

**Descriptions—Studio Art
of
Courses**

- 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.
QA: STA 806
- 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.
QA: STA 825
- 883. Critical Theory and Aesthetic Experience in Art Education**
Spring of even-numbered years. 3(3-0)
R: Approval of department.
Theories of art criticism and aesthetic experience. Application of these concepts to art education and related fields.
QA: STA 826
- 884. Curriculum Design for Art Education**
Fall of odd-numbered years. 3(3-0)
R: approval of department
Principal curriculum models. Factors affecting art curricula. Design and evaluation of curricula for art education.
QA: STA 827
- 885. Research Methods for Art Education**
Spring of odd-numbered years. 3(3-0)
R: Approval of department.
Research designs and methodologies applicable to the study of problems in art education. Preparing, conducting, and evaluating a pilot research problem.
QA: STA 828
- 891. Special Topics in Art Education**
Fall, Spring, Summer. 1 to 2 credits. A student may earn a maximum of 2 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, Spring, Summer. 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.
- 894. Art Education Research Practicum**
Fall, Spring. 3(0-6) A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to master's students in Art Education. Approval of department.
Design and implementation of research in art classrooms.
QA: STA 821, STA 822
- 897. Master's Project in Art Education**
Fall, Spring. 1 to 2 credits. A student may earn a maximum of 2 credits in all enrollments for this course.
R: Open only to master's students in Art Education. Approval of department.
Final project in art education, used in partial fulfillment of Plan B master's degree requirements.
- 898. Master of Fine Arts Research**
Fall, Spring. 4 to 8 credits in increments of 2 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.

- 899. Master's Thesis Research**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.
R: Open only to master's students in Art Education. Approval of department.
Directed research leading to a master's thesis, used in partial fulfillment of Plan A master's degree requirements.
QA: STA 899

- 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.
QA: SUR 615

- 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.
QA: SUR 616

- 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.
QA: SUR 618

- 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.
QA: SUR 619

- 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.
QA: SUR 620

- 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.
QA: SUR 621

- 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.
Temporary approval effective from Fall Semester 1992 through Summer Semester 1994.
QA: SUR 801

- 802. Clinical Surgical Anatomy**
Spring. 4(2-4) A student may earn a maximum of 6 credits in all enrollments for this course. 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.
QA: SUR 802

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.
QA: SUR 608

- 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.
QA: SUR 609

- 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.
QA: SUR 610

- 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.
QA: SUR 611

- 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.
QA: SUR 613

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

- 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.
Temporary approval effective from Fall Semester 1992 through Summer Semester 1994.
QA: SUR 803
- 804. Research Design and Quantitative Techniques for Surgical Residents**
Spring. 3(3-0)
R: Open only to students in master's degree program in Surgery.
Recognition and differentiation between experimental designs. Identification of strengths and weaknesses of a manuscript. Recognition and definition of statistical terms and common inferential techniques used in surgical research. Use of computer software
QA: SUR 804
- 890. Seminars in Research**
Fall, Spring, Summer. 1 credit. A student may earn a maximum of 2 credits in all enrollments for this course.
R: Open only to M.S. students in Surgery.
Philosophy and methods of research. Preparation and presentation of research data in research reports. Practical applications.
Temporary approval effective from Fall Semester 1992 through Summer Semester 1994.
QA: SUR 890
- 899. Master's Thesis Research**
Fall, Spring, Summer. 3 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.
P: SUR 801, SUR 802, SUR 803, SUR 804. R: Open only to M.S. students in Surgery. Approval of department.
Temporary approval effective from Fall Semester 1992 through Summer Semester 1994.
QA: SUR 899

SYSTEMS SCIENCE SYS

**Department of Electrical
Engineering
College of Engineering**

- 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 of odd-numbered years. 3(3-0)
P: CPS 131, MTH 234. R: Not open to Electrical Engineering majors.
Systems methodology and analysis. Mathematical representations of systems, transform and state space analysis, feedback control, system simulation. Practical applications.
QP: MTH 214 QA: SYS 810, SYS 811
- 811. Systems II**
Spring of odd-numbered years. 3(3-0)
P: STT 351, SYS 810. R: Not open to Electrical Engineering majors.
System modelling methodology and techniques. Continuous and discrete system simulation. Simulation model optimization with applications to optimal control and parameter estimation. Applications in decision support contexts.
QP: SYS 810, STT 441 or STT 351 QA: SYS 811, SYS 814

TEACHER EDUCATION TE
**Department of Teacher Education
College of Education**

- 150. Reflections on Learning**
Fall, Spring, Summer. 3(3-0) Interdepartmental with 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 and Learning in Context**
Spring. 4(3-4)
P: TE 150; TE 250 or CEP 240. R: Not open to freshmen and sophomores. Open only to Education majors and to students in Education specialization.
Role of social context and sociocultural background in learning. Natural and socially constructed differences among learners. Relationship among subject-specific knowledge, teaching and learning that subject, and the institutional and communal context.
QP: TE 101, TE 200
- 305. Curriculum Methods and Materials: Elementary Education**
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Elementary certification candidates.
Curriculum in K-8 grades. Methods and materials for teaching in elementary and middle school.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 305, TE 305A, TE 307A, TE 308A
- 306. Interdisciplinary Elementary Curriculum**
Fall. 2(1-2)
R: Not open to freshmen and sophomores. Open only to elementary certification candidates with Academic Learning emphasis.
Integrating reading and writing across the curriculum. Classroom organization, unit planning and interdisciplinary curriculum.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 306C, TE 307A, TE 308A
- 310. Methods of Teaching Reading in the Elementary School**
Fall. 2(2-0)
R: Not open to freshmen and sophomores. Open only to elementary certification candidates.
Methods and materials for teaching reading at the elementary level. Learning and teaching problems, concrete materials and instructional strategies.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 310, TE 310A, TE 310B, TE 310C, TE 310D
- 312. Literacy Instruction in the Elementary Grades**
Fall. 2(1-3)
R: Not open to freshmen and sophomores. Open only to elementary certification candidates.
Application of instructional principles for teaching reading. Emphasis on the nature of literacy, its cultural context, and reading-writing connections.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 312, TE 312D, TE 311C, TE 312A

- 313. Critical Reading and Children's Literature**
Fall, Spring. 2(2-0)
R: Not open to freshmen and sophomores. Open only to elementary certification candidates.
Strategies for helping children to develop critical reading skills through literary experience. Emphasis on fiction.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 313, TE 313B, TE 313D
- 315. Teaching Mathematics in the Elementary Grades**
Fall, Spring. 1 to 2 credits.
R: Not open to freshmen and sophomores. Open only to elementary certification candidates.
Methods and materials for teaching mathematics in the elementary school. Emphasis on problem-solving and meaningful presentation of mathematical content.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 315, TE 315D, TE 315C, TE 315A, TE 315B
- 316. Teaching Social Studies in the Elementary Grades**
Fall, Spring. 1 to 2 credits.
R: Not open to freshmen and sophomores. Open only to 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.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 316, TE 316B, TE 316C, TE 316D
- 317. Teaching Language Arts in the Elementary School**
Fall, Spring. 2(2-0)
R: Not open to freshmen and sophomores. Open only to elementary certification candidates.
Methods and materials for teaching language arts in elementary grades. Emphasis on interrelationship of listening, viewing, speaking, reading, and writing.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 317, TE 317C
- 318. Teaching Science in the Elementary and Middle School**
Fall. 2(2-0)
R: Not open to freshmen and sophomores. Open only to elementary certification candidates.
Methods and materials for teaching science. Emphasis on teaching for conceptual understanding.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 318, TE 318B, TE 318C, TE 318D
- 322. Methods of Teaching-I. Secondary Common Elements**
Fall. 1(1-0)
R: Not open to freshmen and sophomores. Open only to secondary certification candidates.
Instructional issues common to all subject areas. Selection of instructional techniques based on teacher values and belief systems, and learner needs and characteristics.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QP: TE 200 or TE 200A or TE 200B or TE 200C or TE 200D QA: TE 322