

STUDIO ART

832*. **Lithography**
 Fall, Spring. 2 to 8 credits. May
 reenroll for a maximum of 40 credits.
 P: STA 432 or approval of department R:

M.F.A. degree candidate
 Theory and practice of lithography as a means to
 create expressive imagery.
 QA: STA 810

833*. **Intaglio Printing**
 Fall, Spring. 2 to 8 credits. May
 reenroll for a maximum of 40 credits.
 P: STA 433 or approval of department R:

M.F.A. degree candidates
 Theory and practice of intaglio printing as a means
 to create expressive imagery.
 QA: STA 809

840*. **Ceramics**
 Fall, Spring. 2 to 8 credits. May
 reenroll for a maximum of 40 credits.
 P: STA 440 or approval of department R:

M.F.A. degree candidates
 Advanced level ceramics involving contemporary
 issues of technique and content; experiences leading
 to independent development.
 QA: STA 804

850*. **Sculpture**
 Fall, Spring. 2 to 8 credits. May
 reenroll for a maximum of 40 credits.
 P: STA 450 or approval of department R:

M.F.A. degree candidates
 Ideas, issues and content in contemporary sculpture;
 advanced work in a variety of three-dimensional
 media; selected readings.
 QA: STA 803

860*. **Graphic Design**
 Fall, Spring. 2 to 8 credits. May
 reenroll for a maximum of 4 credits.
 P: STA 460 or approval of department R:

M.F.A. & M.A. degree candidates
 Investigation and development of visual forms leading
 to questioning of perceptual responses used in design
 problem solving and clarification.
 QA: STA 806

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

Examination of contemporary thought in art educa-
 tion. Current problems examined within an interdis-
 ciplinary framework. Research and reports.
 QA: STA 825

883*. **Critical Theory and Aesthetic
 Experience in Art Education**
 Spring of odd-numbered years. 3(3-0)
 R: Approval of department

Theories of art criticism and aesthetic experience.
 Application of these concepts for art education or
 related fields.
 QA: STA 826

884*. **Curriculum Design for Art
 Education**
 Fall of odd-numbered years. 3(3-0)
 R: approval of department

Factors affecting art curriculum; analysis, preparation
 and evaluation.
 QA: STA 827

885*. **Research Methods for Art
 Education**
 Spring of even-numbered years. 3(3-0)
 R: Approval of department.

Research designs and methodologies applicable to the
 study of problems in art education; preparation and
 evaluation.
 QA: STA 828

892*. **M.F.A. Seminar**
 Fall, Spring. 3(3-0) May reenroll for
 a maximum of 12 credits.
 R: M.F.A. degree candidates

Examination and review of contemporary intellectual
 issues related to practice in the visual arts. Group
 critiques of individual scholarly and applied research.

898*. **M.F.A. Thesis**
 Fall, Spring. 4 to 8 credits in
 increments of 2 credits. May reenroll
 for a maximum of 16 credits.
 P: 12 graduate credits in student's studio

art discipline R: M.F.A. degree candidates
 Capstone work for M.F.A. degree candidates in Studio
 Art.

SURGERY SUR

608*. **Basic Surgery Clerkship**
 P: FMP 602. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

The surgical patient, surgical diagnosis, pre-operative
 evaluation and post-operative care.
 QA: SUR 608

609*. **Otolaryngology Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Common otolaryngologic disorders, emergencies.
 Diagnosis and treatment. Primary physician's judg-
 ments about management.
 QA: SUR 609

610*. **Plastic Surgery Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Principles of wound healing and tissue repair. Indica-
 tions and applications of plastic surgery procedures.
 QA: SUR 610

611*. **Urology Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Demonstration of clinical manifestations of
 genito-urinary disease, investigative methods and
 techniques of diagnosis and management. Urologic
 emergencies and performance of basic urologic skills.
 QA: SUR 611

613*. **Orthopedic Surgery Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Diagnosis and management skills in common ortho-
 pedic problems. Orthopedic emergencies.
 QA: SUR 613

614*. **Neurosurgery Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Common emergent and elective neurosurgical prob-
 lems involving the brain, spine, and peripheral nerves.
 Neurological examinations, diagnostic methods.
 QA: SUR 614

615*. **Ophthalmology Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Medical and surgical treatment of eye diseases.
 Clinical experiences include private office practice,
 surgical observations, pre-and post-operative care.
 QA: SUR 615

616*. **Thoracic Surgery Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Problem solving in thoracic medicine and surgery.
 Pulmonary physiology. Diagnostic tools and tests, and
 indications for surgical procedures.
 QA: SUR 616

618*. **Anesthesia Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Common anesthetic agents. Performing anesthetic
 procedures under faculty supervision.
 QA: SUR 618

619*. **Sub-specialty Surgery Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Surgical domains not covered otherwise or in which
 students desire further exposure.
 QA: SUR 619

620*. **Advanced Surgery Clerkship**
 Fall, Spring, Summer. 6(-)
 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 sever-
 al technical bedside procedures with more responsibil-
 ity for patient care than in SUR 608.
 QA: SUR 620

621*. **Surgical Nutritional Care
 Clerkship**
 Fall, Spring, Summer. 6(-) May
 reenroll for a maximum of 18 credits.
 P: SUR 608. R: Open only to grad-
 uate-professional students in College of Human Medi-
 cine.

Clinical experience with nutrition team dealing with
 surgical and medical patients requiring therapeutic
 nutrition as a result of metabolic derangement and
 nutritional deficiencies.
 QA: SUR 621

801*. **Shock and Metabolism**
 Fall. 6(4-4)
 P: M.D. or D.O. Degree and acceptance
 into Masters Program in Surgery R: MD's or D.O.'s
 accepted into Master's Degree in Surg Prog

Results of prolonged reduction in tissue perfusion on
 tissue metabolism, structure, and function at the
 systemic, cellular and subcellular levels and pharma-
 cologic interventions useful in volume resuscitation
 QA: SUR 801

SURGERY

802*. **Clinical Surgical Anatomy**
 Spring. 6(4-3) May reenroll for a maximum of 6 credits.
 Interdepartmental with the Department(s) of Anatomy.
 P: MD or DO Degree and acceptance into Master's in Surgery program R: MD/DO accepted into MS in Surgery Program
 Review of surgical anatomy; the opportunity to obtain detailed anatomical information through lecture and dissection sessions; and the clinical interpretation of anatomy and surgical approaches
 QA: SUR 802

803*. **Enteral and Parenteral Nutrition**
 Fall, , Summer. 4(2-4)
 P: M.D. or D.O. degree & acceptance into Master's in Surgery program R: M.D.'s/D.O.'s accepted into M.S. in Surgery Program
 The identification of individuals requiring nutritional support; nutritional requirements in diseases; delivery of total parenteral and enteral nutrition; special problems in nutrition
 QA: SUR 803

804*. **Research Design and Statistics**
 Spring. 4(-)

Students will recognize/differentiate between experimental designs; recognize/define statistical terms; determine appropriate statistical tests; determine strengths/weaknesses of a manuscript

890*. **Seminars in Research**
 Fall, Spring, Summer. 1 to 7 credits. May reenroll for a maximum of 7 credits.
 P: M.D. or D.O. degree and acceptance into M.S. in Surgery program R: M.S./D.O.'s accepted into M.S. in Surgery Program
 Preparation and presentation of research data, philosophy and methods of research, thesis and other research reports, literature review, illustration of research data, practical assignments
 QA: SUR 890

899*. **Master's Thesis Research**
 Fall, Spring, Summer. 3 to 4 credits. May reenroll for a maximum of 15 credits.
 P: Satisfactory completion of SUR 801, 802, 803, 804 and approval of dept R: M.D.'s/D.O.'s accepted into M.S. in Surgery program
 QA: SUR 899

SYSTEMS SCIENCE SYS

410. **Systems Methodology**
 Spring. 2(1-3)
 P: CE 370. R: Open only to Engineering Arts seniors.
 Systems analysis and design. Needs analysis, system identification, graphical models. Team project required.
 QP: CE 370 QA: SYS 410

810*. **Systems I**
 Fall. 3(3-0)
 P: MTH 234, CPS 120 or CPS 131 R: NONE Not eligible to students with EE undergraduate background
 Introduction to systems methodology and analysis. Mathematical representations of systems, transform and state space analysis, feedback control, system simulation. Practical applications and problems in a range of disciplines.
 QP: MTH 214 QA: SYS 810 SYS 811

811*. **Systems II**
 Spring. 3(3-0)
 P: SYS 810, STT 351 R: NONE
 System modelling methodology and techniques, continuous and discrete system simulation, simulation model optimization with applications to optimal control and parameter estimation, applications and problems in a range of decision support contexts.
 QP: SYS 811 STT 441 QA: SYS 811 SYS 814

TEACHER EDUCATION TE

150. **Reflections on Learning**
 Fall, Spring, Summer. 3(3-0)
 Interdepartmental with the Department(s) of Counseling, Educational Psychology and Special Education.

Students' experiences as learners in comparison to psychological, sociological, and anthropological theories and assumptions about learning and teaching in and out of school.

250. **Human Diversity, Power, and Opportunity in Social Institutions**
 Fall, Spring, Summer. 3(3-0)

Comparative study of schools and other social institutions. Social construction and maintenance of diversity and inequality. Political, social and economic consequences for individuals and groups.

301*. **Learners, Learning, and Teaching in Context(W)**
 Fall. 4(3-3)
 P: TE150 and TE250 or CEP240 R:

Education
 Diverse learners in school, and how they learn. Natural and constructed diversity. Responding to student differences. Ways of knowing. What diverse learners know and what they should learn. Nature and distribution of learning. Multiple literacies.
 QP: TE101 TE200

302*. **Learner Diversity and the Teaching of Subject Matter(W)**
 Spring. 5(3-6)
 P: TE301 R: Education
 Inquiry into teaching and learning of subject matter in context, with an examination of learners, communities, and pedagogy.

305*. **Curriculum Methods and Materials: Elementary Education**
 Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 3 credits.
 R: Elementary certification candidates
 Curriculum in K-8 grades. Methods and materials of teaching elementary and middle school.
 QA: TE305 TE305A TE307A TE308A

306*. **Interdisciplinary Elementary Curriculum**
 Fall. 2(1-2)
 R: Elementary certification candidates/Academic Learning emphasis
 Integrating reading and writing across the curriculum.
 QA: TE306C TE307A TE308A

310*. **Methods of Teaching Reading in the Elementary School**
 Fall. 2(2-0)
 R: Elementary certification candidates
 Methods and materials for teaching reading at elementary level. Analysis of learning and teaching problems, study of concrete materials and instructional strategies.
 QA: TE310 TE310A TE310B TE310C TE310D

312*. **Literacy Instruction in the Elementary Grades**
 Fall. 2(1-3)
 R: Elementary certification candidates
 Application of instructional principles introduced in TE310. Emphasis on nature of literacy, its cultural context, and reading-writing connections.
 QA: TE312 TE312D TE311C TE312A

313*. **Critical Reading and Children's Literature**
 Fall, Spring. 2(2-0)
 R: Elementary certification candidates
 Development of strategies for helping children to develop critical reading skills through literary experience.
 QA: TE313 TE313B TE313D

315*. **Teaching Mathematics in the Elementary Grades**
 Fall, Spring. 1 to 2 credits.
 R: Elementary certification candidates
 Methods and materials for teaching mathematics in the elementary school. Emphasis on problem-solving and meaningful presentation of mathematical content.
 QA: TE315 TE315D TE315C TE315A TE315B

316*. **Teaching Social Studies in Elementary Grades**
 Fall, Spring. 1 to 2 credits.
 R: Elementary certification candidates
 Methods and materials for teaching social studies in diverse elementary classrooms. Use of social science and historical content to address contemporary issues.
 QA: TE316 TE316B TE316C TE316D

317*. **Teaching Language Arts in the Elementary School**
 Fall, Spring. 2(2-0)
 R: Elementary certification candidates
 Methods and materials for teaching language arts in elementary grades. Emphasis on interrelationship of listening, viewing, speaking, reading, and writing.
 QA: TE317 TE317C

318*. **Teaching Science in the Elementary and Middle School**
 Fall. 2(2-0)
 R: Elementary certification candidates
 Methods and materials for teaching science at elementary and middle school grades. Emphasis on teaching science for conceptual understanding.
 QA: TE318 TE318B TE318C TE318D

322*. **Methods of Teaching--Secondary Common Elements**
 Fall. 1(1-0)
 R: Secondary certification candidates
 Instructional issues common to all subject areas. Selection of instructional techniques based on teacher values and belief systems, learner needs and characteristics, and sound education principles and policies.
 QA: TE322

326*. **Methods of Teaching--Secondary Subject Areas: English**
 Fall. 2(2-0)
 R: Candidates for secondary teacher certification
 Specifics of classroom instruction in English. Selection of instructional techniques based on course objectives, needs and characteristics of learners, and sound educational principles and policies.
 QA: TE326