

Descriptions — Statistics and Probability of Courses

872. Theory of Statistics I
 Winter. 3(3-0) STT 870; MTH 822 or concurrently.

Important distributions. Order statistics. Slutsky theorem and additional properties of vague convergence. Basic concepts of decision theory. A survey of basic statistical methods.

873. Theory of Statistics II
 Spring. 3(3-0) STT 872.

Basic concepts and properties of estimation and hypothesis testing. Linear models.

876. Statistical Inference in Economics I
 Fall. 3(3-0) EC 812A or EC 805A; STT 443 or STT 863; or approval of department.

Interdepartmental with the departments of Agricultural Economics and Economics. Administered by the Department of Economics. Review and extension of single-equation regression models. Properties of least-squares estimators under alternative specifications. Problems of analyzing nonexperimental data. Errors in variables, autoregressive and heteroscedastic models.

877. Statistical Inference in Economics II

Winter. 3(3-0) EC 876 or approval of department. Interdepartmental with the departments of Agricultural Economics and Economics. Administered by the Department of Economics.

Specification interpretation and estimation of simultaneous equation models. Nonlinear models. Bayesian approach to estimation problems. Recent developments in econometrics.

878. Statistical Inference in Economics III

Spring. 3(3-0) EC 877 or approval of department. Interdepartmental with the departments of Agricultural Economics and Economics. Administered by the Department of Economics.

Validation and application of dynamic econometric models. Bayesian approach to estimation problems. Recent developments in econometric methods and in applied econometric research.

882. Probability I

Winter. 3(3-0) STT 870; MTH 822 or concurrently.

Laws of large numbers, random series, central limit problem, stable laws.

883. Probability II

Spring. 3(3-0) STT 882.

Extension theorems for integrals including the Kolmogorov theorem. The Radon-Nikodym theorem. Conditional expectations, transitions. Convergence in L_p spaces.

886. Stochastic Processes and Applications I

Winter. 3(3-0) STT 441 or STT 861.

Discrete and continuous time Markov processes including the ergodic theorem. Other topics selected from: stationary processes, Brownian motion, stochastic differential equations, Counting and Poisson processes, queuing processes, branching processes.

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 36 credits. Approval of department.

899. Master's Thesis Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

929. Foundations of Decision Theory

Fall of even-numbered years. 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.

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 36 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.

STUDIO ART

See Art.

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. FMP 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. SUR 608.

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. SUR 608.

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. SUR 608.

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. SUR 608.

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. SUR 608.

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. SUR 608.

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. SUR 608.

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. SUR 608.

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. 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.

801. Shock and Metabolism
Fall. 6(4-4) Master's student in surgery or approval of department.

Results of prolonged reduction in tissue perfusion on tissue metabolism, structure and function at the systemic, cellular and subcellular levels and pharmacologic interventions useful in volume resuscitation.

802. Clinical Surgical Anatomy
Spring. 6(4-4) Master's student in surgery or approval of department. Interdepartmental with the Department of Anatomy.

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.

803. Enteral and Parenteral Nutrition
Winter. 4(2-4) Master's student in surgery, approval of department.

The identification of individuals requiring nutritional support, nutritional requirements in diseases, delivery of total parenteral and enteral nutrition and special problems in nutrition (i.e., anorexia nervosa and obesity).

890. Seminars in Research
Fall, Winter, Spring, Summer. 1 credit. May reenroll for a maximum of 3 credits. Master's student in surgery, approval of department.

Preparation and presentation of research data, philosophy and methods of research, thesis and other research reports, literature review, illustration of research data, practical assignments.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. 1 to 15 credits. May reenroll for a maximum of 15 credits. SUR 801, SUR 802, SUR 803, approval of department.

SYSTEMS SCIENCE

See Electrical Engineering and Systems Science.

TEACHER EDUCATION T E

College of Education

101. Exploring Teaching
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
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
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
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 implication of these differences for instruction.

200C. Learning of School Subjects
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(2-2) 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.