.INTL: INTERNATIONAL/INTERCULTURAL STUDIES

INTL 2090 Introduction to International/Intercultural Studies   **3-0-3**

An overview of international studies as a field of inquiry and practice. An examination of the primary approaches to international study, the development of a cross-cultural perspective in the study of international problems, and an appreciation of the complexities of cross-cultural communication are emphasized.

INTL 3510 Study Abroad   **0-0-0 to 9-0-9**

Prerequisite: Acceptance to a VSU study abroad program. Courses for students studying abroad on VSU-approved programs. Students must have written approval from the Office of International Programs and relevant academic units to register for these courses. The number of credit hours granted is dependent on the nature of the program.

INTL 3520 Study Abroad   **0-0-0 to 9-0-9**

Prerequisite: Acceptance to a VSU study abroad program. Courses for students studying abroad on VSU-approved programs. Students must have written approval from the Office of International Programs and relevant academic units to register for these courses. The number of credit hours granted is dependent on the nature of the program.

INTL 4800 Seminar in International Studies   **3-0-3**

An examination of selected international issues and problems from the perspectives of students' major disciplines, providing experience in the multi-disciplinary analysis of international problems and fostering a sensitivity to the interrelatedness of global issues and concerns.

ITED: INSTRUCTIONAL TECHNOLOGY

ITED 3000 Integration : Design, Discipline, & Technology   **2-0-2**

Prerequisites: BVED 2400, PSYC 3110. The application of the principles of instructional design in an interdisciplinary environment using the tools of technology.

JAPN: JAPANESE

**JAPN 1001 Beginning Japanese Language and Introduction
to Japanese Culture, I**   **3-0-3**

Emphasis on the development of proficiency and communicative competence at the novice level in the four basic skills: speaking, listening, reading, and writing, as defined by the American Council on the Teaching of Foreign Languages Proficiency Guidelines. Awareness of various sociocultural aspects and the distinctiveness of certain cultural traditions. JAPN 1001 is not open for credit to students with two or more years of high school Japanese or the equivalent.

**JAPN 1002 Beginning Japanese Language and Introduction
to Japanese Culture, II**   **3-0-3**

Prerequisite: JAPN 1001 or the equivalent. A continuation of JAPN 1001, with emphasis on proficiency and communicative competence at the novice level

in the four basic skills: speaking, listening, reading, and writing, as defined by the American Council on the Teaching of Foreign Languages Proficiency Guidelines. Awareness of various sociocultural aspects and the distinctiveness of certain cultural traditions.

JAPN 1111 Intensive Japanese Language and Japanese Culture   3-0-3
Prerequisite: Two or more years of high school Japanese or the equivalent. Emphasis on the development of proficiency and communicative competence at the novice level in the four basic skills: speaking, listening, reading, and writing, as defined by the American Council on the Teaching of Foreign Languages Proficiency Guidelines. Awareness of various sociocultural aspects and the distinctiveness of certain cultural traditions. JAPN 1111 is a one-semester combination of JAPN 1001 and JAPN 1002. This course is designed for those students not fully prepared for the 1002 level. JAPN 1111 reviews the concepts presented in JAPN 1001 and advances the student through the material of JAPN 1002.

JAPN 2001 Intermediate Japanese Language and Japanese Culture I   3-0-3
Prerequisite: JAPN 1002 or the equivalent. Emphasis on the development of proficiency and communicative competence at the intermediate level in the four basic skills: speaking, listening, reading, and writing, as defined by the American Council on the Teaching of Foreign Languages Proficiency Guidelines. Awareness and understanding of various sociocultural aspects and the distinctiveness of certain cultural traditions.

JAPN 2002 Intermediate Japanese Language and Japanese Culture II   3-0-3
Prerequisite: JAPN 2001 or the equivalent. A continuation of JAPN 2001, with emphasis on proficiency and communicative competence at the intermediate level in the four basic skills: speaking, listening, reading, and writing, as defined by the American Council on the Teaching of Foreign Languages Proficiency Guidelines. Awareness and understanding of various sociocultural aspects and the distinctiveness of certain cultural traditions.

JOUR: JOURNALISM

JOUR 2500 Journalism Newspaper Seminar   1-0-1 to 2-0-2
A practicum for students involved in newspaper production. Content, editing, and production (traditional and electronic) will be addressed. In order to register for two hours, students must have already completed one semester of JOUR 2500. May be repeated for credit.

JOUR 2510 Journalism Newsletter Seminar   1-0-1
A practicum for students involved in the production of newsletters. Content, editing, and production (traditional and electronic) will be addressed. May be repeated for credit.

JOUR 3080 Grammar and Editing   3-0-3
Also offered as ENGL 3080. Prerequisite: ENGL 2110 or 210H, 2120 or 2120H, 2130 or 2130H, or 2140. An intensive review of grammar and usage as well as an introduction to the purposes, practices, and techniques of editing standard English. The grammar section of the course will cover such topics as parts

of speech and their uses, sentence elements and their effective uses, agreement, punctuation, and parallelism. Students will also be taught fundamental approaches to editing and the practical application of editing techniques.

JOUR 3500 Introduction to Journalism 3-0-3

A survey of the development, function, and philosophy of journalism with an emphasis on contemporary attitudes, practices, and problems.

JOUR 3510 News Writing 3-0-3

A basic course in writing and reporting for newspapers, with application to other mass communication media. The course acquaints students with the theoretical background and practical experience necessary for them to function effectively in journalistically related fields (newsletter writing, business writing, public relations).

JOUR 3530 Special Topics in Journalism 3-0-3

Selected subjects of interest in journalism.

JOUR 3540 The Law and Journalism 3-0-3

A broad application of the principles of law to the mass media with emphasis on the print media. Topics including libel, privacy, obscenity, and free press-fair trial will be covered.

JOUR 3560 Contemporary American Magazines 3-0-3

A survey of contemporary American magazines and their role in society. The course focuses on writing for specific audiences, interpreting policy and influence, resolving ethical questions, and reviewing production processes.

JOUR 3570 Photojournalism 3-0-3

A basic course in the principles of news photography and black and white photographic techniques. This course will provide students with the fundamental and practical skills needed to photograph news events for newspapers and magazines.

JOUR 4500 Document Design 3-0-3

Also offered as ENGL 4500. Prerequisite: JOUR 3510, ENGL 3060, JOUR/ ENGL 3080, or permission of instructor. A study of the theory of layout and design, including editorial decision-making, photo editing, and production technology for print and online media.

JOUR 4510 Feature Writing 3-0-3

Prerequisite: Permission of instructor. A study of the theory and practice of writing a variety of features for newspapers and magazines, with emphasis on intensive research, interviews, use of statistics, and the organization of long articles.

JOUR 4520 Literary Journalism 3-0-3

Also offered as ENGL 4520. Prerequisite: JOUR 3510, ENGL 3060, JOUR/ ENGL 3080, or permission of instructor. A study of the theory and practice of applying fiction techniques to journalistic fact. The course will explore the relationship between literature and journalism, especially in terms of style and subject matter.

JOUR 4530 Editorial, Column, and Review Writing 3-0-3

A study of the theory and practice of writing editorials, columns, and reviews.

JOUR 4550 Reporting 3-0-3

Prerequisite: JOUR 3510. An advanced course in reporting for the media. Emphasis will be on learning to cope with specialized, often highly technical or

complex information. Students will learn the fundamentals of covering local government, law enforcement, and the courts and will deal with the controversial issues of our time.

JOUR 4700 Directed Study in Journalism   **1-0-1 to 3-0-3**

Prerequisite: JOUR 3510. Study in an area or subject not normally found in established courses offered by the department. Permission of adviser, instructor, and department head required. Forms must be completed before registration. May be repeated for credit up to a maximum of 6 hours.

JOUR 4800 Internship in Journalism   **3-0-3 to 12-0-12**

Supervised work at a newspaper, magazine, or related publication (traditional or online format). The amount of credit depends on the work requirements. Permission to enroll must be secured from the advisor and the department head at least one semester in advance of registration.

LATN: LATIN

**LATN 1001 Beginning Latin Language and Introduction
to Roman Culture, I**   **3-0-3**

Emphasis on the development of proficiency and communicative competence at the novice level in the four basic skills: speaking, listening, reading, and writing. Awareness of various sociocultural aspects and the distinctiveness of certain cultural traditions. LATN 1001 is not open for credit to students with two or more years of high school Latin or the equivalent.

**LATN 1002 Beginning Latin Language and Introduction
to Roman Culture, II**   **3-0-3**

Prerequisite: LATN 1001 or the equivalent. A continuation of LATN 1001, with emphasis on proficiency and communicative competence at the novice level in the four basic skills: speaking, listening, reading, and writing. Awareness of various sociocultural aspects and the distinctiveness of certain cultural traditions.

LATN 1111 Intensive Latin Language and Roman Culture   **3-0-3**

Prerequisite: Two or more years of high school Latin or the equivalent. Emphasis on the development of proficiency and communicative competence at the novice level in the four basic skills: speaking, listening, reading, and writing. Awareness of various sociocultural aspects and the distinctiveness of certain cultural traditions. LATN 1111 is a one-semester combination of LATN 1001 and LATN 1002. This course is designed for those students not fully prepared for the 1002 level. LATN 1111 reviews the concepts presented in LATN 1001 and advances the student through the material of LATN 1002.

LATN 2001 Intermediate Latin Language and Roman Culture   **3-0-3**

Prerequisite: LATN 1002 or the equivalent. Emphasis on the development of proficiency and communicative competence at the intermediate level in the four basic skills: listening, reading, and writing, and some speaking within a limited context. Awareness and understanding of various sociocultural aspects and the distinctiveness of certain cultural traditions.

LATN 2002 Fundamentals of Roman Literature and Roman Culture   3-0-3
Prerequisite: LATN 2001 or the equivalent. Emphasis on epic poetry (Virgil's *Aeneid*) and on proficiency and communicative competence at the intermediate level in the four basic skills: listening, reading, and writing, and to some extent, speaking. Awareness and understanding of various sociocultural aspects and the distinctiveness of certain cultural traditions.

LEAS: LEGAL ASSISTANT STUDIES

LEAS 1100 Introduction to Paralegalism   3-0-3
An introduction to the field of paralegalism. The course will include the role of the paralegal in the legal system, the regulation and ethics of practice and the skills necessary for successful practice.

LEAS 3200 Legal Research I   3-0-3
Prerequisite: LEAS 1100. A study of legal research methods utilizing state and federal sources. Students will develop professional skills as they read and analyze appellate court opinions, legislation and pleadings.

LEAS 3201 Legal Research II   3-0-3
Prerequisites: LEAS 1100 and LEAS 3200. A continuation of Legal Research I. This course will emphasize computer assisted legal research skills as well as the preparation of legal documents.

LEAS 3210 Pre-Trial Preparation and Procedures   3-0-3
Prerequisite: LEAS 1100. The study of pre-trial procedures and tactics in civil and criminal cases. The course will include methods of investigation, interviewing clients, preparation of clients and witnesses for testifying, competency of evidence, preparation of interrogatories, other discovery methods, and pleadings.

LEAS 3220 Business Entities   3-0-3
Prerequisite: LEAS 1100. The study of corporate, partnership and agency law. This course will examine the applicable law as well as the formation and dissolution of various types of business entities.

LEAS 3230 Criminal Law for the Paralegal   3-0-3
Prerequisite: LEAS 1100. The study of procedural and substantive criminal law. The application, interpretation, and enforcement of criminal law will be addressed. The role of the paralegal in the criminal justice system will be emphasized.

LEAS 3240 Civil and Criminal Procedure   3-0-3
Prerequisite: LEAS 1100. The study of the methods used to litigate civil and criminal cases in both state and federal court. The preparation of documents necessary to move cases through the courts will be emphasized, as well as the role of the paralegal in litigation.

LEAS 4200 Family Law   3-0-3
Prerequisite: LEAS 1100. The study of applicable law surrounding family relationships. The issues of adoption, marriage, divorce, alimony, child custody and support, and property division, will be addressed.

LEAS 4210 Consumer Law   **3-0-3**

   Prerequisite: LEAS 1100. The study of the laws that govern consumer prac-
   tices. The law surrounding commercial paper, contracts, sales, and secured
   transactions will be emphasized.

LEAS 4220 Administrative Law   **3-0-3**

   Prerequisite: LEAS 1100. The study of laws governing administrative agencies
   of government. Special emphasis will be placed on the role of the paralegal in
   dealing with various administrative agencies.

LEAS 4230 The Law of Real Property Transactions   **3-0-3**

   Prerequisite: LEAS 1100. The study of laws that control real property transac-
   tions. Topics covered include the conveyancing of real property, title search
   methods and landlord-tenant issues.

LEAS 4250 Trial Advocacy   **3-0-3**

   Also offered as POLS 4250. An examination of all aspects of presenting a case
   in trial. Students develop effective methods for analyzing and preparing cases
   for presentation in trial. Students will learn and use basic technical skills neces-
   sary as members of the University's Mock Trial Team at tournaments sponsored
   by the American Mock Trial Association.

LEAS 4700 Directed Study in Legal Assistant Studies   **1/3-0-1/3**

   Prerequisites: Legal Assistant Studies major and LEAS 1100. Directed read-
   ing and research in selected areas of legal assistant studies. Topics examined will
   include those not normally found in established legal assistant studies courses.
   Regular conferences between instructor and student will be required. Permission
   of the advisor, instructor and department head must be obtained prior to registra-
   tion.

LEAS 4802 Special Topics in Legal Assistant Studies   **3-0-3**

    Prerequisite: LEAS 1100. Selected topics of interest in legal assistant studies.

LEAS 4900 Internship in Legal Assistant Studies   **3-0-3**

   Prerequisite: Legal Assistant Studies major, LEAS 1100 and LEAS 3200.
   Supervised, practical experience in an appropriate legal setting. Permission of
   the advisor, instructor and department head must be obtained prior to registra-
   tion.

LIBS: LIBRARY SCIENCE

LIBS 1000 Introduction to Library Resources   **1-0-1**

   Designed to promote an awareness of Valdosta State University Library Services
   and general information resources, including the role of information in society,
   research skills, the Internet, and critical thinking skills.

LIBS 2000 Introduction to Specialized Library Resources   **1-0-1 to 2-0-2**

   Offered at departmental request. A study of the reference resources essential to
   majors in the department requesting the course.

LING: LINGUISTICS

LING 4000 Elements of Linguistics   **3-0-3**

   Prerequisite or co-requisite: ENGL 2110 or 210H, 2120 or 2120H, 2130 or

2130H, or 2140. A study of applied linguistics which examines the nature, structure, and diversity of language, including the phonological, syntactic, and semantic patterns of English in contrast to features of other selected languages. The course may be part of the 9-hour sequence for those seeking an English to Speakers of Other Languages (ESOL) endorsement to a Georgia state teaching certificate.

LING 4160 Sociolinguistics   **3-0-3**

Prerequisite or Co-requisite: LING 4000. A study of the nature of language and the relationships between language and culture. Emphasis on cultural and social factors affecting language. The course may be part of the 9-hour sequence for those seeking an English to Speakers of Other Languages (ESOL) endorsement to a Georgia state teaching certificate.

MATH: MATHEMATICS

MATH 0097, MATH 0099 See the Learning Support Section on the last page of the course offerings.

MATH 1101 Introduction to Mathematical Modeling   **3-0-3**

A study of algebraic topics from a modeling perspective. Introduction to different types of models including linear, quadratic, polynomial, exponential, and logarithmic. Emphasis on gathering, presentation, and interpretation of data by using real-world examples as models.

MATH 1111 College Algebra   **3-0-3**

Algebraic topics including polynomials, rational expressions, equations, inequalities, graphing, exponents and radicals, relations and functions through exponential and logarithmic functions.

MATH 1112 Trigonometry   **3-0-3**

Prerequisite: MATH 1111 or equivalent. Circular, trigonometric, and inverse functions, mathematical induction, the binomial theorem, and complex numbers.

MATH 1113 Precalculus   **3-0-3**

Prerequisite: Either MATH 1112 or both a Mathematics SAT score greater than 549 and a strong background in high school mathematics including the equivalent of MATH 1112. Study of polynomial, rational, and transcendental functions and applications, conic sections, polar coordinates, parametric equations, and mathematical induction.

MATH 1113H Honors Precalculus   **3-0-3**

Prerequisite: Either MATH 1112 or both a mathematics SAT score greater than 549 and a strong background in high school mathematics including the equivalent of MATH 1112 Study of polynomial, rational, and transcendental functions and applications, conic sections, polar coordinates, parametric equations, and mathematical induction. Focus on concepts and real-world applications.

MATH 1261 Survey of Calculus I   **3-0-3**

Prerequisite: MATH 1111 or MATH 1101. Topics include limits, continuity, differentiation of functions of one variable, and applications.

MATH 1262 Survey of Calculus II   **3-0-3**

Prerequisite: MATH 1261. A continuation of Survey of Calculus I. Topics include techniques and applications of integration of functions of one and several

variables, and techniques and applications of differentiation of functions of several variables.

MATH 2150 Introduction to Linear Algebra 3-0-3

Prerequisite: MATH 2261 or consent of instructor. Systems of linear equations, matrices, determinants, and their properties; vectors and inner products; vector spaces; linear transformations; eigenvalues and eigenvectors. Special emphasis is placed on applications.

MATH 2261 Analytic Geometry and Calculus I 4-0-4

Prerequisite: MATH 1112 or preferably MATH 1113. Introduction to limits, derivatives, integration, fundamental theorem of calculus, and applications.

MATH 2262 Analytic Geometry and Calculus II 4-0-4

Prerequisite: MATH 2261. Integrals; exponential, logarithmic, trigonometric, and inverse functions; applications of calculus; parametric equations; polar coordinates; sequences and series.

MATH 2263 Analytic Geometry and Calculus III 4-0-4

Prerequisite: MATH 2262. Three-dimensional analytic geometry; functions of several variables; partial derivatives; multiple integrals, line and surface integrals.

MATH 2620 Statistical Methods 3-0-3

Prerequisite: MATH 1111 or MATH 1101. An introductory course in statistics. Topics include descriptive statistics; basic notions of probability, random variables, probability distributions, simple random sampling, and sampling distributions; confidence intervals and hypothesis tests; and regression. The application of statistical methodology and the use of computer software are emphasized.

MATH 3000 Tutoring in Mathematics 2-0-2

Prerequisite: Consent of Tutoring Center Director. Philosophy and fundamentals of one-to-one tutoring in mathematics that takes place in the Tutoring Center. Review of basic mathematical concepts in algebra and calculus. Introduction to current technology for enhancement of mathematics instruction. Designed for the Tutoring Center tutors in mathematics, it is graded on an S/U basis. Students must complete this course prior to tutoring in the center or must register for this course during their first semester of tutoring.

MATH 3010 History of Mathematics 3-0-3

Prerequisite: MATH 2261. A study of the development of mathematics from primitive times to the twentieth century; including numeral systems, arithmetical methods, origins of algebra, geometry, trigonometry, analytic geometry, calculus; and selected topics from modern mathematics.

MATH 3040 Set Theory 3-0-3

Prerequisite: MATH 2262. Propositional and predicate logic; mathematical induction. Logic and structure of sets as related to mathematical proof. Relations, and cardinality.

MATH 3080 Algebraic Structures 3-0-3

Prerequisite: MATH 3040. An examination of the structural foundations of the secondary school algebra curriculum. Topics include rings, integral domains, groups (including groups of transformations) and polynomials. Emphasis on development of students' deductive reasoning and proof techniques.

MATH 3140 Mathematics for Special Education Teachers   **3-0-3**

Prerequisite: MATH 1111. Fundamental mathematical concepts beginning with prenumber notions and then extending to number concepts, numeration systems, and computational algorithms for whole and rational numbers; geometry and measurement, and the role of technology in mathematics instruction.

MATH 3160 Mathematics for Early Childhood Teachers   **3-0-3**

Prerequisite: MATH 1111. A study of concepts and processes underlying the elementary school mathematics curriculum (K-4). Topics include numeration, number systems, estimation, computational algorithms, informal geometry, and measurement.

MATH 3180 Mathematics for Middle School Teachers   **3-0-3**

Prerequisite: MATH 1111. Concepts and processes that provide the foundation for the middle-grades mathematics curriculum (5-8). Includes an in-depth study of the real number system with emphasis on the rational number system and axiomatic differences among number systems. Other topics include relations and functions, geometry (including coordinate geometry and graphing), measurement, and elementary probability and statistics.

MATH 3340 Ordinary Differential Equations   **3-0-3**

Prerequisite: MATH 2262 or consent of instructor. Differential equations of first and second order, linear equations of higher order, and applications.

MATH 3510 Foundations of Geometry   **3-0-3**

Prerequisite: MATH 3040. A study of Euclidean and non-Euclidean plane geometry from both synthetic and metric approaches. Topics include concepts related to incidence, betweenness, plane separation and convexity, congruence, and parallelism, with some attention given to geometric transformations.

MATH 3600 Probability and Statistics   **3-0-3**

Prerequisite: MATH 2261. Descriptive statistics, probability distributions for discrete and continuous random variables, statistical inference, one way analysis of variance, and regression analysis.

MATH 3900 Mathematical Theory of Interest   **3-0-3**

Prerequisite: MATH 2262. A treatment of the mathematical theory and the practical applications of the various measures of interest. Included in the topics to be covered are simple and compound interest, continuous annuities, varying annuities, amortization, sinking funds, bonds, valuation of securities.

MATH 4081 Modern Algebra I   **3-0-3**

Prerequisite: MATH 4150 or MATH 3040 or consent of instructor. Topics from groups, rings, and fields. Subgroups, cyclic groups, permutation groups, normal subgroups, homomorphisms, Cayley's and Lagrange's Theorems, factor groups, abelian groups, direct products. Introduction to rings and fields.

MATH 4082 Modern Algebra II   **3-0-3**

Prerequisite: MATH 4081. Continuation of MATH 4081 with emphasis on rings and fields. Rings, integral domains, and fields. Vector spaces, extension fields, finite fields.

MATH 4085 Applied Modern Algebra   **3-0-3**
   Prerequisite: MATH 4081. Lattices, Boolean algebras, semigroups, binary group
   codes, binary relations, and graphs. Special emphasis is placed on applications.

MATH 4110 Number Theory   **3-0-3**
   Prerequisite: MATH 2262. Elementary properties of integers including divis-
   ibility, unique factorization, progressions and prime numbers. Linear congruences
   and residue classes, complete and reduced residue systems, Chinese Remainder
   Theorem, quadratic residues, law of quadratic reciprocity, Theorems of Fermat
   and Wilson, Fibonacci and perfect numbers, sums of squares, elementary theory
   of continued fractions.

MATH 4150 Linear Algebra   **3-0-3**
   Prerequisites: *Either* MATH 2150 and MATH 3040 *or* consent of instructor.
   Introduction to the theory of vector spaces, with emphasis on finite-dimensional
   vector spaces, linear systems, matrices, linear transformations, eigenvalues, and
   related subjects.

MATH 4260 Mathematical Analysis   **3-0-3**
   **Prerequisites: MATH 3040 *or* consent of instructor *or* MATH 2263 with a
   grade of A or B.** A study of the principles of mathematical analysis; point set
   topology in Euclidean and metric spaces, numerical sequences and series, conti-
   nuity, differentiation, integration, sequences and series of functions.

MATH 4300 Functions of a Complex Variable   **3-0-3**
   Prerequisite: MATH 2263. Introductory study of the algebraic and geometric
   properties of the complex number system and functions of a complex variable.
   Limits, continuity, and differentiation of complex functions. Analytic functions
   and the Cauchy-Riemann conditions. Integration of complex functions; Cauchy-
   Goursat theorem; Cauchy integral formula; the theorems of Morera and Liouville.
   Taylor and Laurent series expansions. Residues and poles with applications to
   integration. Conformal mappings.

MATH 4540 Topology   **3-0-3**
   Prerequisite: MATH 3040. The study of point set topology in metric and topo-
   logical spaces. Open and closed sets, compactness, connectedness, topological
   mappings, separation, product and functions spaces.

MATH 4621 Mathematical Statistics I   **3-0-3**
   Prerequisites: MATH 2263 and either MATH 2620 or MATH 3600. Distribu-
   tions of random variables, conditional probability and stochastic independence,
   multivariate and some special distributions, and distributions of functions of ran-
   dom variables.

MATH 4622 Mathematical Statistics II   **3-0-3**
   Prerequisite: MATH 4621. Introduction to statistical inference, sufficient statis-
   tic, estimation theory, theory of statistical tests, and inferences about normal models.

MATH 4630 Topics in Applied Statistics   **3-0-3**
   Prerequisite: MATH 3600 or consent of instructor. Topics in applied statistics
   will be selected from quality control, sampling theory, nonparametric statistics,
   experimental design, or regression analysis.

MATH 4651 Numerical Analysis I   **3-0-3**

Prerequisites: MATH 2262 and either CS 1301 or CS 1338. Development and implementation of efficient numerical methods; locating roots of nonlinear equations; solving systems of linear equations; numerical differentiation and integration; interpolation; approximation of functions.

MATH 4652 Numerical Analysis II   **3-0-3**

Prerequisites: MATH 4651 and MATH 3340. Continuation of MATH 4651. Determination of eigenvalues and eigenvectors of matrices; method of least squares, and curve fitting; numerical solutions of ordinary and partial differential equations.

MATH 4901 Operations Research I   **3-0-3**

Prerequisite: MATH 2150 or MATH 4150. Mathematical aspects and applications of Operations Research. Topics are selected from linear programming (mainly), integer programming, and dynamic programming.

MATH 4902 Operations Research II   **3-0-3**

Prerequisite: MATH 3600 or MATH 4621 (Note that MATH 4901 is not a prerequisite). An introduction to stochastic operations research. Topics are selected from stochastic modeling and optimization, probability models, queueing theory, and Monte Carlo simulation.

MATH 4910 Mathematical Models   **3-0-3**

Prerequisite: MATH 2263 or consent of instructor. An introduction to basic principles and applications of classical mathematical models, optimization models and probabilistic models.

MATH 4980 Senior Seminar   **3-0-3**

Prerequisite: A 4000-level course in algebra, analysis, or topology. A capstone experience in pure mathematics. Topics in an area of algebra, analysis, or topology will be covered and presented in a written and/or oral form.

MATH 4990 Special Topics in Mathematics   **Variable**

Prerequisites: Consent of instructor and Head of the Department of Mathematics and Computer Science. Topics and credits to be assigned. May be taken more than once if topics are different.

MATH 4990H Honors Special Topics in Mathematics   **Variable**

Prerequisites: Consent of instructor and Head of the Department of Mathematics and Computer Science. Topics and credits to be assigned. Student presentations will be required. May be taken more than once if topics are different.