LS 2290 Advanced Swing Dance 1 (2) Focuses on competition level and style of swing dance. Students learn to break down and teach a routine to beginners. Students also learn the skills necessary to create and choreograph a short routine. Prereq: LS 2280.

LS 2310 Bosu 1 (3) Introduces the group aerobic style of Bosu, which concentrates on physical stability, core strength, and general fitness.

LS 2320 Core Stability Training 1 (3) Teaches fundamentals of core training. Students learn basic anatomy, proper strength training, and how to design a program to fit their fitness goals.

LS 2330 Aerobic Dance 1 (3) Instruction in the development of skills for the safe improvement and maintenance of cardiovascular fitness, flexibility, and muscle tone utilizing dance movements and techniques.

LS 2350 Basic Yoga 1 (3) Develops flexibility, strength, sensitivity, energy, and a sense of relaxation through the study of basic yoga postures, conscious breathing, and meditation techniques.

LS 2360 Power/Ashtanga Yoga 1 (3) Power/Ashtanga Yoga is a comprehensive workout based on the Eastern philosophy of K. Pattabhi. Students learn the eight limbs of this philosophy and the rigorous series of postures that produce a high power, athletic workout with the purpose of detoxifying impurities in the body.

LS 2370 Kripalu Yoga 1 (3) Great emphasis is placed on learning breath work techniques to combine directly with the various kripalu yoga postures. The goal is to teach individuals the physiological reactions produced by this type of yoga in developing and restoring health.

LS 2380 Vinyasa Flow Yoga 1 (3) Explores the energetic, fluid movement of Yoga postures in sync with conscious breathing. Students study creative sequences using classical as well as innovative and advanced Yoga postures.

LS 2420 Meditation and Relaxation 1 (2) Exposes students to the benefits of relaxation and meditation techniques. Students learn different techniques used to relieve stress and promote relaxation.

LS 2450 Pilates 1 (3) Study of the history, philosophy, and fundamental movement concepts of Pilates.

LS 2460 Intermediate Pilates 1 (3) Course is designed to expand students’ knowledge and practice of the principles, techniques and exercises learned in the basic Pilates course. Prereq: LS 2450.

LS 2500 Marathon Training 1 (3) Provides students with the resources and knowledge to train for and successfully complete a marathon.

LS 2510 Running and Jogging 1 (3) Introduces the various components important to improving overall fitness level through a running or jogging activity. Topics include proper stretching exercises, nutrition, workout program design, and proper running techniques.

LS 2580 Self Defense 1 (3) Basic physical defense that incorporates risk avoidance and awareness techniques with basic physical defense options.

LS 2640 Aikido 1 (3) Introduces the modern Japanese martial art of Aikido.

LS 2660 Hapkido 1 (3) Introduces the fundamental skills and techniques of the self-defense based Korean martial art of Hapkido.

LS 2700 Sports Officiating 1 (3) Practical study of officiating for various sports. Includes studies and practical application of officiating rules and mechanics. Sports studied include football, basketball, softball, soccer, and introductions to a variety of other team sports.

LS 2750 Red Cross First Aid/CPR 1 (3) Gives students the knowledge and skills necessary to prevent, recognize, and provide basic care for infants, children, and adults with injuries and sudden illness.

LS 2760 First Aid/CPR for the Professional 1 (2) This American Red Cross CPRAED for the Professional Rescuer course teaches those with a duty to act the skills needed to respond appropriately to breathing cardiac emergencies, including the use of an Automated External Defibrillator (AED) to care for a victim of cardiac arrest.

LS 2770 Lifeguarding 1 (3) Students gain the knowledge and skills to prevent, recognize and respond to emergencies and to provide care for injuries and sudden illness. Upon course completion, students receive a lifeguard certification from the American Red Cross.

LS 2780 Wilderness First Aid 1 (2) This American Red Cross Wilderness First Aid with Adult CPR course provides individuals involved with wilderness activities with the knowledge and skills to prevent, recognize and provide basic care for injuries and sudden illness when more advanced help is not immediately available.

LS 2910 Outdoor Leadership 1 (3) Introduces the skills necessary to lead others in a backcountry environment. Focus is on wilderness travel skills, minimum impact, group dynamics, leadership skills and decision making. Course also includes certification in Wilderness First Aid.

LS 3470 Advanced Alpine Skiing 1 (3) Advanced downhill snow skiing instruction in such techniques as mogul skiing, check turns, free-style, and racing. There is an additional fee for course. Taught over Christmas break. Credit is awarded for spring semester. (Contact Department of Parks, Recreation and Tourism Management in October.) Prereq: LS 1470.

LS 3560 Riffery 1 1 (2) Students build upon skills previously learned in the basic riffery course, and learn advanced skills, such as using ballistic software and chronographs, precision long range shooting and advanced reloading.

LS 3580 Advanced Shotgun Skeet 1 (2) Introduces students who have taken the basic shotgun course to the shotgun game of Skeet. Students learn the rules and techniques necessary to competitively participate in Skeet.

LS 3890 Intermediate Tennis 1 (3) Develops skills necessary to play at a competitive level of tennis. Students learn mechanically sound tennis skills, court positioning, court movement, proper shot selection, and strategic insight into the game. Prereq: LS 1890.
MATH 1040 Precalculus and Introductory Differential Calculus 4 (4) Relevance of precalculus and algebra review, limits, continuity and introduction to differential calculus. The combination of MATH 1040 and MATH 1070 covers the same calculus material as MATH 1060. MATH 1040 alone cannot be substituted for any calculus course. To be taken Pass/No Pass only. Not open to students who have received credit for MATH 1060. Prereq: Any MATH or STAT course or a score of 65 or higher on the Clemson Mathematics Placement Test.

MATH 1050 Precalculus 4 (4) Extensive treatment of topics chosen to prepare students for the study of calculus. Special emphasis is given to polynomial, rational, exponential, logarithmic, and trigonometric functions and their graphs, as well as basic and analytic trigonometry. Students who have received credit for any other mathematical sciences course will not be allowed to enroll in or receive credit for MATH 1050. To be taken Pass/No Pass only. Coreq: MATH 1051.

MATH 1051 Precalculus Laboratory 0 (2) Non-credit laboratory to accompany MATH 1050. Coreq: MATH 1050.

MATH 1060 Calculus of One Variable I 4 (4) Topics include analytic geometry, introduction to derivatives, computation and application of derivatives, integrals, exponential and logarithmic functions. Includes Honors sections. Prereq: MATH 1030 or MATH 1040 or MATH 1050 or a score of 80 or better on the Clemson Mathematics Placement Test.

MATH 1070 Differential and Integral Calculus 4 (4) Continuation of MATH 1040. Successful completion of MATH 1040 and MATH 1070 is equivalent to the completion of MATH 1060. Continuation of differential calculus and an introduction to integral calculus. Not open to students who have received credit for MATH 1060. Prereq: MATH 1040.

MATH 1080 Calculus of One Variable II 4 (4) Topics include transcendental functions, applications of integration, integration techniques, indeterminate forms, improper integrals, parametric equations, polar coordinates, and infinite series. Includes Honors sections. Prereq: MATH 1030 or MATH 1040 or MATH 1050 or a score of 80 or better on the Clemson Mathematics Placement Test.

MATH 1100 Calculus II for Biologists 4 (4) Continuation of MATH 1150. Manipulatives and concrete models are used for properties, operations, and problem solving for integers, elementary fractions, rational numbers, and real numbers. Selected topics in statistics and probability are introduced with a hands-on approach to learning. Restricted to Elementary, Early Childhood, and Special Education majors. Prereq: MATH 1150.

MATH 1170 Mathematics for Elementary School Teachers I 3 (2) Problem-solving strategies, logic, algebraic thinking, sets, relations, functions, numeration systems, whole numbers, integers, number theory, fractions, decimals, applications of percent, real numbers with their computational algorithms and properties are explored. Content, according to state standards, is taught with appropriate methodology for teaching K–6. Prereq: MATH 1010. Coreq: MATH 1171.

MATH 1171 Mathematics for Elementary School Teachers I Laboratory 0 (2) Non-credit laboratory to accompany MATH 1170. Coreq: MATH 1170.

MATH 1180 Mathematics for Elementary School Teachers II 3 (2) Simple probability and descriptive statistics are reviewed. Two- and three-dimensional geometry including polygons, polyhedra and their properties; congruence, similarity, and constructions; coordinate system; standard measurement, area, surface area, volume; and motion geometry are explored. Content, according to state standards, is taught with appropriate methodology for teaching K–6. Prereq: MATH 1010. Coreq: MATH 1181.

MATH 1181 Mathematics for Elementary School Teachers II Laboratory 0 (2) Non-credit laboratory to accompany MATH 1180. Coreq: MATH 1180.

MATH 1190 Introduction to Discrete Methods 3 (3) Topics normally include elementary logic and methods of proof; sets, functions, and relations; graphs and trees; combinatorial circuits and Boolean algebra.

MATH 1290 Problem Solving in Discrete Mathematics 3 (2) Problem-solving approach to learning mathematics is applied to topics in modern discrete mathematics. Typical selection of topics includes logic and proof, sets, relations, functions, mathematical induction, graphs and trees, counting techniques, recurrence equations. For Bachelor of Science and Bachelor of Arts majors in Mathematical Sciences only. Credit may not be received for both MATH 1190 and MATH 1290. Prereq: MATH 1060 or MATH 1070. Coreq: MATH 1291.

MATH 1291 Problem Solving in Discrete Mathematics Laboratory 0 (2) Non-credit laboratory to accompany MATH 1290. Coreq: MATH 1290.

MATH 1990 Problem Solving in Mathematics 3 (2) Functions and graphs, mathematical modeling, and applications. Applications from management and life and social sciences are presented. Specific topics include linear, quadratic, polynomial, exponential, and logarithmic functions with emphasis on problem solving. Students who have received credit for any other mathematical sciences course will not be allowed to enroll in or receive credit for MATH 1990. To be taken Pass/No Pass only. Coreq: MATH 1991.

MATH 1991 Problem Solving in Mathematics Laboratory 0 (2) Non-credit laboratory to accompany MATH 1990. Coreq: MATH 1990.

MATH 2060 Calculus of Several Variables 4 (4) Topics include real valued functions of several variables, multiple integration, differential calculus of functions of several variables, vector field theory. Includes Honors sections. Prereq: MATH 1080 or MATH 1110.

MATH 2070 Multivariable Calculus 3 (3) Introduction to the calculus of several variables, differential calculus and optimization of several variables, multiple integrals. Topics from the management sciences are used to illustrate the above concepts. May not be taken by students who have passed MATH 2060. Prereq: MATH 1020 or MATH 1060 or MATH 1070.

MATH 2080 Introduction to Ordinary Differential Equations 4 (4) Introduction to the study of differential equations and their application to physical problems. Topics include exact, series, and numerical solutions; solutions by means of Laplace transforms; and solutions of systems of differential equations. Includes Honors sections. Prereq: MATH 2060.

MATH 2100 Applied Matrix Algebra 3 (3) Introduction to the basic principles of matrix algebra with applications to the behavioral and managerial sciences. Major areas of application include linear programming, directed graphs, and game theory. Prereq: MATH 1020 or MATH 1060 or MATH 1070.

MATH 2160 Geometry for Elementary School Teachers 3 (3) Informal treatment of the basic concepts of geometry. Open to Elementary, Early Childhood, and Special Education majors only. Prereq: MATH 1160.

MATH 2500 Introduction to Mathematical Sciences 1-3 (1-3) Introduction to areas of study, degree options, career choices, and professional development in mathematical sciences. Includes guidelines and requirements for portfolio development and an introduction to ethical issues.

MATH 2990 Creative Inquiry–Mathematical Sciences 1-3 (1-3) In consultation with and under the direction of a faculty member, students pursue scholarly activities individually or in teams. These creative inquiry projects may be interdisciplinary. Arrangements with mentors must be established prior to registration. May be repeated for a maximum of three credits. Prereq: Consent of faculty member/mentor.

MATH 3020 Statistics for Science and Engineering 3 (3) Calculus based statistics course in methodology for collecting, organizing, and interpreting data. Topics include understanding variability, graphical and numerical summarization of data, introductory probability, normal and related distributions, statistical inference, basic experimental design, and simple linear regression. Statistical software is used. Prereq: MATH 2060.

MATH 3080 College Geometry 3 (3) Theorems and concepts more advanced than those of high school geometry. Treatment of the various properties of the triangle, including the notable points, lines, and circles associated with it. Prereq: MATH 1060 or MATH 1070.
MATH 3110 Linear Algebra 3 (3) Introduction to the algebra of matrices, vector spaces, polynomials, and linear transformations. Includes Honors sections. Preq: MATH 1080 or MATH 1110.

MATH 3150 Advanced Topics in Mathematics for Elementary Teachers 3 (3) Course builds and expands upon content from previous elementary mathematics courses. Covers investigation of two- and three-dimensional shapes; scale and scale factor; ratio and proportional reasoning; relationships between perimeter, area, surface area and volume; relationships between fractions, decimals, and percents. Open to Elementary, Early Childhood, and Special Education majors only. Preq: MATH 2160.

MATH 3160 Problem Solving for Mathematics Teachers 3 (3) Course emphasizes problem solving and builds and expands upon previous mathematics content courses by examining connections between number and operations; algebra; data analysis and probability; geometry; and measurement. Open to Elementary, Early Childhood, and Special Education majors only. Preq: MATH 2160.

MATH 3190 Introduction to Proof 3 (3) Introduces mathematical proofs with topics that include proof techniques, elementary logic, induction, sets, functions, and relations. Preq: MATH 1080 or MATH 1110.

MATH 3600 Intermediate Mathematics Computing 3 (3) Intermediate-level introduction in using computers to solve problems in the mathematical sciences. Fundamental concepts of procedural programming including flow control, modular construction, primitive data structures, recursion, and graphics are applied to problems in applied mathematics, probability, statistics, discrete mathematics, and operations research. Preq: MATH 1080 or MATH 1110.

MATH 3650 Numerical Methods for Engineers 3 (3) Application of undergraduate mathematics and basic engineering principles with emphasis on numerical methods, computer programming and the use of mathematical software packages in the solution of engineering problems. Preq: ENGR 1090 and MATH 2080, each with a C or better.

MATH 3820 Honors Seminar 1 (1) Weekly seminar to prepare students in Departmental Honors Program for independent senior research. At the end of the second semester, each student must have identified a research topic and a faculty advisor. May be repeated for a maximum of two credits. Preq: Junior standing in departmental honors program.

MATH 3990 Creative Inquiry—Mathematical Sciences 1-3 (1-3) In consultation with and under the direction of a faculty member, students pursue scholarly activities individually or in teams. These creative inquiry projects may be interdisciplinary. Arrangements with mentors must be established prior to registration. May be repeated for a maximum of three credits. Preq: Consent of faculty member/mentor.

MATH 4000 Theory of Probability 3 (3) Principal topics include combinatorial theory, probability axioms, random variables, expected values; special discrete and continuous distributions, joint distribution of random variables, correlation, conditional expectation, law of large numbers, central limit theorem. Includes Honors sections. Preq: MATH 2060.

MATH 4020* Statistics for Science and Engineering II 3 (3) Principal topics include simple linear regression, multiple regression and correlation analysis, one-way analysis of variance, multiple comparison, multifactor analysis of variance, experimental design. Computation and interpretation of results are facilitated through use of statistical computer packages. Preq: MATH 3020.

MATH 4030* Introduction to Statistical Theory 3 (3) Principal topics include sampling distributions, point and interval estimation, maximum likelihood estimators, method of moments, least squares estimators, tests of hypotheses, likelihood ratio methods, regression and correlation analysis, introduction to analysis of variance. Includes Honors sections. Preq: MATH 4000.

MATH 4060* Sampling Theory and Methods 3 (3) Probability-based treatment of sampling methodology. Theory and application of estimation techniques are treated using simple and stratified random sampling, cluster sampling, and systematic sampling. Preq: MATH 4000; and one of MATH 3020 or STAT 2300 or STAT 3090.

MATH 4070 Regression and Time-Series Analysis 3 (3) Theory and application of the regression and time series. Approaches to empirical model building and data analysis are treated. Computation and interpretation of results are facilitated through the use of interactive statistical packages. Preq: MATH 3110 and MATH 4000; and one of MATH 3020 or STAT 2300 or STAT 3090.

MATH 4080* Exploration and Analysis of Secondary Mathematics 3 (3) In-depth exploration and analysis of important underlying ideas in the secondary mathematics curriculum. An emphasis is placed on reasoning and proof as students investigate topics in algebra, geometry, probability, statistics and calculus. Preq: MATH 2060.

MATH 4100 Number Theory 3 (3) Introduction to theory of integers and related number systems. Topics include historical development, principle of mathematical induction, divisibility, primes, congruences, number-theoretic functions, primitive roots, quadratic residues, and diophantine equations. Preq: MATH 1080 or MATH 1110.

MATH 4110* Introduction to Combinatorics 3 (3) Introductory course in combinatorial analysis. Topics include enumeration, graph theory, posets, and extremal combinatorics. Preq: MATH 3160; and either MATH 1190 or MATH 3190.

MATH 4120* Algebra I 3 (3) Provides a first introduction to algebra with topics including modular arithmetic, ring theory and group theory. Preq: MATH 3110 and MATH 3190.

MATH 4130* Algebra II 3 (3) A continuation of MATH 4120. Topics may include advanced group theory (including Sylow theorems, some classifications of groups); advanced ring theory; field theory; and Galois theory. Preq: MATH 4120.

MATH 4190* Discrete Mathematical Structures I 3 (3) Applies theoretical concepts of sets, functions, binary relations, graphs, Boolean algebras, propositional logic, semigroups, groups, homomorphisms, and permutation groups to computer characterizes and design, words over a finite alphabet and concatenation, binary group codes, and other communication or computer problems. Includes Honors sections. Preq: MATH 3110.

MATH 4300 Actuarial Science Seminar I 1 (1) Problem-solving seminar to prepare students for the Society of Actuaries’ Exam P or the Casualty Actuarial Society’s Exam 1 (Probability). Preq: MATH 4000.

MATH 4310 Theory of Interest 3 (3) Comprehensive treatment of the theory of interest including from a calculus-based continuous viewpoint. Topics include simple and compound interest and discount, nominal and effective rates, force of interest, basic and general annuities, yield rates, amortization and sinking funds, and applications to bonds, mortgages, and other securities. Preq: MATH 2060.

MATH 4320 Actuarial Science Seminar II 1 (1) Problem-solving seminar to prepare students for the Society of Actuaries’ Exam FM or the Casualty Actuarial Society’s Exam 2 (Financial Mathematics). Preq: MATH 4310.

MATH 4340* Advanced Engineering Mathematics 3 (3) Fourier series, Laplace and Fourier transforms, and numerical methods for solving initial value and boundary-value problems in partial differential equations are developed. Applications to diffusion wave and Dirichlet problems are given. Matrix methods and special functions are utilized. Preq: MATH 2080.

MATH 4350* Complex Variables 3 (3) Elementary functions; differentiation and integration of analytic functions; Taylor and Laurent series; contour integration and residue theorem; conformal mapping; Schwarz-Christoffel transformation. Includes Honors sections. Preq: MATH 2060.

MATH 4400* Linear Programming 3 (3) Introduction to linear programming covering the simplex algorithm, duality, sensitivity analysis, network models, formulation of models, and the use of simplex codes to solve, interpret, and analyze problems. Includes Honors sections. Preq: MATH 2060 and MATH 3110.

MATH 4410* Introduction to Stochastic Models 3 (3) Introductory treatment of stochastic processes, finite-state Markov chains, queueing, dynamic programming, Markov decision processes, reliability, decision analysis, and simulation. Both theory and applications are stressed. Includes Honors sections. Preq: MATH 4000.

MATH 4420* Advanced Mathematical Programming 3 (3) Theory, methodology, and applications of integer and nonlinear programming. Topics include model development, computer solutions, branch and bound, unconstrained and constrained optimization algorithms, complexity and convergence analysis. Case studies are included. Preq: MATH 4400.

MATH 4500 Introduction to Mathematical Models 3 (3) Includes a study of the modeling process and examples of existing models chosen from physical, biological, social, and management sciences, depending on the instructor. Written and oral report is required for at least one of the models studied. May be repeated for a maximum of six credits. Preq: MATH 3600 or MATH 3650; and one of MATH 3020 or STAT 2300 or STAT 3090.

MATH 4530* Advanced Calculus I 3 (3) Properties of the real number system, sequences and limits, continuous functions, uniform continuity, and differentiation. Includes Honors sections. Preq: MATH 2060 and MATH 3190.
MATH 4940* Advanced Calculus II 3 (3) Continuation of MATH 4530. Material includes Riemann integrals and improper integrals, infinite series, sequences and series of functions. Includes Honors sections. Prereq: MATH 4530.

MATH 4500* Topics in Geometry 3 (3) Covers a variety of geometries, such as Euclidean, hyperbolic, projective, and spherical. The intrinsic properties of these spaces, such as their geodesics and isometries, are studied. Other topics include differential geometry of curves and surfaces, Gaussian curvature, and the celebrated Gauss-Bonnet theory linking geometry with topology. Prereq: MATH 2060 and MATH 310; and either MATH 1190 or MATH 3190.

MATH 4560* Topology 3 (3) Introduction to point-set topology. Topics include metric spaces, topological spaces, Hausdorff spaces, homeomorphisms, continuity, product and quotient spaces, compactness, and connectedness. Additional topics, such as homotopy equivalence of paths, the fundamental group, and basic knot theory, are introduced as time permits. Prereq: MATH 1190 or MATH 3190.

ME 2010 Engineering Discovery I 1-3 (1-3) Invited presenters and faculty provide lectures and demonstrations. Prereq or concurrent enrolment: ME 2010 with a C or better.

ME 2040 Mechanics of Materials 3 (3) Application of kinematic and kinetic analysis to structural components. Properties of solids, simple machine elements. Prereq: MATH 1060 or MATH 1070; and MATH 3600 or MATH 3650.

ME 3070 Foundations of Mechanical Systems 3 (3) Study of the second law of thermodynamics and entropy. Includes applications to fixed mass systems and control volumes; vapor and gas power cycles; mixtures of gases; vapor psychrometrics; combustion and the third law. Prereq: MATH 3030 with a C or better.

ME 3080 Heat Transfer 3 (3) Study of steady and transient heat conduction, free and forced convection, radiation, and multi-mode heat transfer. Emphasizes analytical and numerical solutions to engineering heat transfer problems with a design orientation. Prereq: MATH 2080 and ME 2080 each with a C or better. Prereq or concurrent enrolment: ME 3080 with a C or better.

ME 3110 Statics and Dynamics for Mechanical Engineers Laboratory 0 (4) Non-credit laboratory to accompany ME 310. Coreq: ME 310.

ME 3090 Engineering Principles and Practices 3 (3) Application of principles and phenomena. Introduction to laboratory safety practices, instrumentation, calibration techniques, data analysis, and report writing. Introduction to basic manufacturing processes. Prereq: PHYS 1220 and PHYS 1240 and MATH 1080, each with a C or better.

ME 2000 Sophomore Seminar 1 (1) Seminars address the Mechanical Engineering program, the profession, best student practices, and career paths. Invited presenters and faculty provide lectures and demonstrations. Prereq or concurrent enrolment: ME 2010 with a C or better.

ME 2010 Statics and Dynamics for Mechanical Engineers 5 (3) Vector analysis of the effects of forces, couples, and force-systems on rigid bodies. Conditions of static equilibrium for simple structures, including pulleys, trusses, beams, frames. Kinematics and kinetics of general rigid body motion in 2-D. Prereq: MATH 1060 or MATH 1070, with a C or better; and MATH 1080 and PHYS 1220, each with a C or better; and both ENGR 1070 and ENGR 1080, or ENG 1410 with a C or better. Prereq or concurrent enrolment: ENGR 1090 and ENGR 2080 and PHYS 1240 and MATH 2060, each with a C or better. Coreq: ME 2011.

ME 2011 Statics and Dynamics for Mechanical Engineers Laboratory 0 (4) Non-credit laboratory to accompany ME 2010. Coreq: ME 2010.

ME 2030 Foundations of Thermal and Fluid Systems 3 (3) Introduction to control volumes, conservation laws of mass, momentum, and energy. Concepts of work and heat are introduced, including rate forms. Properties of pure substances. Prereq: MATH 2060 and PHYS 2210, each with a C or better. Prereq or concurrent enrolment: ME 2220 with a C or better.

ME 2040 Mechanics of Materials 3 (3) Relationships between external loads on solid bodies or members and the resulting internal effects and dimension changes, including the derivation of rational formulas for stresses and deformations and the identification and use of important mechanical properties of engineering materials. Includes Honors sections. Prereq: MATH 2060 and MATH 2010, each with a C or better. Prereq or concurrent enrolment: MATH 2080 and MATH 2220 and MATH 2100, each with a C or better.

ME 2220 Mechanical Engineering Laboratory 1 2 (6) Discovery of mechanical engineering principles and phenomena. Introduction to laboratory safety practices, instrumentation, calibration techniques, data analysis, and report writing. Introduction to basic manufacturing processes. Prereq: PHYS 1220 and PHYS 1240 and MATH 1080, each with a C or better.

ME 2900 Creative Inquiry in Mechanical Engineering I 1-3 (1-3) Students work in extended teams (including sophomores, juniors, seniors, and graduate students) addressing research and development problems under the supervision of a faculty leader. Engineering principles and best practices will be employed. Team work, professionalism, and communication skills are emphasized. May be repeated for a maximum of nine credits. Prereq: consent of instructor.

ME 3020 Senior Honors Seminar 0 (0) Acquaints students enrolled in Departmental Honors Program with current research activities in the Department of Mechanical Engineering. Faculty provide seminars in which research interests are summarized. These seminars are planned to prepare students in choosing a research topic for the senior thesis. Prereq: Junior standing in departmental honors program.

ME 3050 Modeling and Analysis of Dynamic Systems 3 (3) Presents techniques for developing and analyzing models of mechanical, electrical, electromechanical, fluid and thermal systems. Transient, steady-state and frequency response are determined using analytical and numerical methods. Covers tools for stability analysis and state-space representation. Covers linear free- and forced-vibrations in single- and multi-degree-of-freedom systems with lumped-parameters representation, methods of vibration absorption and isolations. Prereq: ECE 2070 and ECE 2080 and MATH 2080 and MATH 3650, each with a C or better. Prereq or concurrent enrolment: ME 3070 with a C or better.

ME 3060 Fundamentals of Machine Design 3 (3) Introduction to failure theory and fatigue analysis. Integration of these topics with selected portions of mechanics of materials and application of them to the design and analysis of machine elements. Prereq: ME 2040 and ME 3070, each with a C or better. Prereq or concurrent enrolment: MATH 3650, with a C or better.

ME 3070 Foundations of Mechanical Systems 3 (3) Introduction to physical elements and mechanisms that define basic mechanical engineering systems. Application of kinematic and kinetic analysis to mechanisms and the role of design in mechanisms. Prereq: ME 2010 with a C or better. Prereq or concurrent enrolment: ME 2040 with a C or better.