490 Independent Study
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Approval of department.
Supervised individual student research and study in technology systems management.

491 Special Topics
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of the department.
Special topics in technology systems management.

TELECOMMUNICATION TC

Department of Telecommunication, Information Studies and Media
College of Communication Arts and Sciences

100 The Information Society
Fall, Spring, Summer. 3(3-0)
Technological, industry and social trends in the information society. Telecommunication industries. Social policy involving information technologies and information services, including television, radio, cable TV, telephone, the Internet, New Media.

200 History and Economics of Telecommunication
Fall, Spring, Summer. 4(4-0) P:M: (TC 100 and EC 201 or concurrently)
Institutional, economic and content development of telecommunication including broadcasting, cable, new video technologies, and telephone and data transmission.

201 Introduction to Telecommunication Technology
Fall, Spring, Summer. 4(4-0) P:M: (CSE 101 or concurrently or CSE 131 or concurrently or CSE 231 or concurrently) and (TC 100) and (MTH 106 or MTH 110 or MTH 116 or MTH 124 or MTH 132 or MTH 152H or MTH 201 or STT 200 or STT 201) or (MTH 103 and MTH 114) or designated score on Mathematics placement test.
Operational principles of audio, data and video telecommunication technologies.

240 Introduction to Digital Media Arts
Fall, Spring, Summer. 3(2-2) R: Open only to students in the Department of Telecommunication.
Principles, processes, techniques and technology involved in the making of media messages, particularly in video, audio and digital media.

241 Principles of Interactive Media
Spring. 3(3-0)
The diverse scope and potential of interactive technologies and media. Brainstorming, planning, implementing, and troubleshooting applications and interfaces for interactive media. Basic principles of programming for interactivity.

310 Basic Telecommunication Policy
Fall, Spring, Summer. 4(4-0) P:M: (TC 100 and TC 200 and TC 201)
Policy in information, telecommunication, and media in the United States and abroad.

339 Digital Games and Society
Spring. 3(3-0)
Cultural, technological, and design evolution of interactive entertainment. Current and historical digital game genres, content, audience, and industries for commercial and non-commercial games. Critical examination of empirical research concerning social impacts of digital games.

342 Basic Video Design and Production
Fall, Spring, Summer. 4(2-4) P:M: (TC 240) and (TC 201) R: Open only to students in the Department of Telecommunication. Approval of department; application required.
Conceptualization, design, planning, producing, directing, shooting, editing, and evaluation of video programs. Emphasis on multi-camera, live studio production. Introduction to location single-camera shooting and editing.

343 Basic Audio Production
Fall, Spring, Summer. 4(2-4) P:M: (TC 201 and TC 240) R: Open only to students in the Department of Telecommunication. Approval of department; application required.
Basic audio production techniques. In-depth audio and radio industry analysis. Media writing.

346 Basic Interactive Media Design
Fall. 4(2-4) P:M: (TC 201) and (TC 240) R: Approval of department, application required.
Basic design and development of interactive digital media, particularly related to Internet applications.

352 Broadcast and Cable Programming and Audience Promotion
Spring of even years. 3(3-0) RB: (TC 200 and TC 240) R: Not open to freshmen or sophomores.
Evaluation, selection and scheduling of cable and broadcast programming. Audience promotion strategies and techniques.

361 Data Communication
Fall, Spring. 3(3-0) P:M: (TC 200 and TC 201) and (MTH 103 and MTH 114) or (MTH 116 or MTH 132) RB: (TC 310)
Data communication concepts and applications. Basic data communications protocols and local area network approaches. Fundamentals of databases.

375 New Media, Old Media
Fall. 3(3-0) P:M: (TC 100) RB: or approval of department.
Uses and social effects of the Internet and the other New Media of communication. Conventional theories of mass media and emerging theories of interactive media processes and effects. Critical examination of empirical social science research concerning the role played by the media, old and new, in society.

391 Special Topics in Telecommunication
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Contemporary issues in telecommunication.

410 Advanced Telecommunication Policy
Spring of even years. 3(3-0) P:M: (TC 310) RB: (TC 100 and TC 200 and TC 201)
Information and communication industries policy in the network of networks of the information society.

442 Advanced Video Design and Production (W)
Fall, Spring, Summer. 4(2-4) P:M: (TC 342 and TC 343) and completion of Tier I writing requirement. R: Open only to juniors or seniors in the Department of Telecommunication. Approval of department; application required.
Advanced principles of video production. Techniques of design, recording, editing and writing.

443 Audio Industry Design and Management (W)
Fall, Spring. 4(2-4) P:M: (TC 342 and TC 343) and completion of Tier I writing requirement. R: Open only to juniors or seniors in the Department of Telecommunication. Approval of department; application required.
Advanced audio production specializing in multichannel techniques. Industry focus on all aspects of the audio field.

444 Information Technology Project Management
Spring. 3(3-0) Interdepartmental with Information Technology Management; Computer Science and Engineering. Administered by The Eli Broad College of Business. P:M: (ITM 311) R: Open only to seniors in the Specialization in Information Technology.
Practical training and experiences in design, testing, and launch of new information technologies and systems.

445 Digital Game Design (W)
Spring. 4(2-4) P:M: (TC 240 and TC 346) and completion of Tier I writing requirement. R: Approval of department. Application required.
Design, architecture, and creation concepts related to the development of interactive digital games.

446 Advanced Interactive Media Design (W)
Spring. 4(2-4) P:M: (TC 201 and TC 240 and TC 346) and completion of Tier I writing requirement. R: Approval of department; application required.
Advanced design and development of interactive digital media, particularly related to CD-ROM, DVD, computer kiosks, and advanced Internet applications.

447 Three Dimensional Graphics Design(W)
Spring. 4(2-4) P:M: (TC 346) and completion of Tier I writing requirement. RB: A course in basic script writing and programming is required. R: Approval of department, application required. SA: TC 847
Design of objects and environments for use as 3-D graphic artwork, computer animation, and real-time, interactive virtual environments: 3-D modeling, texturing, lighting, object and basic human animation.

448 Special Topics in Digital Media Arts and Technology
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course. P:M: (TC 240) and (TC 342 or TC 343 or TC 346) R: Approval of Department, application required.
Emergent topics in digital media arts and technology.

452 Telecommunication and Information Industries (W)
Spring. 4(4-0) P:M: (TC 100 and TC 200 and TC 201) and completion of Tier I writing requirement.
Telecommunication and information industry issues including economic dynamics, market structures, business practices, and interfaces with other industries.

455 3D Game and Simulation Design (W)
Fall. 4(2-4) P:M: (TC 445) and completion of Tier I writing requirement. R: Approval of department, application required.
Advanced design, architecture, and creation concepts related to the development of real-time interaction 3D design for gaming, simulation, and immersive virtual environments.

456 Multichannel and Broadband Telecommunication(W)
Fall. 4(4-0) P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in the Department of Telecommunication.
Television and internet video in a multichannel/broadband environment. Developments in broadcasting, cable, satellite master antennae TV, direct broadcast satellite, multipoint distribution systems, telephone, internet and home video applications.

458 Telecommunication Management (W)
Spring. 3(3-0) P:M: (TC 310) and completion of Tier I writing requirement. R: Not open to freshmen or sophomores.
Theoretical and practical aspects of telecommunication management including case studies.

462A Wireless Networks and Applications
Fall of even years. 3(2-2) P:M: (TC 361) R: Not open to freshmen or sophomores.
Technologies and services in the wireless telecommunications industry. Applications of wireless communications for voice and data communications, including cellular telephony and mobile data applications.

462B Teleconferencing and Computer Supported Cooperative Work
Spring of even years. 3(2-2) P:M: (TC 361) RB: (TC 201 and TC 240) R: Not open to freshmen or sophomores.
Methods of teleconferencing including assessing requirements for teleconferencing, system design and implementation, and system evaluation.

462C Introduction to Electronic Commerce
Spring of odd years. 3(2-2) P:M: (TC 361) RB: (TC 100 and TC 201) R: Not open to freshmen or sophomores.
Technologies, business models, and organizational and social implications of electronic commerce. Design of e-commerce sites.

463 Network Design and Implementation I
Fall, Spring. 3(3-0) P:M: (TC 361) R: Not open to freshmen or sophomores.
Operation and management of telecommunications systems. Overview of the different systems, network configurations, current market forces and how they factor into business plans for public telecommunication networks.

464 Network Security
Spring of odd years. 3(3-0) P:M: (TC 361)
Network security issues and how network security is maintained in voice data and video networks.

465 Network Design and Implementation II (W)
Spring. 3(2-2) P:M: (TC 361 and TC 463) and completion of Tier I writing requirement. R: Not open to freshmen or sophomores.
Techniques for analyzing organizational requirements for private voice data and video systems. Preparing a request for proposals and bids.

476 Telecommunication Research Methods (W)
Spring. 4(4-0) P:M: Completion of Tier I writing requirement. RB: (TC 100) R: Not open to freshmen or sophomores.
Telecommunication research methods including content analysis, sampling, experiments, surveys, statistics, ratings, polling and qualitative research.

477 Global Media (W)
Fall. 4(4-0) P:M: Completion of Tier I writing requirement. RB: (TC 100) R: Not open to freshmen or sophomores.
Comparison of national approaches to use of television, radio, cable, telephone, data and satellite communication, and the Internet. Development, international commerce, data flows, propaganda, impact on cultures.

490 Independent Study
Fall, Spring, Summer. 1 to 7 credits. A student may earn a maximum of 7 credits in all enrollments for this course. R: Open only to juniors or seniors in the Department of Telecommunication. Approval of department; application required.
Directed study under faculty supervision.

491 Special Topics in Telecommunication
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Contemporary issues in telecommunication.

493 Telecommunication Internship
Fall, Spring, Summer. 1 to 7 credits. A student may earn a maximum of 7 credits in all enrollments for this course. P:M: (TC 100 and TC 200 and TC 201 and TC 240) and (TC 310 or TC 361) R: Open only to juniors or seniors in the Department of Telecommunication. Approval of department; application required.
Supervised professional experience in a telecommunication institution, business or facility.

498 Collaborative Game Design (W)
Spring. 4(2-4) P:M: (TC 339 or concurrently and TC 445 and TC 455) and completion of Tier I writing requirement. R: Only open to students in the Game Design and Development Specialization. Approval of department, application required.
Design and development of comprehensive digital games in a team setting working with a client. Participation in a design cycle including specification, design, prototyping, implementation, testing, and documentation. Issues of professionalism, ethics, and communication.

802 Research Methods in Telecommunication
Spring. 3(3-0) SA: TC 876
Social science research methods in telecommunication and Internet services assessing content, consumption and social effects. Design, sampling, data collection, analyses, presentation and ethics for content analysis, ethnographies, focus groups, case studies, surveys and experiments. Market research and segmentation including new product introductions.

820 Introduction to Theory in Telecommunication, Information, Society
Fall. 3(3-0) SA: TC 821
Classic and contemporary theories of communication with special emphasis on applications to telecommunication, new media, and technology.

822 Ethnicity, Race, Gender and Telecommunication
Spring of even years. 3(3-0)
Ownership, employment and portrayals of ethnic, racial and gender groups in media.

840 Foundations of Digital Media Arts and Technology
Fall. 3(2-2) RB: Basic familiarity with computers and Internet. R: Approval of department.
Foundational technology and design concepts and skills unique to and common across video, audio, multimedia, and 3-D animation/virtual reality.

841 Design Research for Digital Media Arts and Technology
Spring. 3(3-0) RB: Direct experience with the creative process for one or more digital media arts and technologies areas including audio, video, multimedia, and 3-D animation/Virtual reality. SA: TC 824
Research methods used by design teams for asking and answering questions related to digital media arts and technology--before, during, and after design of creative work. The design goals and the design prototype are tested to guide development and evaluate effectiveness.

842 Design and Development of Media Projects
Fall. 3(2-2) P:M: (TC 840) and (TC 442 or TC 443 or TC 446 or TC 847) R: Open only to graduate students in the Department of Telecommunication or approval of department.
Design of digital media arts projects in video, audio, multimedia, 3-D animation/virtual reality and other new media. Proposal development, team building, project management and workflow methods, production techniques and evaluative methods in the creation of media projects.

843 Digital Media Project
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to master's students in the Department of Telecommunication, Information Studies and Media.
Digital media arts and technology individual student project.

848 Special Topics in Digital Media Arts and Technology
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P:M: (TC 840 or concurrently and TC 841) and (TC 442 or concurrently or TC 443 or concurrently or TC 446 or concurrently or TC 447 or concurrently) R: Approval of department.
Current topics at the cutting edge of digital media arts and technology.

850 Telecommunication and Information Policy
Spring. 3(3-0) R: Open only to graduate students in Telecommunication or approval of department. SA: TC 810
Analysis of major public and private telecommunication and information policies. Applying concepts and data from law, political science, economics, communication, technology and general social science.

852 Economic Structure of Telecommunication Industries
Fall. 3(3-0) R: Open only to graduate students in the Department of Telecommunication or approval of department.
Economic aspects of telecommunication and information industries. Emphasis on market structure, conduct, performance. Content diversity, new technologies, recent regulatory policies, and antitrust.

853 Information Technology and Organizations
Spring. 3(3-0) RB: Knowledge of communication industries and technologies that might be acquired either academically or through professional experience.
Develops basic perspectives for analyzing the impact of information technologies on organizational structures, the allocation and performance of tasks within organizations, organization members, and organizational strategies and effectiveness, and relationships among firms in a market economy.

854 Economics of Media Markets and Strategies
Spring of odd years. 3(3-0) P:M: (TC 852) RB: Intermediate microeconomics class.
Conceptual tools and analytical perspectives on economic forces and incentives underlying structure, conduct, and responses to new technologies in media markets.

861 Information Networks and Technologies
Fall. 3(3-0) RB: Academic or professional background in telecommunication field.
Fundamental characteristics, components, standards and applications of information networks and services. Local and wide area network technologies, fundamentals of the Internet, and private network technologies and services from a management perspective.

862 Information Networks and Electronic Commerce
Spring. 3(2-2) P:M: (TC 840 or TC 861) RB: Academic or professional background in telecommunication field.
Design and management of electronic commerce strategies and the telecommunications infrastructure. Impact of electronic commerce on organizations and society.

863 Electronic Information and Entertainment Media Management
Spring of even years. 3(3-0) R: Open only to graduate students in the Department of Telecommunication. SA: TC 856
Management, programming, advertising, and promotion issues in broadcast television, multichannel television, interactive television, and Internet and broadband data service programming.

872 Telecommunication and National Development
Fall of odd years. 3(3-0)
Role of electronic mass media and telecommunication in facilitating national development in Asia, Africa, Latin America, the Caribbean and the Middle East. Examples from agriculture, health, family planning, nutrition, and education.

877 Comparative and International Telecommunication
Fall of even years. 3(3-0)
Comparison of various national approaches to broadcasting, cable, satellite and telephone systems. Policy, economic, institutional and content issues. Interactions and media flows among countries. International regulatory bodies.

890 Independent Study
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate students in Telecommunication. Approval of department; application required.
Individualized study under faculty supervision.

891 Special Topics in Telecommunication
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open only to graduate students in the College of Communication Arts and Sciences or approval of department.
Contemporary issues. Topics vary.

893 Telecommunication Internship (N)
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
Internships in information industries.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate students in the Department of Telecommunication, Information Studies and Media.
Master's thesis research.

912 Information Technology Transactional Perspectives
Spring of even years. 3(3-0) Interdepartmental with Information Technology Management. Administered by The Eli Broad College of Business. RB: Graduate level microeconomics course R: Open only to doctoral students.
Multiple perspectives on relationships between organizations and information technology. Information processing, communications and management strategy approaches. Economic perspectives.

916 Qualitative Research Methods
Spring. 3(3-0) Interdepartmental with Journalism; Advertising. Administered by School of Journalism. R: Open only to Ph.D. students in Mass Media and Communication. SA: ADV 916, JRN 916
Qualitative research in mass and specialized communication systems. Topics include documentary, bibliographic, case study and participant observation methods.

921 Media Theory
Fall. 3(3-0) Interdepartmental with Advertising; Journalism. Administered by Department of Advertising. R: Open only to Ph.D. students in Mass Media and Communication.
Process and effects of mediated communication. Audiences, socialization, and persuasion. Macro-societal, and intercultural perspectives. Theory construction.

930 Law and Public Policy of the Media
Fall. 3(3-0) Interdepartmental with Journalism; Advertising. Administered by School of Journalism. R: Open only to Ph.D. students in Mass Media. SA: ADV 930, JRN 930
Philosophical, legal, political, and statutory principles underlying law and public policy applied to media. Selected issues involving constitutional law, common law, statutes, and administrative policy.

960 Media and Technology
Spring. 3(3-0) Interdepartmental with Advertising; Journalism. R: Open only to Ph.D. students in Communication Arts and Sciences-Mass Media or Communication or approval of department.
Theoretical frameworks concerning media and communication processes, and their interactions with technology. Social, organizational, critical, and economic perspectives.

965 Media Economics
Spring. 3(3-0) Interdepartmental with Advertising; Journalism. R: Open only to Ph.D. students in Communication Arts and Sciences-Mass Media or Communication or approval of department.
Economic theory and analysis relevant to the mass media. Economic structure and performance of mass media and advertising industries. Competition among media and within related industries.

975 Quantitative Research Design
Fall. 3(3-0) Interdepartmental with Advertising; Journalism. Administered by Department of Advertising. RB: One graduate-level research design or statistics course. R: Open only to Ph.D. students in Mass Media.
Survey, experimental and content-analytic techniques applied to the study of media. Academic and applied research methods. Univariate and multivariate techniques.