

**Descriptions — Sociology  
of  
Courses**

**895. Computer Simulation of Social Behavior**  
Winter. 4(3-2) Approval of department.

Survey of research in the simulation of human behavior. Training in the basic technological and conceptual tools necessary for independent research in the area. Working in detail through an operating large simulation program to appreciate how the tools apply in practice. Designing and writing a simulation program.

**899. Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**901. Educational Sociology: Seminar (901D.)** Fall, Winter. 3 to 4 credits. Approval of department. Interdepartmental with the College of Education.

**930. Sociology of Work**  
Spring. 4(4-0) 430, 310, 884 or approval of instructor.

Theory and research problems in occupational structure, work settings, functions and meanings of work, occupational mobility and career patterns.

**941. Human Ecology**  
Fall. 4(4-0) Approval of department.

The analysis of population aggregates in terms of their place in a total ecosystem, defined as the structure of interdependencies involving population, environment, technology, and patterns of organization.

**942. Urban Theory**  
Winter. 4(4-0) 941; 812 and 967 recommended.

Examination and critique of competing theories of urban structure and process: theories of evolution of human settlement, classic location theories, human ecology, communication and system theories.

**952. Techniques of Population Analysis**  
Spring. 4(3-1) 420; STT 422; or approval of department.

Techniques for the analysis of population size and composition, mortality, fertility, migration, population estimates and forecasts, population and labor force distribution, and selected techniques of ecological analysis.

**953. Experimental Methods**  
Winter. 4(3-2) 860.

The design and analysis of social experiments, with special emphasis on laboratory investigation of social processes.

**954. Social Survey Methods**  
Spring. 4(4-0) 860.

The design and analysis of theoretically oriented survey research. Sampling, questionnaire construction, interviewing, and data processing.

**955. Field Research Methods**  
Spring. 4 credits. 312; approval of department.

An overview of the design and execution of social research.

**964. Seminar in Small Group Research**

Fall. 3 to 5 credits. Thirty graduate credits including 811, or approval of department.

The experimental and theoretical investigation of organizational processes in small groups.

**966. Social Structure and Personality**  
Winter. 3 credits. 811 or approval of department.

Theoretical and research problems in analysis of influence of social positions on personality, and influence of personality and social factors in allocating persons to different social positions. Stress will be placed upon quantitative research and contemporary theories of social structure and personality.

**967. Introduction to Formal Theory in Sociology**  
Spring. Variable credit. 966.

Analysis of the structure of formal theory in sociology and of the problems of interpretation and verification of deterministic and probabilistic theories. Examination of specific practices of theory construction.

**968. Symbolic Interactionism: Theory and Research**

Spring. 1 to 4 credits. 811; social psychology concentration.

Theoretical and research problems within the framework of symbolic interaction. The socialization process and the development, maintenance, and enhancement of the self. Critique of the literature and proposals for new research directions.

**970. Theories of Conflict and Change**  
Fall. 3(3-0) Approval of department.

Major theoretical European and American contributions to the study of conflict and change.

**971. Race, Politics, and Social Structure**

Winter. 3(3-0) Approval of department.

Racism, including the social mechanisms by which it is created, maintained, and lessened, and the variant forms of political action related to racism and social structure.

**972. War and International Conflict**

Spring. 3(3-0) Approval of department.

Causes, structure and patterns of wars between societies, revolutions within societies and the relation of war and revolution to cross-cultural conflict and change.

**973. Values, Crises and Utopias in a Post-Modern Society**

Fall. 3(3-0) Approval of department.

Macro-sociological approach to study of social problems and stresses; planned change; and conscious improvement of modern societies.

**976. Theoretical Perspectives in Sociology**

Winter. 4 credits. 845 or 846.

Comparison and analyses of concepts, conceptual schemes and theories of outstanding social theorists in relation to modern research.

**977. Seminar in Selected Theoretical Issues**

Spring of odd-numbered years. 4(4-0) May re-enroll for a maximum of 8 credits. 845.

Issue approach to social theory. Selected themes relate to substantive problems in theory, theory construction or the work of a historical or contemporary thinker.

**978. Comparative Rural Social Organization**

Spring. 4 credits.

Structure and function of social organizations ranging from societies to small groups. The comparative approach will be used in studying phenomena involved in the transitions from agrarian to industrial societies.

**981. Comparative Sociology**  
Fall. 3 or 4 credits. Doctoral student in sociology; completion of core courses.

Macro-sociological studies of societies. The relationship of the whole to the varied parts of societies, the connection between societies, and the patterns of change in different societies. The development of research with respect to the cross-cultural study of social structures, social institutions, and social systems.

**982. Comparative Social Psychology**  
Winter. 3 or 4 credits. 981.

Social psychological research problems involving a comparative methodology. Social psychological functions of education, mobility, mass media use, etc. Comparative study of the social psychology of modernization.

**983. Comparative Research Methods**  
Spring. 3 or 4 credits. 981.

Sampling problems, data collection strategies, problems of translation and concept equivalence. Management, analysis and interpretation of cross-cultural data.

**991. Research Seminar in Work and Organization**

Winter. 2(2-0) May re-enroll for a maximum of 6 credits. Thirty graduate credits and approval of instructor.

An advanced seminar devoted to analysis of designs used in current research in work and organization.

**999. Research**

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

## SOUTH ASIAN LANGUAGES

See Linguistics and Oriental and African Languages.

## SPANISH

See Romance and Classical Languages.

## STATISTICS AND PROBABILITY

STT

### College of Natural Science

Introductory courses are further classified as follows:

315, 316—sequence for undergraduate students of Business Administration.

201—survey course.

421, 422, 423—minimal sequence for students planning to use statistical methods in their research.

441, 442, 443—minimal sequence in theory of statistics. Qualified students should take the 861, 862, 863 sequence instead.

861, 862, 863—sequence for students preparing to do advanced work in statistics.

882, 883—sequence in analytic probability theory and stochastic processes at graduate mathematics level.

**201. Statistical Methods**

Fall, Winter, Spring, Summer. 4(4-0)  
MTH 108 or 111. Primarily for students in psychology, sociology, anthropology, political science, economics, agriculture, and forestry. Credit may not be earned in more than one of the following: 201, 315, 421.

Descriptive statistics, elementary probability and combinatorics. The binomial distribution. Random variables, their expectations and variances. Central Limit Theorem, estimation and inference. Simple tests based on the binomial, normal, t, chi-square and F distributions.

**315. Introduction to Probability**

Fall, Winter, Spring, Summer. 4(5-0)  
MTH 111. Credit may not be earned in more than one of the following: 201, 315, 421.

Set and algebra of sets. Chance experiments, outcomes and events. Probabilities of events. Conditional probability, independent trials, Bayes' theorem. Introduction to statistical inference relevant to business decision problems.

**316. Fundamentals of Statistical Inference**

Fall, Winter, Spring, Summer. 4(5-0)  
315. Primarily for students in the College of Business. Interdepartmental with the Department of Marketing and Transportation Administration.

Description of sample data, applications of probability theory, sampling, estimation, tests of hypotheses.

**317. Quantitative Business Research Methods**

Fall, Winter, Spring, Summer. 4(3-2)  
316. Interdepartmental with and administered by the Department of Marketing and Transportation Administration.

Application of statistical techniques to business decision-making. Topics covered include applications of linear regression and correlation, analysis of variance, selected nonparametric tests, time series, and index numbers.

**341. Probability for Teachers**

Spring. 4(4-0) MTH 301 or approval of department.

Primarily for majors in mathematical education. Probability theory will be studied as a mathematical structure. Although some examples of the use of the theory will be discussed (as the use of some theorems is discussed in a course in plane geometry) the major emphasis will be on understanding the structure of probability theory.

**351. Introduction to Statistics**

Spring. 4(4-0) MTH 214.

Probability models, discrete random variables, the binomial, hyper-geometric and Poisson distributions, statistical inference based on the binomial distribution, continuous random variables, test of hypothesis and confidence intervals based on the normal distribution.

**421. Statistics I**

Fall, Winter, Spring, Summer. 4(4-0)  
MTH 108. Credit may not be earned in more than one of the following: 201, 315, 421. This course and 422, 423 form a one year sequence in statistics for those without a calculus background; 421 provides an introduction to a few of the main ideas of probability and statistics. The course sequences 441-2-3 and 861-2-3 form one year sequences in statistics for those with a calculus background. Those expecting to use statistics in their graduate research should complete one of the full year sequences.

Descriptive statistics, elementary probability and combinatorics. The binomial distribution. Random variables, their expectations and variances. The Central Limit Theorem, Estimation and inference. Simple tests based on the binomial, normal, t, chi-square and F distributions.

**422. Statistics II**

Fall, Winter, Spring, Summer. 3(3-0)

421.

Nonparametric tests: sign test, Wilcoxon's rank sum test, Spearman's rank correlation test, run tests. Multiple regression analysis. Least squares estimation and tests for simple linear hypotheses.

**423. Statistics III**

Fall, Winter, Spring, Summer. 3(3-0)

422.

Application of multiple regression analysis to analysis of variance problems. Design of experiments including randomized block designs. Latin squares, factorial designs, and balanced incomplete block designs.

**441. Probability and Statistics I: Probability**

Fall, Winter, Spring, Summer. 4(4-0)

MTH 215.

Mathematical probability as a basis for the theory of statistics. Discrete and continuous probability models, conditional probability and independence, random variables, central limit theorem, sampling distributions.

**442. Probability and Statistics II: Inference**

Winter, Spring. 4(4-0) 441; MTH

334 or concurrently.

Estimation, confidence intervals, test of hypotheses, linear hypotheses.

**443. Probability and Statistics III: Inference**

Spring. 4(4-0) 442.

Multiple linear regression, analysis of variance, goodness of fit tests, certain non-parametric tests.

**460. Theory of Games**

Winter of odd-numbered years. 3(3-0)

MTH 215, 334.

Zero-sum, two-person games. Extensive and normal forms, convexity, von Neuman minimax theorem and extensions. Methods of solving games. Applications.

**490. Statistical Problems**

Fall, Winter, Spring. 1 to 6 credits.

Approval of department.

Individualized study adapted to the preparation and interests of the student.

**825. Sample Surveys**

Fall. 3(3-0) 423 or 442 or 862.

Application of statistical sampling theory to survey designs involving simple random, stratified, and systematic samples; sub-sampling, double sampling; ratio and regression estimates; other topics.

**826. Nonparametric Statistics**

Spring. 4(4-0) 442 or 862.

Current tests of hypotheses which may be made without specification of the underlying distribution. Rank tests and tests based on permutation of observations. Tolerance and confidence sets. Large-sample distributions. Applications to research in the social and natural sciences.

**833. Mathematical Programming**

Spring. 3(3-0) EC 800, or 812A,

MTH 334. Interdepartmental with the departments of Agricultural Economics and Economics and administered by the Department of Agricultural Economics.

Linear programming. Theory of linear economic models. Topics in nonlinear programming.

**841. Linear Statistical Models**

Fall. 4(4-0) 443 or 863.

Use of linear statistical models. Curve fitting, simple and multiple regression analysis, multiple and partial correlation coefficients, the analysis of variance, simultaneous confidence intervals, more complex experimental designs.

**852. Methods in Operations Research I**

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

Optimization techniques and probability models with a wide variety of applications: linear programming, including special problems; network analysis, including PERT; dynamic programming; game theory; queuing theory. Acquaintance with matrices advisable.

**853. Methods in Operations Research II**

Spring. 3(3-0) 852.

Continuation of 852. Inventory theory; Markov chains with applications; simulation as adjunct to mathematical models; advanced topics in linear programming; non-linear programming.

**861. Theory of Probability and Statistics I**

Fall. 4(4-0) MTH 424 or 427 or concurrently.

Discrete probability models, random variable expectation, combinatorial analysis, conditional probability and independence, generating functions, some special discrete distributions, continuous probability models.

**862. Theory of Probability and Statistics II**

Winter. 4(4-0) 861; MTH 425 or 428 or concurrently.

Continuous probability models, density transformations, some special continuous distributions, limit laws. Introduction to statistical inference, estimation of parameters, hypothesis testing.

**863. Theory of Probability and Statistics III**

Spring. 4(4-0) 862; MTH 334, 426 or 429 or concurrently.

Continuation of hypotheses testing, sufficiency, Rao-Blackwellization, some nonparametric methods, linear models.

**864. Stochastic Models in Biology**

Fall. 3(3-0) 441 or 861.

Stochastic processes. Selected topics from growth processes, epidemic theory, prey-predator models, mathematical genetics.

**865. Theory of Experimental Designs**

Fall of even-numbered years. 3(3-0)  
873 or approval of instructor.

Experimentation: Cochran's theorem; review of sampling theory; simple designs and statistical analyses; factorial designs and confounding and the group theoretic aspects of these designs; geometrical problems of construction of sets of Latin and Graeco-Latin squares.

**871. Theory of Probability and Statistics I**

Fall. 3(3-0) 863; MTH 821 or concurrently.

Probability spaces. Distribution functions. Characteristic functions. Law of large numbers, Glivenko-Cantelli theorem, central limit theorem. Some special distributions including multivariate normal. Convergences for sequences of random variables.

**Descriptions — Statistics and Probability  
of  
Courses**

- 872. Theory of Probability and Statistics II**  
Winter. 3(3-0) 871; MTH 822 or concurrently.  
Basic concepts of decision theory. Most powerful tests. Standard statistical methods for use in the binomial, Poisson and normal situation; sequential and nonparametric methods; linear models.
- 873. Theory of Probability and Statistics III**  
Spring. 3(3-0) 872; MTH 927 or concurrently; or approval of department.  
Asymptotic distributions of some statistics. Cramer-Rao inequality. Asymptotic properties of maximum likelihood methods.
- 876. Statistical Inference in Economics I**  
Fall. 3(3-0) 443 or 863; EC 812A or 801; or approval of department. Interdepartmental with the departments of Agricultural Economics and Economics and 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 variable, 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 and 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 and 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 and Stochastic Processes II**  
Winter. 3(3-0) MTH 822 or concurrently.  
Laws of large numbers, applications in analysis. Basic limit theorems. Markov processes and semi-groups. Renewal theory. Random walks in  $R^1$ .
- 883. Probability and Stochastic Processes III**  
Spring. 3(3-0) MTH 823 or concurrently.  
Laplace transforms, Tauberian theorems, resolvents. Applications of Laplace transforms. Characteristic functions. Application of Fourier methods to random walks. Harmonic analysis.
- 886. Stochastic Processes and Technological Applications**  
Winter. 3(3-0) 441 or 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) 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. 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) 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, 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, 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) 873; 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) 873, 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) 873; 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) 873; 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) 873; 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 of even-numbered years. 3(3-0) 873; 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) 873, 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) 873; 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) 873, 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) 873, 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 re-enroll for a maximum of 10 credits. 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. 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 re-enroll 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 re-enroll 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 re-enroll 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 re-enroll 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.

**612. Rectal Surgery**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May re-enroll for a maximum of 34 credits. H M 602.  
Data collection, physical examination, and problem formulation relating to colon and rectal disease. Involvement in special techniques, examinations, and surgical procedures is an important aspect of the experience.

**613. Orthopedic Clerkship**  
Fall, Winter, Spring, Summer. 1 to 17 credits. May re-enroll 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 re-enroll 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 re-enroll 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 re-enroll 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 re-enroll for a maximum of 16 credits. H M 602.  
Introduces common anesthetic agents and provides opportunity for performing anesthetic procedures under faculty supervision.

**630. Emergency Medicine Clerkship**  
Fall, Winter, Spring, Summer. 4 to 8 credits. May re-enroll for a maximum of 8 credits. 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 in the United States**  
Fall, Winter, Spring. 3(3-0) Non-majors.  
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.

\*Name change effective July 1, 1975.  
Formerly Department of Television and Radio.  
†Name change effective July 1, 1975.  
Formerly College of Communication Arts.

**210. Telecommunication Processes**  
Fall. 3(3-0) Sophomores.  
Human communication processes and behavior as modified by telecommunication. Audiences of telecommunication. Functions and dysfunctions of telecommunication. Contemporary implications of telecommunication media on society.

**220. History and Economics of Telecommunication**  
Winter. 4(3-2) 210.  
Institutional and cultural development and underlying economic principles of the telecommunication field, including broadcast programs.

**230. Basic Telecommunication Technology**  
Spring. 4(3-2) 220.  
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) 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) 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) Juniors, approval of department.  
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, Summer. 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**  
Winter, Spring. 4(2-4) 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) Junior majors, 302 and approval of department.  
Advanced television crew operations. Writing and production of programs directed by students in 451.

**361. Television Directing**  
(333.) Fall, Winter, Spring, Summer. 4(2-4) 302 and approval of department.  
Television producing and directing methods with assigned experiences in the television studios.