Theory of Statistics I
Fall. 3(3-0) P:NM: (MTH 828 or concurrently and STT 881 or concurrently) Empirical distributions, quantiles, Glivenko-Cantelli Theorem. Important distributions and families. Convergence, Slutsky Theorem, asymptotics of differentiable functions. Basic concepts of decision theory. Confidence sets. Some basic statistical methods.

Theory of Statistics II
Spring. 3(3-0) P:NM: (STT 871 and STT 882 concurrently) Theory of Neyman Pearson tests and extensions. Convex loss estimation, best unbiased estimates, sufficient statistics, information lower bounds. Extensive application to linear models. LAN families and applications to estimation and tests.

Theory of Probability I
Fall. 3(3-0) P:NM: (MTH 828 or concurrently) Measures and their extensions, integration, and convergence theorems. Product measures, Lebesgue decomposition, transition probabilities, Kolmogorov consistency theorem. Independence. Classical limit theorems for partial sums.

Theory of Probability II

Stochastic Processes and Applications
Fall. 3(3-0) P:NM: (STT 441 or STT 861) Markov chains and their applications in both discrete and continuous time, including classification of states, recurrence, limiting probabilities. Queuing theory, Poisson process and renewal theory.

Stochastic Models in Finance
Spring. 3(3-0) P:NM: (STT 881) SA: STT 887 Stochastic models used in pricing financial derivatives. Discrete-time models. Brownian motion, stochastic integrals and Itô's formula, the basic Black-Scholes model, risk neutral distribution, European and American options, exotic options, the interest rate market, futures and interest rate options.

Stochastic Processes

Statistical Problems
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 24 credits in all enrollments for this course. R: Approval of department. Individualized study on selected problems.

Master's Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 24 credits in all enrollments for this course. R: Approval of department. Master's thesis research.

Sequential Analysis and Renewal Theory
Fall of even years. 3(3-0) P:NM: (STT 872) Sequential estimation, testing and design. Optimal stopping. Linear and nonlinear renewal theory.

Topics in Advanced Inference
Spring of odd years. 3(3-0) P:NM: (STT 872) Topics selected from: decision theory; James-Stein, shrinkage, Bayes, and empirical Bayes estimation; invariance; bootstrap methodology; inference on stochastic processes; stochastic approximation; survival analysis and reliability.

Asymptotic Theory
Fall of odd years. 3(3-0) P:NM: (STT 872) Large sample behavior of likelihood function. Local Asymptotic Normality models. Contiguity. Bahadur and Pitman efficiency of statistical procedures.

Semi-Nonparametric Inference
Spring of even years. 3(3-0) P:NM: (STT 872) Small and large sample properties of distribution-free tests. Adaptive and robust procedures. Nonparametric ANOVA. Estimation of regression and density functions.

Convergence of Measures and Stochastic Processes
Fall of even years. 3(3-0) P:NM: (STT 882) Convergence of measures on metric spaces. Prohorov's theorem. Function spaces with the uniform and Skorohod metric. Empirical processes. Applications.

Stochastic Processes and Probability
Fall of odd years. 3(3-0) P:NM: (STT 882) Discrete and continuous time martingales, convergence theorems, Doob-Meyer decomposition. Applications.

Stationary and Second Order Processes
Spring of even years. 3(3-0) P:NM: (STT 882) Stationary, second order, and Gaussian processes. Sample path properties. Linear and nonlinear prediction and estimation. Applications.

Martingales
Fall of odd years. 3(3-0) P:NM: (STT 882) Stochastic integrals and semi-martingales, Itô formula, stochastic differential equations. Applications.

Problems in Statistics and Probability
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department. Individual study on an advanced topic in statistics or probability.

Topics in Statistics and Probability
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 24 credits in all enrollments for this course. R: Approval of department. Nonparametric statistics, multivariate analysis, time series analysis, Bayesian statistics, reliability theory, stochastic approximation, design of experiments, sets of decision problems, stochastic processes, or sequential analysis.

Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 48 credits in all enrollments for this course. R: Approval of department. Doctoral dissertation research.
Studio Art–STA

351  Mixed Media and Installation
Fall, Spring. 3(0-6) P:M: (STA 111 and STA 113 and STA 114)
Exploration of artistic expression using mixed media and assemblage techniques. Installation techniques.

354  Casting
Fall, Spring. 3(0-6) P:M: (STA 111 and STA 113 and STA 114)
Casting concepts and techniques as a means of artistic and cultural expression.

355  Construction and Fabrication
Fall, Spring. 3(0-6) P:M: (STA 111 and STA 113 and STA 114)
Sculptural concepts using methods of construction and fabrication as an approach to artistic and cultural expression.

360  Graphic Design
Fall, Spring. 3(0-6) P:M: (STA 111 and STA 113 and STA 114)
Graphic signs and symbols used in visual communication. Application of design principles to experimental and practical problem solving.

370  Photography
Fall, Spring. 4(2-4) P:M: (STA 111 and STA 113 and STA 114)
History and basic technology of black and white photography, integrative camerawork, and darkroom processing. Issues in photographic aesthetics. Students furnish camera and all materials.

400  Advanced Drawing
Fall, Spring. 4(0-8) P:M: (STA 300)
Drawing with an emphasis on a wide range of current drawing concepts, materials, and techniques. Advanced non-representational drawing. Application to individual thematic development.

420  Painting
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 325)
Advanced applications of painting concepts, styles and techniques. Consideration of the language of contemporary painting.

430  Relief Printing
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 300 or STA 320)
Theory and practice of relief prints including additive methods, inocut and woodcut for artistic and cultural expression.

431  Screen Printing
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 300 or STA 320)
Screen printing as a fine art print medium. Theory and techniques as a means to creative and expressive imagery.

432  Lithography
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 300 or STA 320)
Lithographic process as an artistic medium. Techniques of the medium. Preparing the plate or stone, printing, and using tusche, wash and rubbing as a means to creative imagery.

433  Intaglio
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 300 or STA 320)
Aesthetic principles and techniques such as line etching, soft ground, and dry point, wax resist, collograph, and monoprints.

435  Handmade Paper
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 300 or STA 320)
Handmade paper as an art form. Basic techniques including lamination, layering, folding and vacuum forming.

440  Ceramics
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 345)
Development of aesthetic and technical skills with particular focus on contemporary issues of content and concept. Includes opportunity for supervised individual study.

450  Advanced Sculpture
Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P:M: (STA 350 or STA 351 or STA 354 or STA 355) P:NM: and one other 300-level sculpture course
Advanced applications of sculpture concepts, styles and techniques. Consideration of the language of contemporary sculpture, with emphasis on individual direction.

460  Graphic Communication
Fall, Spring. 4(0-8) P:M: (STA 462 or STA 463 or STA 464 or STA 465 or STA 466 or STA 467 or STA 468) P:NM: and one other 400-level graphic design course.
Graphic design for visual communication based on typographic problem solving. Selected experimental and practical projects.

462  Three-Dimensional Design
Spring. 4(0-8) P:M: (STA 360)
Development and application of visual communication elements for three-dimensional structures and compound surfaces within a broad range of scale.

463  Book Design
Fall. 4(0-8) P:M: (STA 360)
Principles of typography and graphic design as applied to the book form.

464  Design Process and Concepts
Fall. 4(0-8) P:M: (STA 360)
Problem solving methods, strategies, and procedures. Exploration of problem definition, analysis, concept development, and evaluation.

465  The Poster
Spring. 4(0-8) P:M: (STA 360)
Poster design as a combined verbal and non-verbal communication device. Visual elements used to persuade and inform.

466  Corporate Imagery
Fall. 4(0-8) P:M: (STA 360)
Design development, hierarchical unification, and application strategies for the graphic identification of organizations and sub-units of organizations.

467  Motion Graphics and Electronic Media
Fall. 4(0-8) P:M: (STA 360)
Non-print methods of visual communication. Computer- and video-based two-dimensional animation design.

468  Computer Graphics
Spring. 4(0-8) P:M: (STA 360)
The computer as a medium for visual communication design. Experimentation with drawing, painting and solid modeling applications.

470  Still Photography
Fall, Spring. 4(2-4) P:M: (STA 370)
Control of black and white photographic materials through advanced camera and darkroom techniques. View camera principles and use. Print hand-coloring and archival processing. Contemporary form and content issues.

472  Color Photography
Spring. 4(2-4) P:M: (STA 370)

473  Landscape Photography
Fall. 4(2-4) P:M: (STA 370)
Principles of landscape photography ranging from response to the rural and pastoral to urban and human altered. Historical and contemporary aesthetic trends. Film formats ranging from 35 mm to 4" x 5". Controlled black and white printmaking and zone system.

474  Photography Studio Lighting
Fall. 4(2-4) P:M: (STA 370)
The photographer's balance of still life and portrait composition and controlled lighting with personal interpretation of subject matter. Lighting theory, technique, and equipment.

475  Photography Workshop
Fall, Spring. 4(1-6) P:M: (STA 370)
Non-traditional photographic processes and concepts. Non-silver printmaking, electronic still imaging, computer manipulation, video production, and slide-sound productions.

481  Art Experiences with Children and Youth: Elementary
Fall. 5(1-8) P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in the Department of Art with a teacher certification option.
Art teaching in the Saturday Art Program. Emphasis on elementary experiences. Planning and writing art curriculum.

482  Art Experiences with Children and Youth: Secondary
Spring. 6(2-8) P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in the Department of Art with a teacher certification option.
Art teaching in the Saturday Art Program. Emphasis on secondary experiences. Planning and writing art curriculum.

490  Independent Study
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course. R: Approval of department.
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

491A  Selected Topics - Painting
Spring. 2 to 3 credits A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (STA 320) R: Approval of department.
Issues of technique, style, and content in painting.
491B Selected Topics - Printmaking
Spring. 2 to 3 credits. A student may earn
a maximum of 6 credits in all enrollments for
this course. P.M.: (STA 430 or STA 431 or
STA 432 or STA 433 or STA 435): R:
Approval of department.
Issues of technique, style, and content in printmak-
ing.

491C Selected Topics - Ceramics
Spring. 2 to 3 credits. A student may earn
a maximum of 6 credits in all enrollments for
this course. P.M.: (STA 345): R:
Approval of department.
Issues of technique, style, and content in ceramics.

491D Selected Topics - Sculpture
Spring. 2 to 3 credits. A student may earn
a maximum of 6 credits in all enrollments for
this course. P.M.: (STA 350 or STA 351 or
STA 354 or STA 355): R:
Approval of department.
Issues of technique, style, and content in sculpture.

491E Selected Topics - Graphic Design
Spring. 2 to 3 credits. A student may earn
a maximum of 6 credits in all enrollments for
this course. P.M.: (STA 360): R:
Approval of department.
Issues of technique, style, and content in graphic design.

491F Selected Topics - Photography
Fall of odd years. 2 to 3 credits. A student may earn
a maximum of 6 credits in all en-
rollments for this course. P.M.: (STA 370): R:
Approval of department.
Issues of technique, style, and content in photography.

492 Senior Seminar and Professional
Practice (W)
Fall, Spring. 2(2-0) P.M.: Completion of Tier I
writing requirement. R: Open only to seniors
in the Studio Art major. C: STA 492A con-
currently.
Capstone course for artists and designers. Writing
as a mode of issue delineation and definition.

492A Exhibition Practicum
Fall, Spring. 1(1-1) P.M.: Completion of Tier I
writing requirement. C: STA 492 encur-
rrently.
Exhibition experience in studio art. Audience di-
lineation. Conceptualization. Use of space. Evalu-
ation.

493 Design Internship
Fall, Spring. 1 to 4 credits. A student may earn
a maximum of 4 credits in all enroll-
ments for this course. P.M.: (STA 460 or
STA 462 or STA 463 or STA 464 or STA 465 or
STA 466 or STA 467 or STA 468): P.N.M:
and one other 400 level graphic de-
sign course. R: Approval of department,
contract required prior to registration.
Field experience in a working design environment
under supervision of a design professional: art direc-
tor, graphic designer, or photographer.

494 Design Center
Fall, Spring. 4(0-8) P.M.: (STA 460 or STA
462 or STA 463 or STA 464 or STA 465 or
STA 466 or STA 467 or STA 468): P.N.M:
and one other 400 level graphic design
course. R: Approval of department, contract
required prior to registration.
Practicum in design problem solving, including
extensive contact with selected clients at a profes-
sional level.

495 Workshop in Studio Art Practice
Fall, Spring, Summer. 1 to 3 credits. A stu-
dent may earn a maximum of 4 credits in all enroll-
ments for this course. RB: Upper level
studio art major. R: Open only to juniors or
seniors or graduate students in the Studio
Art major or approval of department. Written
contract required.

In-depth study of a specific technique or theoretical
artistic practice.

820 Painting
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Advanced study in a variety of painting media to
foster independent development.

830 Relief Printing
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Theory and practice of relief prints as a means to
create expressive imagery.

831 Screen Printing
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Theory and practice of screen printing as a means to
create expressive imagery.

832 Lithography
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Theory and practice of lithography as a means to
create expressive imagery.

833 Intaglio Printing
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Theory and practice of intaglio printing as a means to
create expressive imagery.

840 Ceramics
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Advanced study in ceramics to foster independent development.

850 Sculpture
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to Mas-
ter of Fine Arts students in Studio Art. Ap-
proval of department.
Advanced study in a variety of three-dimensional
media to foster individual development.

860 Graphic Design
Fall, Spring. 2 to 8 credits. A student may earn
a maximum of 40 credits in all enroll-
ments for this course. R: Open only to graduate students in Studio Art. Approval of department.
Planning and conceptualizing ideas for visual com-
munication problems that are to be expressed in
words and/or pictures. Design of research that will
expose a mastery of visual aesthetics and concepts in
information design.

891 Special Topics in Art Education
Fall, Spring. Summer. 1 to 3 credits. A stu-
dent may earn a maximum of 3 credits in all enroll-
ments for this course. R: Approval of department.
Special topics supplementing regular course offer-
ings proposed by faculty on a group study basis for
graduate students.

892 Master of Fine Arts Seminar
Fall. 3(3-0) A student may earn a maximum
of 12 credits in all enrollments for this
course. R: Open only to Master of Fine Arts
students in Studio Art. Approval of depart-
ment.
Contemporary intellectual issues related to practice
in the visual arts. Group critiques of individual schol-
arily and applied research.

898 Master of Fine Arts Research
Fall, Spring. 1 to 8 credits. A student may earn
a maximum of 16 credits in all enroll-
ments for this course. P.N.M: 12 graduate
credits in student's studio art discipline. R:
Open only to Master of Fine Arts students in
Studio Art.
Individual research project in the student’s studio art
discipline directed by major professor.

SURGEON—SUR

Department of Surgery
College of Human Medicine

608 Junior Surgery Clerkship
Fall, Spring, Summer. 6 to 12 credits. A stu-
dent may earn a maximum of 12 credits in all enroll-
ments for this course. P.N.M: (FMP 602): R:
Open only to graduate-professional stu-
dents in College of Human Medicine.
The surgical patient, surgical diagnosis, pre-
operative evaluation and post-operative care.

609 Otolaryngology Clerkship
Fall, Spring, Summer. 6 credits. A student may earn
a maximum of 18 credits in all en-
rollments for this course. P.N.M: (SUR 608): R:
Open only to graduate-professional stu-
dents in College of Human Medicine.
Common otolaryngologic disorders, emergencies.
Diagnosis and treatment. Primary physician's judg-
ments about management.

610 Plastic Surgery Clerkship
Fall, Spring, Summer. 6 credits. A student may earn
a maximum of 18 credits in all en-
rollments for this course. P.N.M: (SUR 608): R:
Open only to graduate-professional stu-
dents in College of Human Medicine.
Principles of wound healing and tissue repair. Indi-
cations and applications of plastic surgery proce-
dures.