS 210; CSE 214 or CSE 260

3 credits

MAT 401: Seminar in Mathematics

Discussions of a specific area of interest in mathematics. The work of each semester covers a different area of mathematics. May be repeated as topic changes. Prerequisites will be announced with the topic each time the course is offered.

Prerequisites: U3 or U4 standing; additional prerequisites announced with topic

SBC: SPK

3 credits

MAT 402: Seminar in Mathematics

Discussions of a specific area of interest in mathematics. The work of each semester covers a different area of mathematics. May be repeated as topic changes. Prerequisites will be announced with the topic each time the course is offered.

Prerequisites: U3 or U4 standing; additional prerequisites announced with topic

SBC: SPK

3 credits

MAT 444: Experiential Learning

This course is designed for students who engage in a substantial, structured experiential learning activity in conjunction with another class. Experiential learning occurs when knowledge acquired through formal learning and past experience are applied to a "real-world" setting or problem to create new knowledge through a process of reflection, critical analysis, feedback and synthesis. Beyond-the-classroom experiences that support experiential learning may include: service learning, mentored research, field work, or an internship.

Prerequisite: WRT 102 or equivalent; permission of the instructor and approval of the EXP+ contract (http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/degree_requirements/EXPplus.php)

SBC: EXP+

0 credit, S/U grading

MAT 458: Speak Effectively Before an Audience

A zero credit course that may be taken in conjunction with any MAT course that provides opportunity to achieve the learning outcomes of the Stony Brook Curriculum's SPK learning objective.

Pre- or corequisite: WRT 102 or equivalent; permission of the instructor

SBC: SPK

0 credit, S/U grading

MAT 459: Write Effectively in Mathematics

A zero credit course that may be taken in conjunction with any 300- or 400-level MAT course, with permission of the instructor. The course provides opportunity to practice the skills and techniques of effective academic writing and satisfies the learning outcomes of the Stony Brook Curriculum's WRTD learning objective.

Prerequisite: WRT 102; permission of the instructor

SBC: *WRTD*

0 credit, S/U grading

MAT 475: Undergraduate Teaching Practicum

Each student assists in teaching a lower-division mathematics course or works in the Mathematics Learning Center. The student's work is regularly supervised by a faculty member. In addition, a weekly seminar is conducted. Responsibilities may include preparation of materials for student use and discussions, helping students with problems, and involvement in "alternative" teaching projects. Intended for upper-division students who have excelled in the calculus sequence. May not be used for major credit.

Prerequisite: Permission of the director of undergraduate studies

SBC: *EXP+*

3 credits, S/U grading

MAT 487: Independent Study in Special Topics

A reading course for juniors and seniors. The topics may be chosen by the student with the approval of a supervising member of the faculty, who also takes responsibility for evaluation. A topic that is covered in a course regularly offered by the department is not appropriate for independent study. May be repeated.

Prerequisite: Permission of the director of undergraduate studies

0-6 credits

MAT 495: Honors Thesis

The student and a supervising faculty member together choose a topic in mathematics, and the student writes a substantial paper expounding the topic in a new way.

Prerequisite: Permission of the director of undergraduate studies

SBC: *EXP+, WRTD*

3 credits