

- 62. Stationary and Second Order Processes**
Spring of odd-numbered years. 3(3-0)
P: STT 882.
Stationary, second order, and Gaussian processes. Sample path properties. Linear and nonlinear prediction and estimation. Applications.
- 63. Martingales**
Fall of odd-numbered years. 3(3-0)
P: STT 882.
Discrete and continuous time martingales, convergence theorems, Doob-Meyer decomposition. Applications.
- 64. Stochastic Analysis**
Spring of even-numbered years. 3(3-0)
P: STT 882.
Stochastic integrals and semi-martingales, Ito formula, stochastic differential equations. Applications.
- 90. 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.
- 95. 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.
- 99. 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.

- 300. Intermediate Drawing**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Observational and imaginative drawing including the human figure. Non-representational drawing. Contemporary drawing systems, concepts, and process.
- 302. Time-Space-Motion-Sound**
Spring. 3 credits.
P: STA 300. R: Not open to freshmen and sophomores.
Multi-dimensional forms of artistic expression and their interrelationships. Theory and exploration.
- 320. Painting I**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Representational painting of landscape, figure, and still life imagery. Painting concepts, materials, and techniques.
- 325. Painting II**
Fall, Spring. 3 credits.
P: STA 320.
Continuation of representational painting, and introduction to non-representational painting and concepts.
- 340. Ceramics I**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Ceramic processes including handbuilding, glaze formulation, and kiln firing.
- 345. Ceramics II**
Fall, Spring. 3 credits.
P: STA 340.
Continued development of ceramic forming and kiln firing techniques including handbuilding, glaze formulation, mold making, casting, and wheel throwing.
- 350. Figure Modeling**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Modeling human and natural forms.

- 400. Advanced Drawing**
Fall, Spring. 4 credits.
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.
- 405. Metalsmithing**
Fall of even-numbered years. 4 credits.
P: STA 111, STA 113, STA 114.
Forming, joining, finishing and embellishing processes for metals to create small sculpture or jewelry.
- 407. Art in London**
Summer. 3 credits. Given only in London, England.
P: STA 111, STA 113, STA 114.
Study in London, England, of a variety of art disciplines. Visits to museums, galleries, monuments and other relevant sites, with some field trips away from the city. Meetings with artists.
- 420. Painting**
Fall, Spring. 4 credits. 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 credits. 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.
- 431. Screen Printing**
Fall, Spring. 4 credits. 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 credits. 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.
- 433. Intaglio**
Fall, Spring. 4 credits. 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, collagraph, and monoprints.
- 435. Handmade Paper**
Spring of odd-numbered years. 4 credits. 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 credits. 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.

STUDIO ART

STA

Department of Art College of Arts and Letters

- 110. Drawing I**
Fall, Spring. 3 credits.
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 credits.
P: STA 110.
Emphasis on development of personal imagery and expression. Introduction of the means of abstraction and of the use of the human figure as subject matter.
- 113. Color and Design**
Fall, Spring. 3 credits.
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 credits.
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.

- 351. Collage, Mixed Media, Assemblage**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Exploration of artistic expression using collage, mixed media, and assemblage techniques.
- 354. Casting**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Casting concepts and techniques as a means of artistic expression.
- 355. Construction and Fabrication**
Fall, Spring. 3 credits.
P: STA 111, STA 113, STA 114.
Sculptural concepts using methods of construction and fabrication as an approach to artistic expression.
- 360. Graphic Design**
Fall, Spring. 3 credits.
P: STA 111, STA 113, 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, STA 113, 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.

**Descriptions — Studio Art
of
Courses**

- 450. Advanced Sculpture**
Fall, Spring. 4 credits. A student may earn a maximum of 20 credits in all enrollments for this course. P: At least two courses from the sequence STA 350, STA 351, STA 354, STA 355.
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 credits.
P: STA 360.
Graphic design for visual communication based on typographic problem solving. Selected experimental and practical projects.
- 462. Three-Dimensional Design**
Spring. 4 credits.
P: STA 460.
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 credits.
P: STA 460.
Principles of typography and graphic design as applied to the book form.
- 464. Design Process and Concepts**
Fall. 4 credits.
P: STA 460.
Problem solving methods, strategies, and procedures. Exploration of problem definition, analysis, concept development, and evaluation.
- 465. The Poster**
Spring. 4 credits.
P: STA 460.
Poster design as a combined verbal and non-verbal communication device. Visual elements used to persuade and inform.
- 466. Corporate Imagery**
Fall. 4 credits.
P: STA 460.
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 credits.
P: STA 460.
Non-print methods of visual communication. Computer- and video-based two-dimensional animation design.
- 468. Computer Graphics**
Spring. 4 credits.
P: STA 460.
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 print making and zone system.
- 474. Photography Studio Lighting**
Fall. 4(2-4)
P: STA 470.
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**
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)
R: Open only to majors in the Department of Art with a teacher certification option. Completion of Tier I writing requirement.
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)
R: Open only to majors in the Department of Art with a teacher certification option. Completion of Tier I writing requirement.
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: Not open to freshmen and sophomores. 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: One 400 level course in printmaking. R: Not open to freshmen and sophomores. 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 340. R: Not open to freshmen and sophomores. 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: One 300 level course in sculpture. R: Not open to freshmen and sophomores. 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: Not open to freshmen and sophomores. Approval of department.
Issues of technique, style, and content in graphic design.
- 491F. Selected Topics - Photography**
Fall of odd-numbered years. 2 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: STA 370. R: Not open to freshmen and sophomores. Approval of department.
Issues of technique, style, and content in photography.
- 492. Senior Seminar and Professional Practice (W)**
Fall, Spring. 2(2-0)
R: Open only to seniors in Studio Art. Completion of Tier I writing requirement.
Capstone course for artists and designers. Writing as a mode of issue delineation and definition.
- 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: 12 credits in 400 level design courses. R: Open only to juniors and seniors in Studio Art with photography or graphic design concentrations. 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(4-0)
P: 12 credits of 400 level design courses and a portfolio review. R: Open only to majors in the Bachelor of Fine Arts program in Studio Art with a design emphasis.
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.

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.

620. Advanced Surgery Clerkship

Fall, Spring, Summer. 6 credits.
P: SUR 608, MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Advanced experience in critical care, trauma, and nutrition. Students must successfully complete several technical bedside procedures with more responsibility for patient care than in SUR 608.

621. Surgical Nutritional Care 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.
Clinical experience with nutrition team dealing with surgical and medical patients requiring therapeutic nutrition as a result of metabolic derangement and nutritional deficiencies.

637. Core Competencies III

Spring, Summer. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine, Medicine, Pediatrics and Human Development, Family Practice, and Obstetrics, Gynecology and Reproductive Biology. Administered by Human Medicine.
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine.
A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

801. Shock and Metabolism

Fall. 4(4-0)
R: Open only to M.S. students in Surgery.
Results of prolonged reduction in tissue perfusion on tissue metabolism, structure, and function at the systemic, cellular and subcellular levels. Pharmacologic interventions useful in volume resuscitation.

802. Clinical Surgical Anatomy

Spring. 4(2-4) Interdepartmental with Anatomy.
R: Open only to Master's students in Surgery.
Review of surgical anatomy. Detailed anatomical information through lecture and dissection sessions. Clinical interpretation of anatomy and surgical approaches.

803. Enteral and Parenteral Nutrition

Fall, Summer. 3(3-0)
R: Open only to M.S. students in Surgery.
Identification of individuals requiring nutritional support. Nutritional requirements in diseases. Delivery of total parenteral and enteral nutrition. Special problems.

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-numbered 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.