

**953. Asymptotic Theory**

*Fall of odd years. 3(3-0) P: STT 872.*

Large sample behavior of likelihood function. Local Asymptotic Normality models. Contiguity. Bahadur and Pitman efficiency of statistical procedures.

**954. Semi-Nonparametric Inference**

*Spring of even years. 3(3-0) P: STT 872.*

Small and large sample properties of distribution-free tests. Adaptive and robust procedures. Non-parametric ANOVA. Estimation of regression and density functions.

**961. Convergence of Measures and Stochastic Processes**

*Fall of even years. 3(3-0) P: STT 882.*

Convergence of measures on metric spaces. Prohorov's theorem. Function spaces with the uniform and Skorohod metric. Empirical processes. Applications.

**962. Stationary and Second Order Processes**

*Spring of odd years. 3(3-0) P: STT 882.*

Stationary, second order, and Gaussian processes. Sample path properties. Linear and nonlinear prediction and estimation. Applications.

**963. Martingales**

*Fall of odd years. 3(3-0) P: STT 882.*

Discrete and continuous time martingales, convergence theorems, Doob-Meyer decomposition. Applications.

**964. Stochastic Analysis**

*Spring of even years. 3(3-0) P: STT 882.*

Stochastic integrals and semi-martingales, Ito formula, stochastic differential equations. Applications.

**990. 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. P: STT 872. R: Approval of department.*

Individual study on an advanced topic in statistics or probability.

**995. 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. P: STT 882. 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.

**999. 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.*

**STUDIO ART**

**STA**

**Department of Art  
College of Arts and Letters**

**110. Drawing I**

*Fall, Spring. 3(0-6)*

Fundamental concepts of drawing. Emphasis on observational, descriptive and analytical drawing. Practice of drawing skills using common drawing media.

**111. Drawing II**

*Fall, Spring. 3(0-6) P: (STA 110)*

Development of imagery and expression; abstraction and the use of the human figure as subject matter.

**113. Color and Design**

*Fall, Spring. 3(0-6)*

Basic elements of two-dimensional design. Principles of organization and the theory and practice of color as a basis for creative solutions for the problems of the artist and designer.

**114. Three-Dimensional Form**

*Fall, Spring. 3(0-6)*

Formal elements of three-dimensional form. Application of the principles of organization as a means for producing creative solutions for the artist and designer. Related practical experience with a variety of materials and processes.

**300. Intermediate Drawing**

*Fall, Spring. 3(0-6) P: (STA 111 and STA 113 and STA 114)*

Observational and imaginative drawing including the human figure. Non-representational drawing. Contemporary drawing systems, concepts, and processes.

**320. Painting I**

*Fall, Spring. 3(0-6) P: (STA 111 and STA 113 and STA 114)*

Representational painting of landscape, figure, and still life imagery. Painting concepts, materials, and techniques.

**325. Painting II**

*Fall, Spring. 3(0-6) P: (STA 320)*

Continuation of representational painting, and introduction to non-representational painting and concepts.

**340. Ceramics I**

*Fall, Spring. 3(0-6) P: (STA 111 and STA 113 and STA 114)*

Ceramic processes including handbuilding, glaze formulation, and kiln firing as a means of cultural expression.

**345. Ceramics II**

*Fall, Spring. 3(0-6) P: (STA 340)*

Continued development of ceramic forming and kiln firing techniques including handbuilding, glaze formulation, mold making, casting, and wheel throwing for cultural and artistic expression.

**350. Figure Modeling**

*Fall, Spring. 3(0-6) P: (STA 111 and STA 113 and STA 114)*

Modeling human and natural forms. The figure as a means of artistic and cultural expression.

**351. Mixed Media and Installation**

*Fall, Spring. 3(0-6) P: (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: (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: (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: (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: (STA 111 and STA 113 and STA 114)*

History and basic technology of black and white photography, integrative camerawork, and dark-room processing. Issues in photographic aesthetics. Students furnish camera and all materials.

**400. Advanced Drawing**

*Fall, Spring. 4(0-8) P: (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: (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: (STA 300 or STA 320)*

Theory and practice of relief prints including additive methods, linocut 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: (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: (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.

## Descriptions—Studio Art of Courses

### 433. Intaglio

Fall, Spring. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P: (STA 300 or STA 320)

Aesthetic principles and techniques such as line etching, soft ground, aquatint, dry point, wax resist, collograph, and monoprints.

### 435. Handmade Paper

Spring of odd years. 4(0-8) A student may earn a maximum of 20 credits in all enrollments for this course. P: (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: (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: (STA 350 or STA 351 or STA 354 or STA 355) 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: (STA 462 or STA 463 or STA 464 or STA 465 or STA 466 or STA 467 or STA 468) 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: (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: (STA 360)

Principles of typography and graphic design as applied to the book form.

### 464. Design Process and Concepts

Fall. 4(0-8) P: (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: (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: (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: (STA 360)

Non-print methods of visual communication. Computer- and video-based two-dimensional animation design.

### 468. Computer Graphics

Spring. 4(0-8) P: (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: (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: (STA 470)

Principles of color photography. Vision, perception, and photographic science and art. Effect of color on content. Color negative process and printing.

### 473. Landscape Photography

Fall. 4(2-4) P: (STA 470)

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.

### 475. Photography Workshop

Spring. 4(1-6) P: (STA 470)

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: 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: 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: (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: (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 printmaking.

### 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: (STA 345) R:

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: (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: (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 enrollments for this course. P: (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: Completion of Tier I writing requirement. R: Open only to seniors in the Studio Art major. C: STA 492A concurrently.

Capstone course for artists and designers. Writing as a mode of issue delineation and definition.

### 492A. Exhibition Practicum

Fall, Spring. 1(1-1) P: Completion of Tier I writing requirement. C: STA 492 concurrently.

Exhibition experience in studio art. Audience delineation. Conceptualization. Use of space. Evaluation.

### 493. Design Internship

Fall, Spring. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course. P: (STA 460 or STA 462 or STA 463 or STA 464 or STA 465 or STA 466 or STA 467 or STA 468) and one other 400 level graphic design course. R: Approval of department, contract required prior to registration.

Field experience in a working design environment under supervision of a design professional: art director, graphic designer, or photographer.

**494. Design Center**  
Fall, Spring. 4(0-8) P: (STA 460 or STA 462 or STA 463 or STA 464 or STA 465 or STA 466 or STA 467 or STA 468) 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 professional level.

**820. Painting**  
Fall, Spring. 2 to 8 credits. A student may earn a maximum of 40 credits in all enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to Master of Fine Arts students in Studio Art. Approval 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 enrollments for this course. R: Open only to graduate students in Studio Art. Approval of department.

Planning and conceptualizing ideas for visual communication 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.

**882. Seminar in Art Education**  
Fall of even years. 3(3-0) R: Approval of department.

Contemporary thought in art education. Current problems examined within an interdisciplinary framework.

**891. Special Topics in Art Education**  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course. R: Approval of department.

Special topics supplementing regular course offerings 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 department.

Contemporary intellectual issues related to practice in the visual arts. Group critiques of individual scholarly 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 enrollments for this course. P: 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.

## SURGERY

## SUR

### Department of Surgery College of Human Medicine

**608. Basic Surgery Clerkship**  
Fall, Spring, Summer. 6 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P: FMP 602. R: Open only to graduate-professional students 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 enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Common otolaryngologic disorders, emergencies. Diagnosis and treatment. Primary physician's judgments about management.

**610. Plastic Surgery Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Principles of wound healing and tissue repair. Indications and applications of plastic surgery procedures.

**611. Urology Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Demonstration of clinical manifestations of genito-urinary disease, investigative methods and techniques of diagnosis and management. Urologic emergencies and performance of basic urologic skills.

**613. Orthopedic Surgery Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Diagnosis and management skills in common orthopedic problems. Orthopedic emergencies.

**614. Neurosurgery Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Problems related to common emergent and elective neurosurgery involving the brain, spine, and peripheral nerves. Neurological examinations, diagnostic methods.

**615. Ophthalmology Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Medical and surgical treatment of eye diseases. Clinical experiences include private office practice, surgical observations, pre-and post-operative care.

**616. Thoracic Surgery Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Problem solving in thoracic medicine and surgery. Pulmonary physiology. Diagnostic tools and tests, and indications for surgical procedures.

**618. Anesthesia Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Common anesthetic agents. Performing anesthetic procedures under faculty supervision.

**619. Sub-specialty Surgery Clerkship**  
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. P: SUR 608. R: Open only to graduate-professional students in College of Human Medicine.

Surgical domains not covered otherwise or in which students desire further exposure.