

Descriptions - STATISTICS AND PROBABILITY

of

Courses

886. Stochastic Processes and Technological Applications

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

Discrete stochastic processes. Markov chains, birth and death processes, branching processes. Selected technological applications.

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.

937. Systems Simulation

Fall. 4(4-0) MGT 836, STT 423, MTH 228. Interdepartmental with and administered by the Department of Management.

The concept of a model, model building, characteristics of simulation models. Techniques of computer simulation. Simulation models in research and management planning/control. Validation and experimental design. Special purpose languages.

948. Mathematical Programming For Business

Spring. 4(4-0) MGT 836, MTH 334, MTH 426, STT 863. Interdepartmental with and administered by the Department of Management.

Large mathematical programs with special structure. Duality and decomposition in mathematical programming. Basic theory of dynamic programming; multistage decision processes and the principle of optimality. Risk, uncertainty, and introduction to stochastic and adaptive control processes.

949. Advanced Applied Stochastic Processes

Winter. 4(4-0) MGT 836, MGT 937.

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, representativeness, 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

SUR

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.

630. Emergency Medicine Clerkship
Fall, Winter, Spring, Summer. 4 to 8 credits. May reenroll for a maximum of 8 credits. SUR 608, H D 608 or MED 608; H M 602. Interdepartmental with and administered by the Department of Medicine.

Pathophysiology and other basic concepts will be used to explain the development of emergent conditions. Clinical diagnosis and treatment of emergencies seen in community emergency departments will be discussed.

SYSTEMS SCIENCE

See Electrical Engineering and Systems Science.

TELECOMMUNICATION TC

College of Communication Arts and Sciences

120. Telecommunication Media and Society
Fall, Winter, Spring, Summer. 3(3-0) Nonmajors.

History, economics, public control, programming, social effects and future of telecommunication; primarily radio and television broadcasting and cable communication. Citizen responsibilities in the development of telecommunication systems and services.

210. Telecommunication Process and Effects
Fall. 3(3-0) Sophomores, Telecommunication majors.

Human communication processes and behavior as modified by telecommunication. Functions, audiences, and implications of electronic media on society.

220. History and Economics of Telecommunication
Winter. 4(3-2) Sophomore TC majors, EC 201.

Institutional and cultural development and underlying economic principles of the telecommunication field, including broadcast programs.

230. Basic Telecommunication Technology
Spring. 4(3-2) Sophomore TC majors.

An analysis of technical factors involved in electronic communication: transmission, sound physics and aural technology, light physics, visual behavior and image technology, computer and automation controls, technical telecommunication policy formulation.

280. History of the Motion Picture
Fall, Winter. 4(2-4) Sophomores.

Development of the motion picture from its beginning to the present, emphasizing social background and cultural values. Screening of significant films from various periods and countries.

301. Basic Audio Production
(201.) Fall, Winter, Spring, Summer. 4(2-4) TC 210, TC 220, TC 230.

Basic orientation to audio and radio studios, with laboratory experiences in production, writing and performance.

302. Basic Video Production
(202.) Fall, Winter, Spring. 4(2-4) TC 301.

Basic orientation to video and television studios, with lab experiences in production, writing and performance.

310. Basic Telecommunication Policy
Fall, Winter. 4(4-0) TC 210, TC 220, TC 230.

Essential U.S. public communication policy is treated through rigorous methodological analysis of case and statutory law, public documents and related primary materials.

335. Audience Survey and Analysis
Winter, Spring. 4(4-0) Juniors.

Designing research for the study of telecommunication audiences. Survey research, sampling, questionnaire construction, research administration. Analyses and interpretation of research results. Audience measurement services and feedback systems.

350. Advanced Radio Production
Fall, Spring. 4(2-4) TC 301 and approval of department.

Planning, coordinating and producing the radio program. Emphasis on documentary and studio productions utilizing original ideas and methods.

351. Television Studio Production
Fall, Spring. 4(2-4) TC 302, approval of department.

Advanced television crew operations. Writing and production of programs directed by students in TC 451.

361. Television Directing
(333.) Fall, Winter, Spring, Summer. 4(2-4) TC 302 and approval of department.

Television producing and directing methods with assigned experiences in the television studios.

390. Cinema I
Fall. 4(3-2) TC 280 and approval of department.

Survey of the film production process: concepts, techniques, procedures, problems, tools. Emphasis on production as the execution of film design.

396. The Documentary Film
Spring. 4(2-4) TC 280.

History of documentary film and analysis of documentary types, providing a solid basis for the understanding and evaluation of the nonfiction film. Screening of significant films.

399. Telecommunication Internship
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 16 credits. Telecommunication juniors and seniors; approval of department.

Internship in a telecommunication studio or in a government agency or business.

401. Station Operations and Programming
Fall, Spring. 4(4-0) Seniors, TC 310, TC 335.

Sales, ratings, station organization, departmental functions, promotion, program formats, station-community relations, ascertainment of community needs, license renewal, stations-network relations.

415. Cable Communication
Winter. 4(4-0) Juniors.

History, technology, public policy, services, economics, management and social effects of broadband cable communication systems.

437. Television Program Development
Winter, Summer. 3(1-4) Senior nonmajors.

Television production planning and practices. Designed for non-majors who desire a working knowledge of the medium for application in other fields.