

887. **Stochastic Processes and Applications II**  
Spring, 3(3-0) STT 886 or approval of department.  
Continuation of STT 886.

890. **Statistical Problems**  
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 4 credits. Approval of department. 36

899. **Master's Thesis Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

929. **Foundations of Decision Theory**  
Fall. 3(3-0) STT 873, STT 883.  
Statistical decision model. Principles of choice. Sufficiency, completeness, invariance, monotonicity, Bayes. Families of probability models: exponential, location-scale.

948. **Mathematical Programming For Business**  
Spring of even-numbered years. 4(4-0) MGT 835. Interdepartmental with and administered by the Department of Management.  
Large mathematical programs with special structure. Duality and decomposition. Dynamic programming; multistage decision processes and the principle of optimality. Integer programming.

949. **Advanced Applied Stochastic Processes**  
Spring of odd-numbered years. 4(4-0) MGT 836. Interdepartmental with and administered by the Department of Management.  
Selected topics from the following areas: Semi-Markov, Markov-renewal and regenerative process models; Markov and semi-Markov decision processes; decision theory, applications from production, inventory, reliability, queuing, and gaming theory.

951. **Advanced Theory of Nonparametric Statistics**  
Spring of even-numbered years. 3(3-0) STT 929.  
Possible topics include small and large sample properties of distribution free tests; robust estimation of location, scale and regression parameters; nonparametric ANOVA.

952. **Asymptotic Theory**  
Winter of even-numbered years. 3(3-0) STT 929.  
Possible topics include large sample behavior of likelihood functions; contiguity; Bahadur and Pitman efficiency of statistical procedures.

954. **Sequential Analysis**  
Spring of odd-numbered years. 3(3-0) STT 929.  
Possible topics include sequential estimation, testing and design; optimal stopping.

955. **Estimation and Testing**  
Winter of odd-numbered years. 3(3-0) STT 929.  
Possible topics include completeness and admissibility results for the family of Neyman-Pearson tests, minimum variance estimates, admissibility of estimates in exponential families and estimation in the normal multivariate case.

961. **Convergence of Measures and Random Variables**  
Fall of odd-numbered years. 3(3-0) STT 883.

Topology of vague convergence of measures. Conditions for relative compactness of a set of measures. Relationships between vague, almost sure, and in-measure convergence. Donsker's theorem and its extensions; applications to statistics.

962. **Martingales**  
Winter of even-numbered years. 3(3-0) STT 883.

Convergence, sampling, decomposition and stopping of sub- and super-martingales. Relationship with differentiation of measures. Applications to sequential analysis and boundary crossing probabilities.

963. **Stochastic Analysis**  
Spring of even-numbered years. 3(3-0) STT 883.

Brownian motion. Stochastic integrals. Ito's formula. Stochastic differential equations. Diffusion processes.

964. **Renewal Theory and Random Walk**  
Fall of even-numbered years. 3(3-0) STT 883.

Renewal events and processes, random walk, Wiener-Hopf factorization, Tauberian theorem. Renewal-Type Equations. Branching processes, birth and death processes.

965. **Stationary and Second Order Processes**  
Winter of odd-numbered years. 3(3-0) STT 883.

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

966. **Markov Processes**  
Spring of odd-numbered years. 3(3-0) STT 883.

Transition functions, semigroups, generators. Sample path properties. Strong Markov property. Characterization and convergence of Markov processes. Ergodicity.

990. **Problems in Statistics and Probability**  
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 10 credits. STT 873.

Seminar or individual study on an advanced topic in statistics.

995. **Topics in Statistics and Probability**  
Fall, Winter, Spring. 1 to 4 credits. May reenroll for a maximum of 4 credits.

Nonparametric statistics, multivariate statistical analysis, statistical time series analysis, Bayesian statistics, reliability theory, stochastic approximation, design of experiments, sets of decision problems, stochastic processes, sequential analysis, other topics.

999. **Doctoral Dissertation Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

## SURGERY SUR

### College of Human Medicine

608. **Basic Surgery Clerkship**  
Fall, Winter, Spring, Summer. 6 to 15 credits. May reenroll for a maximum of 30 credits. II M 602.

An introduction to the surgical patient, stressing surgical diagnosis, pre-operative evaluation and post-operative care. Objectives are designed to help the student attain acceptable levels of surgical competence for physicians.

609. **Otolaryngology Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

Common otolaryngologic disorders, emergencies, including diagnosis and treatment, and judgments concerning proper management by primary physicians.

610. **Plastic Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

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

611. **Urology Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

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

613. **Orthopedic Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

Diagnostic and management information and skills, including emergencies, in common orthopedic problems.

614. **Neurosurgery Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

A hospital-based experience to provide the student with familiarity with the field and understanding of the contribution of neurosurgery in medicine generally.

615. **Ophthalmology Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

Development of skills and knowledge in ophthalmology, neuro-ophthalmology, visual function, and management of problems such as glaucoma, the red eye, and trauma.

616. **Thoracic Surgery Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 34 credits. H M 602.

Problem-solving in thoracic medicine and surgery, also stressing pulmonary physiology, use of diagnostic tools and tests, and indications for surgical procedures.

618. **Anesthesiology Clerkship**  
Fall, Winter, Spring, Summer. 4 to 16 credits. May reenroll for a maximum of 16 credits. H M 602.

Introduces common anesthetic agents and provides opportunity for performing anesthetic procedures under faculty supervision.

## STUDIO ART

See Art.

**Descriptions — Surgery  
of  
Courses**

**619. General Surgery Elective Clerkship**  
Fall, Winter, Spring, Summer. 4 to 16 credits. May reenroll for a maximum of 16 credits. H M 602 and SUR 608.  
Experiences in clinical general surgery.

**620. Advanced Surgery Clerkship**  
Fall, Winter, Spring, Summer. 6 to 8 credits. May reenroll for a maximum of 16 credits. SUR 608; MED 608.  
Focus on advanced clinical and surgical skills. Students have more responsibility for patient care and direct learning to specific topics in general or subspecialty surgery. Clerkship options vary by community.

**621. Nutritional Care of Surgical Patients**  
Fall, Winter, Spring, Summer. 4 to 12 credits. SUR 608, MED 608, approval of instructor.  
Clinical experience on the Nutrition Team in dealing with surgical and medical patients requiring therapeutic nutrition as a result of metabolic derangement and nutritional deficiencies. Major emphasis on nutritional assessment and formulation of plans of management through intravenous support.

**SYSTEMS SCIENCE**

See Electrical Engineering and Systems Science.

**TEACHER EDUCATION T E**

(Name change effective September 1, 1981. Formerly the Department of Elementary and Special Education, and the School of Teacher Education including the Division of Teacher Education and Professional Development.)

**College of Education**

**101. Exploring Teaching**  
(ED 101A.) Fall, Winter, Spring. 3(2-3)  
Examination of the manifest and hidden curriculum in classrooms; the multiple purposes of schooling; individual reasons for choosing teaching; participant/observation in a local classroom required.

**200. Individual and the School**  
(ED 200.) Fall, Winter, Spring, Summer. 5(5-0) Not open to students with credit in T E 200A, T E 200B, T E 200C or T E 200D.  
Major psychological factors in the school learning-teaching situation; concepts in human development related to problems in the school situation; teacher's role in motivation, conceptual learning, problem solving, and the development of emotional behavior, attitudes and values, learning of skills, retention and transfer; and measurement of student abilities and achievement.

**200A. Educational Psychology for Teacher Decision Making**  
(ED 200A.) Fall, Winter. 3(2-2) Open only to students in Multiple Perspectives emphasis or approval of department.  
Principles and theories of learning and development and the ways these ideas may be used to make teaching decisions.

**200B. Educational Psychology of Individual Differences in Classrooms**  
(ED 200B.) Winter. 3(3-0) Open only to students in Heterogeneous Classrooms emphasis or approval of department.  
Educational psychology foundations of the range of diverse capabilities and characteristics found among school children and the implications of these differences for instruction.

**200C. Learning of School Subjects**  
(ED 200C.) Fall. 3(2-2) Open only to students in Academic Learning emphasis or approval of department.  
Theories of knowledge and learning that explain and justify the teaching of school subjects in elementary and secondary schools.

**200D. Personal and Social Dimensions of Teaching**  
Fall. 3(3-0) Open only to students in Learning Community emphasis or approval of department.  
Theory and practice of the personal and social dimensions of teaching, including communication skills, interpersonal and group dynamics, and personal educational philosophy.

**201B. Instructional Implications of Individual Differences**  
Spring. 2(2-0) Open only to students in Heterogeneous Classrooms emphasis or approval of department.  
Ways that instructional characteristics and teacher behavior interact with students' entering characteristics to influence student learning and behavior in the classroom.

**201D. Student Learning and Development**  
Fall. 3(3-0) Approval of department.  
Relevant theory and research relating to human learning and development in school-age children. Emphasis on affective teacher/student factors contributing to classroom learning community.

**205C. Curriculum for Academic Learning**  
Winter. 3(3-0) Open only to students in Academic Learning emphasis or approval of department.  
Effects of curriculum on understanding of academic subjects. Political and cultural influences on curriculum. Teachers' use of curriculum.

**219A. Classroom Organization and Management of Diverse Pupils**  
Winter. 2(1-2) Open only to students in Multiple Perspectives emphasis or approval of department.  
Knowledge and skills related to effective decision making for classroom management and organization including behavioral disruptions. Development of teacher leadership behaviors for developing classroom environments conducive to learning.

**250B. Social Organization of Diversity in School and Society**  
(ED 450B.) Winter. 3(3-0) Open only to students in Heterogeneous Classrooms emphasis or approval of department.  
Social and cultural organization of learning and teaching; institutional context; reducing inequities and increasing learning in classrooms diverse in social class, race, ethnicity, and gender of students; observation of classrooms.

**260A. Teacher Decision Making Laboratory I**  
Fall, Winter, Spring. 1(0-2) May reenroll for a maximum of 3 credits. Open only to students in Multiple Perspectives emphasis or approval of department.  
Developmental and systematically guided practice in reflective analysis-synthesis of the teaching-learning process. Integrates theory, principles and skills from previous courses into applied field experiences.

**270A. Professional Practice: Field Experience**  
Fall, Winter. 1 to 3 credits. May reenroll for a maximum of 6 credits. Open only to students in Multiple Perspectives emphasis or approval of department.  
A field based experience in elementary, middle or high schools taken concurrently with related professional education courses. Focused observations, interviews, practice teaching skills specified by the professional education courses and aide tasks.

**270B. Field Practice: Teaching in Heterogeneous Classrooms**  
Fall, Winter, Spring. 1(0-2) May reenroll for a maximum of 3 credits. Open only to students in Heterogeneous Classrooms emphasis or approval of department.  
Field course integrating knowledge and practice of classroom management, planning for instruction, interpreting research into practice, oral and written communication skills for the teacher in the heterogeneous classroom.

**305. Curriculum Methods and Materials—Elementary Education**  
(ED 321A.) Fall, Winter, Spring, Summer. 3(1-7) T E 101; T E 200 or T E 200A or T E 200B or T E 200C or T E 200D. Must be taken concurrently with one or more courses in methods of instruction. Not open to students with credit in T E 305A or T E 205C.  
Bases, scope, and sequence of curriculum in reading, language arts, and social studies; adaptation of principles to methods and materials of teaching in the elementary and middle school.

**305A. Generic Methods of Teaching**  
Winter, Spring. 2(1-2) Open only to students in Multiple Perspectives emphasis or approval of department.  
Teaching strategies and instructional models for all subject matter and K-12 grade level designations. Teacher decision-making as it affects curriculum development and instructional planning is stressed.

**306C. Interdisciplinary Elementary Curriculum**  
Fall. 3(2-2) Open only to students in Academic Learning emphasis or approval of department.  
Consideration of open-ended social, scientific, or institutional problems that draw on the concepts and skills of the major curricular areas for their solution. Field experience is required.

**307A. Integrated Elementary Methods I: Science, Social Studies, Language Arts, Mathematics**  
Spring. 2(1-2) Open only to students in Multiple Perspectives emphasis or approval of department.  
Methods of teaching elementary, middle and junior high school science in an integrated context with social studies, language arts, and mathematics through the use of unified themes. Participation in microteaching, whole class teaching and/or field trip may be required.