

- 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

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.

SUR

- 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, PHD 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.

Descriptions - Telecommunication

of

Courses

- 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.

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

- 451. Advanced Television Directing**
Fall, Spring. 3(0-6) TC 361, approval of department.
Assigned experiences in television directing of programs written and produced by students in TC 351.

- 489. Television and Radio in Education**
Fall, Summer. 4(4-0) Seniors; Juniors with approval of department.

Uses of broadcast media for instructional purposes, both on-the-air and in the classroom. Current usages by institutions of higher learning and public schools, including both broadcasting and closed-circuit television. Survey of research studies of the effects of educational broadcasting. Types of educational programs are evaluated. Specialists in educational radio and television participate as guest lecturers.

- 498. International Telecommunication**
Fall, Summer. 4(4-0) Seniors; Juniors with approval of department.

Alternative approaches to television, radio, cable, and satellite communication with examples from selected national and international systems. Telecommunication's role in national development. Conflict and cooperation in information distribution and propaganda.

- 499. Individual Projects**
Fall, Winter, Spring, Summer. 1 to 6 credits. Junior telecommunication majors and approval of department.

- 801. Trends and Issues in Telecommunication**
Spring, Summer. 4(4-0) Approval of department.

Salient issues and prevailing trends in telecommunication. Consideration of interdependence and relationships within and between telecommunication systems, services, and society.

- 810. Telecommunication Policy Analysis**
Winter. 4(4-0) TC 310, or approval of department.

Systematic interdisciplinary analysis of major public and private telecommunication policies applying tenets from law, political science, economics, communication, general social science and technology.

- 822. Art Instructional Media Laboratory II--Television**
Fall, Winter, Spring, Summer. 4(1-9) May reenroll for a maximum of 8 credits. Approval of department. Interdepartmental and jointly administered with the Department of Art.

Analysis of teaching video tapes and television programs in art. Utilization of television as a medium of artistic expression and communication for application to art education or related fields.

- 825. Seminar in Instructional Television**
Spring, Summer. 3(3-0) Approval of department. Interdepartmental with and administered by the College of Education.

Television use in instruction, particularly as it concerns the learner, the classroom teacher, the instructional developer and the administration.

- 830. The Television Producer**
Fall, Winter. 4(4-0) TC 361 or approval of department.

Producer's functions in planning and supervising the execution of television programs, with emphasis on content, organization and use of production techniques to secure the intended audience response.

- 831. Media Research I**
Fall. 4(4-0) Approval of department. Intedepartmental with the Department of Advertising.

Survey and experimental research designs and their relationship to mass media problems. Applied mass media research, audience research, consumer studies, mass media message research.

- 832. Media Research II**
Winter. 4(4-0) TC 831. Interdepartmental with the Department of Advertising.

Data analysis techniques and presentation of mass media research data. Models for the study of mass media research problems.

- 840. News and Public Affairs Programming**
Winter. 4(4-0) Approval of department.

Analysis of broadcast journalism functions in relation to program design. Writing practice in analytic and editorial forms. Programming responsibilities, legal and ethical restraints.

- 841. News and Public Affairs Producing**
Spring. 4(2-4) Approval of department.

Researching, writing and producing extended news and public affairs reports.

- 850. Telecommunication Sales Management**
Winter. 4(4-0) TC 401 or approval of department.

Direction and supervision of station sales and promotion personnel in securing and servicing national, regional and local accounts.

- 851. Telecommunication Financial Management**
Spring. 4(4-0) TC 832.

Financial analysis of broadcast stations and cable systems, acquisition criteria, recapitalization, and evaluation of system performance. Role of finance and managerial economics in pricing, profit maximization. Application of forecasting techniques.

- 852. Telecommunication Industries**
Spring. 4(4-0) EC 201 or approval of department.

Economic examination of telecommunication industries with emphasis on market structure, conduct, performance, program diversity, new technologies, recent regulatory policies, antitrust, and common carrier.

- 870. Global Broadcasting: Foreign Domestic Systems**
(990.) Winter. 4(4-0) TC 498 or approval of department.

Organization, financing, and programming as related to historic and cultural determinants. Special emphasis on the role of broadcasting in developing nations.

- 871. Global Broadcasting: International Systems**
(991.) Spring. 4(4-0) TC 498 or approval of department.

Propaganda and information services. International coordinating organizations such as ITV, UNESCO, Eurovision, and Intervision. Developments in satellite communication.

- 880. Public Broadcasting**
Winter. 4(4-0) TC 489 or approval of department.

Investigation of the role, organization, and problems of non-profit broadcasting by television and radio, especially since its recognition by federal legislation as an alternate program service to commercial broadcasting in the United States.

- 885. Teaching of Broadcasting**
Summer. 4(4-0) Approval of department.

Philosophy and objectives of instruction in broadcasting. The undergraduate and graduate curricula. The content of radio and television courses and methods of teaching.

- 887. Evaluation and Criticism in Broadcasting and Film**
(941.) Winter. 3(3-0) Approval of department.

Formulation and application of standards for objective appraisal of the social, ethical and artistic aspects of radio, television and film programs.

- 890. Special Problems**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

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

- 910. Public Policy in Mass Media II**
Fall. 4(4-0) Students in the Ph.D. Program in the Mass Media or approval of department.

Analysis of theory, documents and research in public policy as it relates to mass media including administrative, antitrust, copyright, advertising and communication policy.

- 931. Mass Media and the First Amendment**
Fall. 4(4-0) Advanced graduate students. Interdepartmental with the departments of Advertising and Journalism. Administered by the Department of Journalism.

First amendment rights and the mass media. Analysis in depth of past and present public policy in areas of confrontation over guaranteed rights of freedom of expression.

THEATRE THR

College of Arts and Letters

- 101. Theatre Appreciation: Foundations**
Fall, Winter, Spring, Summer. 3(3-0).

An overview of theatre arts as a recreational, cultural and social force in contemporary life; fundamentals of play production.

- 104. Introduction to Costuming**
Fall, Winter, Spring. 3(2-2)

Introductory study of theatrical costuming including theory, patterning, materials, construction and history of dress.

- 204. Sophomore Theatre Practicum**
Fall, Winter, Spring, Summer. 12(0-40) THR 104, THR 221 or approval of department.

Theatre apprenticeship served in the MSU production program.

- 211. Sophomore Acting Practicum I**
Fall. 4(0-10) THR 223 or approval of department.

Intensive preparation of actor's physical and vocal instrument through exercises and improvisation and scene study.

- 212. Sophomore Acting Practicum II**
Winter. 4(0-10) THR 211 or approval of department.

Continuation of THR 211.

- 213. Sophomore Acting Practicum III**
Spring. 4(0-10) THR 211, THR 212 or approval of department.

Continuation of THR 212.

- 221. Introduction to Technical Theatre**
Fall, Winter, Spring, Summer. 3(2-2)

Fundamentals of the technical aspects of stage practice with an opportunity to practice basic technical theatre skills in the department shops.

- 223. Introduction to Acting**
Fall, Winter, Spring, Summer. 4(1-6)

Training the beginning actor to utilize his experiences to develop himself as an artistic instrument.

- 300A. Rehearsal**
Fall, Winter, Spring, Summer. 1(0-3) May reenroll for a maximum of 6 credits. Combined credits in THR 300A and THR 300B may not exceed 6. Approval of instructor.
Rehearsal in the public performance program of the Department of Theatre.

- 300B. Production**
Fall, Winter, Spring, Summer. 1(0-3) May reenroll for a maximum of 6 credits. Combined credits in THR 300A and THR 300B may not exceed 6. Approval of instructor.
Production work in the public performance program of the Department of Theatre.

- 301. Directing and Design Practicum I**
Fall, Winter. 4(0-8) THR 204 and approval of department.

Practice in directing for the theatre emphasizing the concept of the stage as an expressive medium for movement and design.

- 302. Directing and Design Practicum II**
Winter, Spring. 3(1-4) THR 301 or approval of department.
Continuation of THR 301.

- 303. Directing and Design Practicum III**
Fall, Spring. 4(0-8) THR 302 or approval of department.
Continuation of THR 301 and THR 302.

- 304. Basic Production Design**
Spring. 3(3-0) Approval of department.
Basic rendering and design techniques relative to effective costume and scenic design.

- 323. Intermediate Acting**
Winter, Spring, Summer. 4(1-6) THR 223, for nonmajors only.
Continuation of THR 223 with emphasis on vocal interpretation and characterization.

- 406. Oral Interpretation**
Winter, Spring. 3(1-4) THR 223 or THR 211.
Training in selecting, interpreting, and performing literature for an audience.

- 411. Acting Studio I**
Fall. 4(0-10) May reenroll for a maximum of 8 credits. THR 213 and approval of department.
An intensive acting practicum designed to deal with problems in acting style as well as the extension of the actor's range.

- 412. Acting Studio II**
Winter. 4(0-10) May reenroll for a maximum of 8 credits. THR 411 or approval of department.
Continuation of THR 411.

- 413. Acting Studio III**
Spring. 4(0-10) May reenroll for a maximum of 8 credits. THR 412 or approval of department.
Continuation of THR 412.

- 414. Auditioning**
Fall. 2(1-2) Approval of department.
Selection and preparation of audition materials to prepare the student for the audition situation.