MATHEMATICS AND STATISTICS

Department Office: 919 Hunter East; (212)772-5300; fax (212)772-4858

Chair: Ada Peluso

Dolciani Mathematics Learning Center; 300 Hunter North; (212)772-5371

Web Site: http://math.hunter.cuny.edu

Professors:
Baider, Bendersky, Cherkas, Churchill, Clarkson, Croom, Loustau, Peluso, Roitberg, Thompson, Williams

Associate Professors:
Binkowski, Chess, Jambois, Matthews, Shay, Shneyerson

Assistant Professor: Talih

Lecturer: Segarra

Advisers:
(undergraduate) Thomas Jambois, John Loustau
(statistics/graduate) Edward Binkowski

HEGIS Codes: 1701 (BA; BA/MA in Mathematics, Adolescence Education/Mathematics); 1701/1703 (BA/MA in Mathematics/Statistics and Applied Mathematics); 1702 (BA in Statistics); 1702/1703 (BA/MA in Statistics/Statistics and Applied Mathematics)

Majors Offered	Options in Major	Number Credits	Recommended Required GER	Prereq	Recommended Minor
BA in Mathematics	Option 1 For students intending to pursue technical careers in business, industry, or government	at least 30		MATH 150 and 155 or the equivalent	12 approved credits in one of the following subjects: biological sciences, chemistry, computer science, economics, geology, philosophy (in particular, logic), physics, or statistics; however, other minors may also be approved
	Option 2 For students intending to continue graduate study beyond the master's level			MATH 150 and 155 or the equivalent	12 approved credits in one of the following subjects: biological sciences, chemistry, computer science, economics, geology, philosophy (in particular, logic), physics, or statistics; however, other minors may also be approved
	Option 3 For students intending to teach in grades 7-12		HIST 151 HIST 152 GEOG 101 (program prerequisites)	MATH 150 and 155 or the equivalent	Adolescence education sequence
	Option 4 For students intending to teach in grades 1-6			MATH 150 and 155 or the equivalent	Childhood education, QUEST, serves as a collateral major, in place of a minor
BA in Statistics		32		MATH 150 and 155 or the equivalent	12 approved credits in one of the following subjects: biological sciences, chemistry, computer science, economics, geology, mathematics, philosophy (in particular, logic), physics, political science, psychology, or sociology
BA/MA in Mathematics		Minimum of 120 total			Students complete the BA in pure mathematics, with 30 additional credits at the graduate level in pure mathematics that are approved by the departmental graduate adviser
BA/MA in Mathematics/Statistics and Applied Math		Minimum of 120 total			Students complete the BA in mathematics with 30 additional credits at the graduate level in applied mathematics, statistics and computer science that are approved by the departmental graduate adviser
BA/MA in Statistics/Statistics and Applied Mathematics		Minimum of 120 total			Students complete the BA in statistics with 30 additional credits at the graduate level in applied mathematics, statistics and computer science that are approved by the departmental graduate adviser
BA/MA in Adolescence Education/Mathematics		Minimum of 141 total			The program includes 46 credits in mathematics courses and 22-24 credits in teacher education courses

The Department of Mathematics and Statistics offers majors in mathematics and statistics that prepare students for careers in business, government, research and teaching. Students considering such majors should consult an adviser during their first or second semester to plan the proper sequence of courses and should continue to consult the adviser at least once each semester. Minors in mathematics and statistics are also offered. Students are reminded that requirements to complete a minor are determined by the major department.

Credit and Course Exemption The department offers credit or course exemption based on standard examinations such as AP and CLEP. Inquiries should be made at the department office.

Mathematics Proficiency and Placement

Effective fall 2004, all students entering Hunter College must demonstrate proficiency (mastery of basic skills) in mathematics as evidenced by scoring 27 or greater on each of the pre-algebra and algebra parts of the new COMPASS math test. Certain categories of students are exempt from this requirement. See the Testing Requirements section of this catalog or check with the Testing Office for more information. Subsequent placement into all mathematics and statistics courses is determined by the student's score on the remaining parts of this exam. New students entering the college take this test in its entirety when they take the other placement exams in reading and writing. Continuing students at the college who have already taken parts 1 and 2 of the formerly used CUNY five-part math exam must take the algebra, college algebra and trigonometry parts of the new COMPASS math exam before registering for a course above MATH 100. A testing schedule and information about the math exam is available from the Testing Office, Room 150 Hunter North, 772-4898. The schedule for this examination should be checked well in advance of registration.

Passing specific parts of this examination is now required by various other departments for entry into certain courses. Requests for information about other departments' regulations should be directed to those departments.

Symbolic Computation Proficiency Requirement

As a requirement for graduation with a BA or MA in mathematics, students must demonstrate entry-level proficiency in symbolic computation. The requirement can be met in any of the following ways:

(a) passing any of MATH 126, MATH 151, MATH 154;

(b) passing a departmental exam in a computer algebra system (currently we use MATHEMATICA or the equivalent).

Accelerated BA/MA Program in Mathematics or in Statistics and Applied Mathematics

The BA/MA program offers promising students the opportunity to complete both the bachelor's and master's degree requirements with a minimum of 120 credits. Requirements are the same as those for a major in the department, plus 30 credits at the graduate level. Interested students should contact the graduate adviser for further information regarding eligibility and curriculum requirements.

Track 1: BA/MA Program in Mathematics
Students complete the BA in pure mathematics with 30 additional credits at the graduate level in pure mathematics approved by the departmental graduate adviser.

Track 2: BA/MA Program in Statistics and Applied Mathematics
Students complete the BA in statistics or mathematics with 30 additional credits at the graduate level in applied mathematics, statistics and computer science approved by the departmental graduate adviser.

Honors

A student majoring in mathematics or statistics may become a candidate for departmental honors by successfully completing MATH 490, by presenting a major GPA of at least 3.6 and by achieving a satisfactory rating on a comprehensive examination.

MATHEMATICS MAJOR

The mathematics major introduces students to the fundamental areas of mathematics and provides some degree of specialization in one or more areas. It trains students in the analytic thinking characteristic of pure and applied mathematics and provides some familiarity with rigorous methods of mathematical proof. To declare the major, the student should have completed one year of calculus (MATH 150 and 155, or the equivalent). The mathematics major consists of at least 30 credits of coursework: 21 credits of core curriculum courses (taken by all mathematics majors except those with a minor in childhood education) and at least 9 credits of advanced courses, chosen by students according to their career plans. Students are expected to select an option from those described below.

Major Core Curriculum

(21 cr) MATH 153, 158, 250, 254 or 255, 260, 311, 351 and STAT 213 or 311.

Options

Some flexibility is possible within each option, but any deviation from the requirement must be approved by the departmental adviser. Such approval is not automatic and will depend on the career goals of the student.

Option 1
For students intending to pursue technical careers in business, industry, or government. Required courses (in addition to the core): 3 courses chosen from MATH 352, 353, 385, or STAT 311. Recommended electives: MATH 254, 255, 301, 354, 485, STAT 312, 313, CSCI 135, 355.

Option 2
For students intending to continue graduate study beyond the master's level. Required courses (in addition to the core): MATH 352 and any two of MATH 312, 340, or 353. To prepare adequately for graduate study, the student should choose at least three additional courses from among MATH 301, 312, 340, 353, 354, 370, 376, 385, 454, 485, 490, STAT 311, 312, 313, CSCI 135, 355 and any 700-level graduate course in the department or at the Graduate Center.

Option 3
For students intending to teach in grades 7-12. Required courses (in addition to the major core): MATH 331, STAT 311. Recommended for required third course and electives: MATH 275, 312, 313, 340, 352, 370, 371, 376, 385, STAT 212, 213, 214, CSCI 135.

Option 4
For students intending to teach in grades 1-6. Any of the above options is appropriate. An alternative requiring permission of the department adviser is an interdisciplinary major including some science courses as well as approved courses within the department. For such a major, core courses would include at least MATH 250, 260 and 311. Elective courses would ordinarily include MATH 261(W) and 313.

Minor

Except for mathematics majors planning to teach in elementary or secondary schools, majors in mathematics ordinarily take as a minor 12 approved credits in one of the following subjects: biological sciences, chemistry, computer science, economics, geology, philosophy (in particular, logic), physics, or statistics. However, other minors may also be approved. For students preparing to teach in elementary or secondary schools the education sequence as prescribed by the School of Education is taken in lieu of a minor.

Minor for Non-Majors

Non-majors wishing to minor in mathematics should consult their major adviser for appropriate course recommendations.

STATISTICS MAJOR

The study of statistics provides the student with analytical tools that may find application in various fields within the sciences and social sciences. Actuarial science is one area open to students in statistics who also have backgrounds in such subjects as computer science, mathematics and economics. The MA in statistics and applied mathe-

matics offered by the department provides enrichment for undergraduate statistics majors. To enter the major the student must have completed MATH 150 and 155.

The statistics major consists of 32 credits as follows: MATH 250, MATH 254 or 354, 260, STAT 212, 213, 214, 311, 312, 313 and any additional 3-credit statistics, mathematics, or computer science courses approved by the undergraduate statistics adviser. Modifications are permitted with the consent of the statistics adviser. For example, a student may elect to replace STAT 212 with a more advanced course. With permission of the adviser, a student may take graduate courses in the MA in statistics and applied mathematics program.

Minor

Statistics majors take 12 approved credits as a minor in one of the following subjects: biological sciences, chemistry, computer science, economics, geology, mathematics, philosophy (in particular, logic), physics, political science, psychology or sociology. For information concerning approved minor sequences, students should consult the departmental adviser.

Minor for Non-Majors

Non-majors wishing to minor in statistics should consult their major adviser for appropriate course recommendations.

Actuarial Sequence

Students interested in actuarial work should take MATH 150, 155, 250, 260, STAT 311 and 313. Students are also encouraged to take courses in accounting, economics and computer science. For information concerning examinations and prizes given to undergraduates by the Society of Actuaries, consult the departmental adviser.

Preparation for Adolescence Education (Grades 7-12)

Students preparing to teach at this level may pursue Option 3, above. The 23-credit sequence in adolescence education can serve in place of the minor. Students interested in teaching grades 7-12 may also pursue a combined BA/MA program in teaching. This program requires a minimum of 141 credits. Approval for admission to this program requires completion of at least 45 credits with a GPA of 2.8 and completion of at least 10 credits in mathematics, including a year of calculus (MATH 150 and 155 or equivalent), with an average of 2.7 in these major courses.

The BA/MA program includes 46 credits in mathematics and 22-24 credits in teacher education courses. See the School of Education section in the undergraduate catalog for additional information on admission, progress standards and exit criteria. The required mathematics courses for the BA/MA in the teaching of mathematics are: MATH 150 and 155 (or the equivalent), 250, 260 and 311 (or the equivalent), 620, 623, 630, 661 and STAT 614 plus 12 additional credits at the 300 level or above, selected with the approval of the departmental adviser.

Preparation for Childhood Education (Grades 1-6)

Students preparing to teach in elementary schools may pursue Option 4 above. The specified collateral major is childhood education. No minor is required.

COURSE LISTINGS

In planning their schedules, prospective majors should note that some advanced required courses are offered only once each year and several advanced elective courses are offered only once every other year. A rotation schedule for course offerings is available in the department office and on the departmental web site.

Prerequisites: Because of the nature of mathematics, the department recommends that students refrain from enrolling in any course that carries prerequisites unless these prerequisites have been completed with a grade of C or better.

MATHEMATICS

MATH 100 Basic Structures of Mathematics
GER 1/B
Not open to students who have completed MATH 104 or 155. Not recommended for students majoring in mathematics, statistics, computer science, or natural sciences. Symbolic logic, sets, number systems, relations and operations and topics in probability and statistics. This is a terminal course and does not serve as a prerequisite to any other course in the department.
3 hrs, 3 cr.

MATH 101 Algebra for College Students
Topics in algebra, graphing and functions. Includes: algebraic and graphical solutions to systems of equations and inequalities; absolute value, polynomial, rational and radical expressions and equations; complex numbers; the function concept; introduction to polynomial, rational and exponential functions and their graphs.
prereq: appropriate score on placement exam
4 hrs (2 lec, 2 lab), 3 cr.

MATH 104 Mathematics for Elementary Education I
GER 1/B
Fundamental and relevant mathematics as recommended by the NCTM for prospective elementary school teachers, including problem solving, sets, logic, numeration, computation, integers and number theory. Required of students planning to teach in elementary schools. Not open to other students.
prereq: MATH 101 *or appropriate score on the placement exam*
3 hrs, 3 cr.

MATH 105 Mathematics for Elementary Education II
GER 1/B
Continuation of MATH 104. Continuation of the content of the mathematics recommended by the NCTM for prospective elementary school teachers, including probability, statistics, plane and transformational geometry, congruence and similarity.
prereq: MATH 104
3 hrs, 3 cr.

MATH 110 Topics in the Mathematical Sciences
GER 1/B
Not open to students who have completed MATH 105, 160 or 260. Intended for liberal arts or social science students. Applications of topics selected from algebra, analysis, computer science, geometry, probability and statistics.
prereq: college-level mathematics or statistics course
3 hrs, 3 cr.

MATH 111 Matrices, Vectors and Linear Programming
GER 1/B
Not open to students who have completed MATH 160 or 260. Recommended for accounting students; not recommended for students majoring in mathematics or statistics. Introduction to matrices and vectors, systems of linear equations and linear programming with applications.
prereq: MATH 101 *or appropriate score on placement exam*
3 hrs, 3 cr.

MATH 125 Precalculus
GER 1/B
Functions and their graphs: polynomial, rational, exponential, logarithmic and trigonometric functions; conic sections; topics in trigonometry; graphical and analytical solutions to systems of equations and inequalities. Not credited to students who have completed MATH 150 or its equivalent.
prereq: grade of C or better in MATH 101 *or appropriate score on placement exam*
4 hrs, 4 cr.

MATH 126 Precalculus Technology Laboratory
Students are introduced to MATHEMATICA as a tool for exploring qualitative features of functions and solving precalculus problems: simplifying algebraic expressions, solving equations, plotting functions and curves, finding and approximating zeros and solving systems of equations. MATH 126 cannot be taken for credit after a student has passed MATH 150. Students who have passed MATH 150 should register for MATH 154 to satisfy the symbolic proficiency requirement.
prereq: grade of C or better in MATH 101 *or appropriate score on placement exam*
pre- or coreq: MATH 125
2 hrs, 1 cr.

MATH 150 Calculus with Analytic Geometry I
GER 1/B
Limits, continuity, differentiation and integration of elementary functions and trigonometric functions, applications. It is strongly recommended that students who have not taken MATH 126 register for MATH 154 simultaneously with MATH 150. For majors in mathematics, MATH 154 may be used to satisfy the departmental graduation requirement of proficiency in symbolic computation.
prereq: grade of C or better in MATH 125 *or appropriate score on placement exam*
4 hrs, 4 cr.

MATH 151 Calculus I with Symbolic Computation
Combines MATH 150 (Calculus I) with MATH 154. Some previous experience with computers is desirable but not required.
prereq: grade of C or better in MATH 125 *or appropriate score on placement exam*
6 hrs, 5 cr.

MATH 153 Theoretical Calculus I Workshop
Class meets once a week over the first six weeks of the semester. An introduction to mathematical proofs by means of a theoretical treatment of topics from MATH 150, including but not restricted to mathematical induction, epsilon-delta arguments, extreme and mean-value theorems.
prereq: MATH 150
2 hrs, 0.5 cr.

MATH 154 An Introduction to Symbolic Computation
Laboratory introduction to machine-aided computation with an emphasis on examples related to calculus. Students use a symbolic computation package to investigate and solve problems numerically, analytically and graphically. The same package is used to create reports of their results. Some previous experience with computers is desirable but not required.
pre- or coreq: MATH 150
2 hrs, 1 cr.

MATH 155 Calculus with Analytic Geometry II
GER 1/B
Differentiation and integration of transcendental functions, integration techniques, infinite sequences and series, improper integrals, polar coordinates.
prereq: MATH 150
4 hrs, 4 cr.

MATH 158 Theoretical Calculus II Workshop
A continuation of MATH 153. The topics include, but are not restricted to, existence theory for the integral of a continuous function on a closed interval and convergence tests. Class meets once a week for the second six weeks of the semester.
prereq: MATH 153
pre- or coreq: MATH 155
2 hrs, 0.5 cr.

MATH 160 Matrix Algebra
GER 1B
Systems of linear equations, matrices, determinants, introduction to vector spaces and linear transformations, applications.
prereq: MATH 125 *or appropriate score on placement exam*
3 hrs, 3 cr.

MATH 250 Calculus with Analytic Geometry III
GER 3/B
Vector geometry, dot and cross products, partial derivatives, matrices, determinants, Jacobians, multiple integration.
prereq: MATH 155
4 hrs, 4 cr.

MATH 254 Ordinary Differential Equations
GER 3/B
First-order equations, second-order linear equations and linear systems, power series solutions, transform and numerical methods, introduction to qualitative theory.
prereq: MATH 250
3 hrs, 3 cr.

MATH 255 Vector Analysis
GER 3/B
Not open to students who have completed MATH 352. Line and surface integrals, Green's Theorem, divergence theorem, Stokes' Theorem, generalized coordinates.
prereq: MATH 250
3 hrs, 3 cr.

MATH 260 Linear Algebra
GER 3/B
Vector spaces, linear transformations, canonical forms, inner product spaces, bilinear forms, applications.
prereq: MATH 153 *or perm dept.*
pre- or coreq: MATH 250
4 hrs, 4 cr.

MATH 261(W) Mathematics in Human History
GER 2/B
A historical treatment of themes in mathematics, probability and statistics, with applications in the arts and sciences. Roots of mathematics in non-Western cultures and contributions of women and minorities are included.
prereqs: ENGL 120*, college-level mathematics course beyond* MATH 101
3 hrs, 3 cr.

MATH 275 Intermediate Symbolic Logic
GER 3/B
Symbolization of statements in sentential and predicate notation, sentential derivations, interpretations, predicate derivations through logic of identity and definite descriptions. Cross-listed as PHILO 275.
prereqs: MATH 153, 158
3 hrs, 3 cr.

MATH 295 Intermediate Topics in Mathematics
GER 3/B
May be repeated as topics vary, but not more than twice. Topics to be studied in any given term will be announced prior to registration.
prereqs: MATH 150*; additional prereqs depend on specific course offered*
3 hrs, 3 cr.

MATH 301 Mathematical Methods for the Physical Sciences
GER 3/B
The course will concentrate on the solution of linear partial differential equations and boundary value problems. Solution techniques such as separation of variables, Fourier series, Green's functions and Laplace transforms are covered. These are applied to several equations which occur in physical applications such as the heat equation, the Laplace equation and the wave equation. Cross-listed as PHYS 301.
prereq: MATH 254
3 hrs, 3 cr.

MATH 311 Abstract Algebra I
GER 3/B
Introduction to the theory of groups and rings.
prereq: MATH 260
3 hrs, 3 cr.

MATH 312 Abstract Algebra II
GER 3/B
Elements of Galois theory, construction with ruler and compass, advanced topics in ring theory and linear algebra.
prereq: MATH 311
3 hrs, 3 cr.

MATH 313 Theory of Numbers
GER 3/B
Congruences, quadratic residues, elementary Diophantine analysis, continued fractions, sums of squares.
prereq: MATH 260
3 hrs, 3 cr.

MATH 331 Geometries
GER 3/B
Topics in affine and projective geometry and/or topics in differential geometry.
prereq: MATH 260
3 hrs, 3 cr.

MATH 340 Topology
GER 3/B
Metric and topological spaces, continuity, homeomorphisms, compactness, connectedness, homotopy, fundamental group.
prereq: MATH 351
3 hrs, 3 cr.

MATH 351 Mathematical Analysis I
GER 3/B
Rigorous treatment of foundations of calculus, including topology of real line and higher-dimensional spaces. Basic results on continuous functions.
prereqs: MATH 158, 250, 260
3 hrs, 3 cr.

MATH 352 Mathematical Analysis II
GER 3/B
Integration, sequences and series, uniform convergence, differentiation of functions of several variables, inverse and implicit function theorems, formula for change of variables.
prereq: MATH 351
3 hrs, 3 cr.

MATH 353 Introduction To Complex Variables
GER 3/B
Complex numbers, analytic functions, elementary functions, contour integrals, Cauchy integral theory, series.
prereqs: MATH 158, 255
3 hrs, 3 cr.

MATH 354 Dynamical Systems and Chaos
GER 3/B
Linear flows, qualitative theory of low-dimensional nonlinear systems, introduction to chaos in discrete one-dimensional dynamical systems.
prereqs: MATH 250, 260
3 hrs, 3 cr.

MATH 370 Mathematical Logic
GER 3/B
A survey of the central results and techniques of metalogic, principally mathematical induction, the soundness and completeness of theorems for first-order logic, the Skolem Theorem and Church's Theorem on undecidability. Cross-listed as PHILO 375.
prereq: MATH 260 *or perm instr.*
3 hrs, 3 cr.

MATH 371 Fundamental Concepts of Modern Mathematics
GER 3/B
Axiomatic approach to set theory: axiom of choice, Zorn's Lemma, transfinite arithmetic.
prereqs: two of the following: MATH 260, 311, 351, 352
3 hrs, 3 cr.

MATH 376(W) Philosophy of Mathematics
GER 3/B
Study of such issues as the nature of demonstration or proof and the nature of mathematical knowledge and mathematical objects such as numbers and sets. Cross-listed as PHILO 376.
prereqs: ENGL 120*; one* PHILO *course; second course in* PHILO *or* MATH *(precalculus or beyond)*
3 hrs, 3 cr.

MATH 385 Numerical Methods I
GER 3/B
Accuracy and precision, convergence, iterative and direct methods. Topics selected from: solution of polynomial equations and linear systems of equations, curve fitting and function approximation, interpolation, differentiation and integration, differential equations. Cross-listed as CSCI 385 and PHYS 385.
prereqs: MATH 155*;* MATH 160 *or* 260
3 hrs, 3 cr.

MATH 391, 392, 393 Independent Study in Mathematics
GER 3/B
Open to Jr/Sr only. Independent study and reading under direction of faculty member.
prereq: perm dept.
1-3 hrs, 1-3 cr.

MATH 395 Advanced Topics in Mathematics
GER 3/B
Topics to be studied in any given term will be announced prior to registration. May be repeated as topics vary, but not more than twice.
prereqs: MATH 250, 260*; additional prereqs depend on specific course offered*
3 hrs, 3 cr.

MATH 454 Calculus on Manifolds
GER 3/B
Functions on Euclidean space, implicit function theorem, Fubini's Theorem, integration on chains and manifolds.
prereq: MATH 352
3 hrs, 3 cr.

MATH 485 Numerical Methods II
GER 3/B
Advanced topics selected from: solution of equations and systems of equations, curve fitting and function approximation, interpolation, differentiation and integration, differential equations. Major project will be assigned. Cross-listed as CSCI 485 and PHYS 485.
prereq: MATH 385
3 hrs, 3 cr.

MATH 490 Honors Seminar
GER 3/B
prereqs: MATH 311, 351*, perm dept.*
3 hrs, 3 cr.

STATISTICS

STAT 113 Elementary Probability and Statistics
GER 1/B
Not open to students who have completed STAT 213, ECO 221, PSYCH 248, or SOC 241. Not credited for majors in statistics or mathematics unless collateral major is elementary education. Discrete probability; descriptive, inferential statistics. Estimation and hypothesis testing for normal and binomial means. Students who have taken calculus or place into calculus by the placement exam should take STAT 213 instead of STAT 113.
prereq: MATH 101 *or appropriate score on placement exam*
3 hrs, 3 cr.

STAT 212 Discrete Probability
GER 1/B
Combinatorics, discrete probability, random walks and game theory. Emphasis on model building.
prereq: MATH 125 *or appropriate score on placement exam*
3 hrs, 3 cr.

STAT 213 Introduction to Applied Statistics
GER 1/B
Not open to students who have completed ECO 221, PSYCH 248, or SOC 241. Familiarity with the Windows computing environment encouraged. Sampling, estimation, tests of hypotheses, including one- and two-sample t-tests, two- and three-way tables for nominal and ordinal data, linear regression, analysis of variance through two-way with interaction, appropriate statistical software.
prereq: MATH 125 *or appropriate score on placement exam*
3 hrs, 3 cr.

STAT 214 Data Analysis Using Statistical Software
GER 3/B
Familiarity with the Windows computing environment encouraged. Analysis of variance, simple and multiple regression, nonparametric statistics, statistical model building.
prereqs: STAT 213 *or* MATH 125 *and* STAT 113 *with grade of C or better in each course*
3 hrs, 3 cr.

STAT 295 Intermediate Topics in Statistics
GER 3/B
Topics to be studied in any given term will be announced prior to registration. May be repeated as topics vary, but not more than twice.
prereqs: STAT 213 *or* STAT 113 *and* MATH 125*; additional prereqs depend on specific course offered*
3 hrs, 3 cr.

STAT 311 Probability Theory
GER 3/B
Combinatorics, distribution theory for discrete and continuous random variables, central limit theorems.
prereq: MATH 250
3 hrs, 3 cr.

STAT 312 Stochastic Processes
GER 3/B
Discrete and continuous stochastic processes including Markov chains, birth processes, queues and Brownian motion.
prereq: STAT 311
3 hrs, 3 cr.

STAT 313 Introduction to Mathematical Statistics
GER 3/B
Estimation, hypothesis testing, confidence limits for normal, binomial, Poisson and exponential random variables.
prereq: STAT 311
3 hrs, 3 cr.

STAT 351 Advanced Biometrics
GER 3/B
A second course in statistics covering quantitative methods applicable in the life sciences. Topics include experimental design, life table analysis, ethical issues, survival analysis, logistic regression and Cox regression. Linear algebra recommended but not required.
prereqs: Math at level of MATH 125*,* STAT 113*,* 213 *or equiv. intro. statistics course*
3 hrs, 3 cr.

STAT 391 Independent Study
GER 3/B
Open to Jr/Sr majors only. Independent study in which a student selects a topic of interest to him- or herself. The study is carried out under the direction of a faculty member.
1 hr, 1 cr.

STAT 392 Independent Study
GER 3/B
Open to Jr/Sr majors only. Independent study in which a student selects a topic of interest to him- or herself. The study is carried out under the direction of a faculty member.
2 hrs, 2 cr.

STAT 393 Independent Study
GER 3/B
Open to Jr/Sr majors only. Independent study in which a student selects a topic of interest to him or herself. The study is carried out under the direction of a faculty member.
3 hrs, 3 cr.

STAT 395 Advanced Topics in Statistics
GER 3/B
Topics to be studied in any given term will be announced prior to registration. May be repeated as topics vary, but not more than twice.
prereqs: STAT 311*;* STAT 312 *or* 313*; additional prereqs depend on specific course offered*
3 hrs, 3 cr.