

611. **Managerial Accounting.** 3 hrs. Prerequisite: MBA 511 or the equivalent. An analysis of the use of accounting information in managerial decision making.
620. **Macroeconomic Analysis for Managers.** 3 hrs. Prerequisites: MBA 520; MBA 530. An examination of the use of macroeconomic analysis and information in managerial decision making.
640. **Problems in Corporate Finance.** 3 hrs. Prerequisite: MBA 570. Applications of financial theory to complex financial problems.
645. **Communication Skills for Managers** 3 hrs. Prerequisite: Admission to MBA or MPA program. A course designed to develop communication skills as they relate to managerial effectiveness.
650. **Technology in Modern Organizations.** 3 hrs. Examination of the impact of information technology on the productivity, quality, service, and enhanced communication abilities of organizations.
660. **Global Business Strategy.** 3 hrs. Prerequisite: Permission of the program director. An analysis of strategic business planning and implementation from the perspective of top management.
685. **Management of the Multinational Enterprise.** 3 hrs. An analysis of the global environment and its implications for cross-border management.
692. **Special Problems in Business Administration.** 1-6 hrs. Prerequisite: Permission of the program director.

Mathematics (MAT)

500. **Mathematics Teaching Seminar.** 1 hr. In-depth topics related to preparing and presenting lessons, testing and grading, and classroom management, includes videotaping of practice teaching sessions. (Does not count as program credit for M.S. in mathematics.)
508. **Mathematical Foundations for Inservice Elementary School Teachers.** 3 hrs. Numeration, place value, intuitive geometry, measurement, arithmetic algorithms. (Does not count as program credit for M.S. in mathematics.)
509. **Mathematical Foundations for Inservice Middle School Teachers.** 3 hrs. Intuitive geometry, integers, rational numbers, probability, graphing, metric system, word problems. (Does not count as program credit for M.S. in mathematics.)
510. **Mathematics for Teachers of Junior High School Mathematics.** 3 hrs. The real number system and major subsystems, introduction to algebra, informal geometry, consumer mathematics, and introduction to BASIC programming. (Open only to elementary and special education majors and does not count as program credit for M.S. in mathematics.)
515. **Introduction to Differential Equations II.** 3 hrs. Prerequisite: MAT 285. Systems of linear differential equations, characteristic equations, operator methods, approximating solutions, Laplace transforms.
517. **Introduction to Partial Differential Equations.** 3 hrs. Prerequisite: MAT 285. Integrability conditions, quasilinear and linear equations, applications to physics, classification of second order equations and canonical forms, separation of variables.
- 518.* **Linear Programming.** 3 hrs. Prerequisite: MAT 326. Convex sets, linear inequalities, extreme-point solutions, simplex procedure, applications.
- 519.* **Optimization in Mathematical Programming.** 3 hrs. Prerequisites: MAT 280, and 418 or 518. Selected topics in optimization from linear and nonlinear programming.
520. **Probability and Mathematical Statistics II.** 3 hrs. Prerequisite: MAT 320. Central limit theorem, estimation, hypothesis tests.
521. **Number Theory.** 3 hrs. Prerequisite: MAT 340. Induction, well ordering, division algorithm, Euclidean algorithm, Fundamental Theorem of Arithmetic, number theoretic functions, congruences.
523. **Modern Algebra I.** 3 hrs. Prerequisite: MAT 340. Elementary notions in groups, Fundamental Theorem of Finitely Generated Groups, permutation groups, quotient groups, the isomorphism theorems, applications of transformation groups.
524. **Modern Algebra II.** 3 hrs. Prerequisite: MAT 423 or 523. Survey of standard algebraic systems: rings, integral domains, fields, modules, polynomial rings, quotient rings, fields of quotients.
526. **Linear Algebra II.** 3 hrs. Prerequisite: MAT 326. Determinants; polynomials; complex numbers; single linear transformations; orthogonal, unitary, and symmetric linear transformations.
536. **Theory of Functions of a Complex Variable.** 3 hrs. Prerequisite: MAT 280. Complex numbers and functions, limits, continuity, differentiation, analytic functions, branches, contour integration, series.
537. **Graph Theory.** 3 hrs. Prerequisite: MAT 340. An introduction to graphs and a sampling of their numerous and diverse applications.
539. **Combinatorics.** 3 hrs. Prerequisites: MAT 326, 340, and 169. Counting and enumeration techniques, inversion formulas and their applications, and counting schemata relative to permutations of objects.

541. **Advanced Calculus I.** 3 hrs. Prerequisites: MAT 280 and 340. Point set theory, sequences, continuity, uniform continuity, limits, mean value theorems, L'Hospital's rule.
542. **Advanced Calculus II.** 3 hrs. Prerequisite: MAT 441 or 541. Riemann integration, Taylor's theorem, improper integrals, infinite series, uniform convergence.
- 560.* **Numerical Analysis I.** 3 hrs. Prerequisites: MAT 280, 326, and knowledge of a programming language. Methods of solving equations and systems of equations, error analysis, difference equations.
- 561.* **Numerical Analysis II.** 3 hrs. Prerequisites: MAT 285, and 460 or 560. Interpolating polynomials, numerical differentiation and integration, numerical solutions of differential equations, roundoff error.
- * *Students will use university computers and appropriate software as a part of course requirements.*
572. **Modern Geometry.** 3 hrs. Prerequisite: MAT 280, 326, and 340. Heuristic and analytic treatment of a branch of modern geometry, such as projective or differential geometry.
575. **General Topology.** 3 hrs. Prerequisites: MAT 169 and 340. General topological spaces, bases and subbases, continuity.
581. **History of Mathematics.** 3 hrs. Prerequisite: MAT 167. The history of mathematics from antiquity through the 17th century. (Does not count as program credit for M.S. in mathematics.)
588. **Mathematics for Inservice Secondary School Teachers I.** 1-3 hrs. Prerequisites: 24 hours of mathematics excluding pre-calculus courses, secondary mathematics teaching experience. Special mathematical topics for inservice secondary school mathematics teachers, to include algebra, number theory, graph theory, and combinatorics. (Does not count as program credit for M.S. in mathematics.)
589. **Mathematics for Inservice Secondary School Teachers II.** 1-3 hrs. Prerequisites: 24 hours of mathematics excluding pre-calculus courses, secondary mathematics teaching experience. Special mathematical topics for inservice secondary school mathematics teachers, to include probability theory, analysis, applied mathematics, topology, geometry. (Does not count as program credit for M.S. in mathematics.)
592. **Special Problems I, II.** 1-3 hrs. each.
601. **Differential Geometry I.** 3 hrs. Prerequisite: Permission of instructor. An introduction to the theory of plane curves, space curves, and surfaces.
603. **Modern Algebra.** 3 hrs. Prerequisite: MAT 424 or 524. Simple groups, solvable groups, the Sylow theorems, presentations of groups, category terminology, introductory homological algebra.
605. **Ordinary Differential Equations.** 3 hrs. Prerequisite: MAT 285. Topics from the theory of ordinary differential equations. Specific topics to be selected by the instructor.
606. **Partial Differential Equations.** 3 hrs. Prerequisite: MAT 285. Dirichlet, Neumann, and mixed boundary value problems; classical techniques of solution of partial differential equations and applications.
610. **Numerical Linear Algebra.** 3 hrs. Prerequisites: MAT 326 and a knowledge of eigenvalues and eigenvectors. Theory and practice of matrix computations, matrix norms, singular value decomposition, linear systems, LU decomposition, QR decomposition, methods for eigenvalue problems.
629. **Applied Combinatorics and Graph Theory.** 3 hrs. Permission of instructor. Combinatorial/graphical techniques for complexity analysis recurrence relations, Polya theory, NP complete problems. May also be taken as CSC 629.
636. **Functions of a Complex Variable.** 3 hrs. Prerequisite: MAT 280. Taylor and Laurent series, residue calculus, conformal mapping with applications, integral formulas of the Poisson type, analytic continuation.
641. **Functions of a Real Variable I.** 3 hrs. Prerequisite: MAT 442 or 542. Foundations of real analysis and introduction to Lebesgue integration.
642. **Functions of Real Variable II.** 3 hrs. Prerequisite: MAT 641. Continuation of MAT 641.
650. **Computer-Assisted Mathematics I.** 3 hrs. Prerequisite: Permission of instructor. Applications of computer algebra software to mathematical modeling. Modeling projects and experiments employing both numeric and symbolic computation using software such as DERIVE, Maple, and Mathematica. The laboratory setting and project format will permit investigations of a deeper nature than would be possible due to time constraints in a typical 3-hour lecture course. May be repeated for a maximum of 6 hours credit.
651. **Computer-Assisted Mathematics II.** 3 hrs. Prerequisite: Permission of instructor. Application of computer algebra software to data analysis, partial differential equations, statistics, nonlinear regression, and linear algebra. May be repeated for a maximum of 6 hours of credit.
657. **Dimensions of Learning in Mathematics I.** 3 hrs. Prerequisite: Admission to the Master of Arts in Teaching degree program. Broad introduction to the concepts, contexts, and practices of teaching, as well as specific instruction in secondary mathematics methods. This course includes a clinical supervision component.
658. **Dimensions of Learning in Mathematics Education II.** 3 hrs. Prerequisite: MAT 657. Continuation of MAT 657.
681. **Topics in Algebra I, II, III.** 3 hrs. Prerequisites: MAT 423 or 523, and permission of instructor. May be repeated for a maximum of 9 hours credit.
682. **Topics in Analysis I, II, III.** 3 hrs. Prerequisite: Permission of instructor. May be repeated for a maximum of 9 hours credit.

683. **Topics in Topology and Geometry I, II, III.** 3 hrs. Prerequisite: Permission of instructor. May be repeated for a maximum of 9 hours credit.
684. **Topics in Applied Mathematics I, II, III.** 3 hrs. Prerequisite: Permission of instructor. May be repeated for a maximum of 9 hours credit.
685. **Topics in Computational Mathematics I, II, III.** 3 hrs. Prerequisite: Permission of instructor. May be repeated for a maximum of 9 hours credit.
689. **Mathematics Seminar I, II.** 3 hrs. Prerequisite: Permission of instructor.
691. **Research in Mathematics.** 1-16 hrs.
697. **Independent Study and Research.** Hours arranged. Not to be counted as credit towards a degree. Students may enroll in this course to meet the continuous enrollment requirement.
698. **Thesis.** 1-6 hrs. for a total of 6 hrs.
720. **Mathematics for Scientific Computing I.** 3 hrs. Prerequisite: Permission of instructor. Numerical methods for the solution of matrix equations and for eigenvector/value finding techniques, including criteria for selection among available algorithms, are covered.
721. **Mathematics for Scientific Computing II.** 3 hrs. Prerequisite: MAT 720 or permission of instructor. Techniques for numerical interpolation and differentiation; techniques for the solution of ODEs and PDEs, including Runge-Kutta, Adams/Bashforth, spectral, and shooting methods.
771. **Functional Analysis for Computational Science.** 3 hrs. Prerequisites: MAT 442 or 542, and MAT 641. An introduction to functional analysis.
772. **Numerical Analysis for Computational Science.** 3 hrs. Prerequisites: MAT 610 and MAT 771. A comprehensive introduction to computational mathematics.
773. **Signal Analysis for Computational Science.** 3 hrs. Prerequisite: MAT 771. The mathematical analysis of time series and signals.

Mathematics Refresher and Enrichment Program (M-REP)

584. **Calculus Review I.** 1-3 hrs. Prerequisite: Permission of instructor. A review of topics from single-variable calculus to include limits, continuity, derivatives, and integration, with applications relevant to the high school curriculum.
585. **Calculus Review II.** 1-3 hrs. Prerequisite: MAT 584 or permission of instructor. A review of topics from single-variable calculus to include methods of integration, L'Hospital's rule, improper integrals, infinite series and vectors, with applications relevant to the high school curriculum.
586. **Geometry Review for High School Teachers.** 1-3 hrs. May be repeated for a maximum of 6 semester hours. Topics from Euclidean geometry, transformational geometry, plane analytic geometry, and topology.
587. **Problem Solving in School Mathematics.** 1-3 hrs. Prerequisite: MAT 585 or permission of instructor. May be repeated for a maximum of 6 semester hours. Includes strategies for solving both standard and nonstandard mathematical problems.

None of the courses MAT 584 - 587 will count toward any degree in mathematics.

Medical Technology (MTC)

- +501. **Body Fluids.** 1 hr. Prerequisite: Admission to the practicum or permission of department. Corequisite: MTC 501L. Analysis of the physical, chemical, and microscopic parameters of body fluids—research component.
- +501L. **Body Fluids Laboratory.** 1 hr. Prerequisite: Admission to the practicum. Corequisite: MTC 501.
502. **Clinical Bacteriology I.** 3 hrs. Prerequisite: MTC 202, 203, BSC 110, 110L, 380, 380L or permission of instructor. Corequisite: MTC 502L. MTC 515 recommended. Evaluation of clinical specimens with regard to pathogenic microorganisms—research component.
- +502L. **Clinical Bacteriology I Laboratory.** 1 hr. Prerequisite: MTC 202, 203, BSC 380, 380L or permission of instructor. Corequisite: MTC 502.
503. **Clinical Mycology.** 1 hr. Prerequisite: Admission to the practicum or permission of department. Corequisite: MTC 503L. The study of pathogenic fungi, emphasis is placed on laboratory methods of isolation and identification of medically important fungi—research component.
- +503L. **Clinical Mycology Laboratory.** 1 hr. Prerequisite: Admission to the practicum. Corequisite: MTC 503.
504. **Clinical Chemistry I.** 3 hrs. Prerequisite: BSC 110, 110L, CHE 420, 420L, or permission of instructor. Co- or prerequisites: MTC 202 and/or 203. Corequisite: MTC 504L. The chemical analysis of body fluids—research component.
- +504L. **Clinical Chemistry Laboratory.** 2 hrs. Prerequisite: CHE 420, 420L or permission of instructor. Co- or prerequisite: MTC 202, 203. Corequisite: MTC 504.