

**Descriptions – Statistics and Probability
of
Courses**

887. Stochastic Models in the Physical Sciences
Spring. 3(3-0) STT 886 or approval of department.

Selected models from the physical sciences. These may include topics from the theory of queues, the theory of dams, and branching processes in cosmic ray theory.

890. Statistical Problems
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

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

927. Theory of Measure and Integration
Spring. 3(3-0) MTH 822. Interdepartmental with and administered by the Department of Mathematics.

Introduction to the theory of integration over abstract spaces. Topics include: measure spaces; measurable and integrable functions; modes of convergence, theorems of Egoroff, Lusin, Riesz-Fischer, Lebesgue; absolute continuity, and the Radon-Nikodym theorem; product measures and Fubini's theorem. Applications to some of the classical theories of integration and summability.

928. Measure Theory Applications to Probability
Fall. 3(3-0) MTH 927.

Kolmogorov extension theorem. Transition measures. Conditional expectations. Uniform integrability.

929. Foundations of Decision Theory
Winter. 3(3-0) STT 928.

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
Fall of odd-numbered years. 3(3-0) STT 873; STT 928 or concurrently.

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
Spring of even-numbered years. 3(3-0) STT 873, STT 929.

Possible topics include large sample behavior of likelihood functions; contiguity; Bahadur and Pitman efficiency of statistical procedures.

953. Advanced Theory of Linear Statistical Models
Fall of even-numbered years. 3(3-0) STT 873; STT 928 or concurrently.

Possible topics include construction and analysis of linear models; regression; ridge regression; optimality criteria, relationships and merits; existence and construction of optimal designs.

954. Sequential Analysis
Spring of odd-numbered years. 3(3-0) STT 873; STT 929.

Possible topics include sequential estimation, testing and design; optimal stopping.

961. Convergence of Measures and Random Variables
Fall of odd-numbered years. 3(3-0) STT 873; STT 928, or concurrently.

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 or even-numbered years. 3(3-0) STT 873; STT 928.

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

963. Diffusion and Brownian Motion
Spring of even-numbered years. 3(3-0) STT 873; STT 928.

One dimensional diffusion, speed and drift measures, local time, stochastic integral, Ito's theorem.

964. Renewal Theory and Random Walk
Fall of even-numbered years. 3(3-0) STT 873; STT 928 or concurrently.

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

965. Second Order Processes
Winter of odd-numbered years. 3(3-0) STT 873, STT 928.

Stochastic processes studied by the methods of linear spaces. Sample path properties, representatives, estimation, prediction, multiplicity.

966. Semi-Groups and Applications
Spring of odd-numbered years. 3(3-0) STT 873, STT 928.

Hille-Yosida theorem, processes of independent increments, infinitely divisible processes, Markov processes in several dimensions.

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. Variable credit.

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.

STUDIO ART

See Art.

SURGERY

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College of Human Medicine

608. Surgery Clerkship
Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll for a maximum of 43 credits. H 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 ophthalmoscopy, 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.

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.

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(1-4)

Emphasis on the nature of teaching in the elementary and secondary schools achieved through field experience. Concurrent lecture/participation sessions focus on techniques of classroom management and operation.

200. Individual and the School
(ED 200.) Fall, Winter, Spring, Summer. 5(3-2) 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. 3(2-2) Open only to students in the 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.
Approved through Spring 1984.

200B. Educational Psychology of Individual Differences in Classrooms

(ED 200B.) Fall. 3(3-0) Open only to students in the Heterogeneous Classrooms emphasis or approval of department.

Range of diverse capabilities and characteristics found among school children and the implications of these differences for instruction.
Approved through Spring 1984.

200C. Learning of School Subjects
(ED 200C.) Fall. 3(2-2) Open only to students in the Academic Learning emphasis or approval of department.

Research and theories of knowledge and learning that justify the teaching of school subjects in elementary and secondary schools.
Approved through Spring 1984.

200D. Personal and Social Dimensions of Teaching
Fall. 3(3-0) Open only to students in the 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.
Approved through Spring 1984.

201B. Instructional Implications of Individual Differences
Spring. 2(2-0) T E 200B, T E 270B concurrently. Open only to students in the 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.
Approved through Spring 1984.

201D. Student Learning and Development
Winter. 3(3-0) T E 200D. Open only to students in the Learning Community emphasis or 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.
Approved through Spring 1984.

205A. Generic Methods of Teaching
Winter, Spring. 2(2-0) T E 200A; T E 260A, T E 270A concurrently. Open only to students in the Multiple Perspectives emphasis or approval of department.

Teaching strategies and instructional models that cut across subject matter and grade level designations are considered. Teacher decision-making as it affects curriculum development and instructional planning is stressed.
Approved through Spring 1984.

205C. Curriculum for Academic Learning
Winter, Spring. 3(3-0) T E 200C. Open only to students in the 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.
Approved through Spring 1984.

219A. Classroom Organization and Management of Diverse Pupils
Fall, Winter. 2(1-2) T E 101, approval of department; T E 260A, T E 270A concurrently.

Knowledge and skills related to educational decision making for classroom management and organization. Development of effective teacher leadership behaviors resulting in classroom environments conducive to learning.
Approved through Spring 1984.

250B. Social Organization of Diversity in School and Society
(ED 450B.) Winter. 3(3-0) T E 270B concurrently. Open only to students in the Heterogeneous Classrooms emphasis or approval of department.

Nature of social diversity in schools and society. Conceptual framework for examining social as well as individual learning determinants.
Approved through Spring 1984.

260A. Teacher Decision Making Laboratory I
Fall, Winter, Spring. 1(0-2) May reenroll for a maximum of 3 credits. T E 200A or concurrently, 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.
Approved through Spring 1984.

270A. Professional Practice: Field Experience
Fall, Winter, Spring. 2(0-6) May reenroll for a maximum of 4 credits. T E 200A or concurrently, approval of department.

A field based experience in elementary and middle schools taken concurrently with professional education courses. Focused observations, interviews, practice teaching skills specified by the professional education courses and by aide tasks.
Approved through Spring 1984.

270B. Field Practice: Teaching in Heterogeneous Classrooms
Fall, Winter, Spring. 1(0-2) May reenroll for a maximum of 3 credits. T E 200B or concurrently, 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.
Approved through Spring 1984.

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 205A 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.

306C. Interdisciplinary Elementary Curriculum
Fall, Spring. 3(2-2) T E 205C.

Teams of students from various majors will work toward the solutions of problems which are multidisciplinary in nature. Field experience required.
Approved through Spring 1984.