

COMMUNICATION SYSTEMS

The major in communication systems combines the theoretical focus of communication studies with the practical skills of information technology, resulting in a program that prepares students to perform on the cutting edge of modern media systems. This program is flexible, emphasizing the interdisciplinary study and project work that are critical in a rapidly-changing field. With a communications systems background, students can enter the dynamic fields of the information industry, media and communication, management, public policy, and a variety of other corporate and non-profit areas.

Because many courses in the major are taught by working professionals, communication systems students gain both a theoretical foundation in communication studies and technology and learn practical strategies for applying that knowledge in the workplace. The technology challenges facing organizations are nearly always intertwined with communication needs. Individuals with a combination of communication expertise with proficiency with technology are invaluable in almost any professional environment.

Degrees Offered

- Communication Systems, BPhil Com (<https://catalogs.northwestern.edu/sps/undergraduate/communication-systems/communication-systems-bphil-com/>)

Communication Systems Courses

CIS 110-CN Introduction to Computer Programming (1 Unit)

Introduction to programming practices for students who have no previous programming background. May not be audited or taken P/N.

CIS 130-CN Tools and Technologies of the World Wide Web (1 Unit)

Introduction to the current tools and technologies used for designing and developing interactive websites.

CIS 212-CN Introduction to Object-Oriented Programming (1 Unit)

Introduction to core elements of object-oriented programming; transfer of those concepts into Java language. May not be audited or taken P/N.

Prerequisite: CIS 110-CN.

CIS 313-CN Telecommunications and Computer Networks (1 Unit)

Overview of telecommunications and computer networks. May not be audited or taken P/N.

CIS 314-CN Intermediate Programming (1 Unit)

Concepts and practices of advanced object-oriented software design and development. May not be audited or taken P/N.

Prerequisite: CIS 212-CN.

CIS 317-CN Database Systems Design & Implementation (1 Unit)

This course covers the fundamentals of database design and management. Topics include the principles and methodologies of database design, database application development, normalization, referential integrity, security, relational database models, and database languages. Principles are applied by performing written assignments and a project using an SQL database system.

CIS 323-CN Python for Data Science (1 Unit)

Overview of Python programming language with emphasis on capabilities to analyze data. May not be audited or taken P/N.

Prerequisite: CIS 212-CN and STAT 202-CN or equivalents.

CIS 323-DL Python for Data Science (1 Unit)

Introduction to data science concepts, techniques, and tools with an emphasis on building practical business applications. May not be audited or taken P/N.

Prerequisite: CIS 323-CN or equivalent.

CIS 324-CN Applied Data Science (1 Unit)

Introduction to data science concepts, techniques, and tools with an emphasis on building practical business applications. May not be audited or taken P/N.

Prerequisite: CIS 323-CN or equivalent.

CIS 324-DL Applied Data Science (1 Unit)

Introduction to data science concepts, techniques, and tools with an emphasis on building practical business applications. May not be audited or taken P/N.

Prerequisite: CIS 323-CN or equivalent.

CIS 325-CN Enterprise Data Science (1 Unit)

Overview of enterprise data science tools, processes, and environment. Application of data science and machine learning techniques in an enterprise environment.

Prerequisite: CIS 324-CN or CIS 324-DL.

CIS 325-DL Enterprise Data Science (1 Unit)

Overview of enterprise data science tools, processes, and environment. Application of data science and machine learning techniques in an enterprise environment.

Prerequisite: CIS 324-CN or CIS 324-DL.

CIS 326-CN Data Engineering (1 Unit)

Overview of the discipline of data engineering, its tools and ecosystem.

Prerequisite: CIS 317-CN or equivalent, or knowledge of SQ.

CIS 330-CN Human Computer Interaction (1 Unit)

Introduction to research that encompasses usability, design, information architecture, psychology, ethnography, and software engineering. Topics include: contextual interviews; design process; prototype construction; evaluation techniques. May not be audited or taken P/N.

CIS 345-CN Information Security (1 Unit)

Practical knowledge to understand, manage, and ensure the security of an organization's information assets. Concepts of information security, business continuity, disaster recovery, and risk management are presented. May not be audited or taken P/N.

Prerequisite: CIS 313-CN or equivalent.

CIS 350-CN Strategic Information Systems (1 Unit)

This course examines current issues, themes, and research related to the strategic use of information systems in organizations at a high level. It focuses on the use of information and information technology for competitive advantage in businesses, organizations, and nonprofits. May not be audited or taken P/N.

CIS 350-DL Information Technology Strategy (1 Unit)

This course examines current issues, themes, and research related to the strategic use of information systems in organizations at a high level. It focuses on the use of information and information technology for competitive advantage in businesses, organizations, and nonprofits. May not be audited or taken P/N.

CIS 365-CN Enterprise Software Development (1 Unit)

Addresses the increasing need to integrate a broad range of data, information systems, and technologies across organizations to serve business goals. May not be audited or taken P/N.

Prerequisite: CIS 314-CN or equivalent.

CIS 370-CN System Analysis and Design (1 Unit)

Overview of the systems development lifecycle (SDLC), with an emphasis on developing quality software systems that meet business requirements

and goals. Students acquire the basic skill set needed by business analysts in today's complex development environment. May not be audited or taken P/N.

CIS 380-CN Information Architecture (1 Unit)

Introduction to the concepts, foundations and components of information architecture (IA) in the digital environment of the World Wide Web. May not be audited or taken P/N.

CIS 385-CN Programming for the Web (1 Unit)

Introduction to the concepts, foundations, and components of programming for the web. May not be audited or taken P/N.

CIS 394-CN Project Management Concepts (1 Unit)

This course introduces effective frameworks and methods for developing information technology and systems strategies that focus on meeting enterprises business objectives and on leveraging IT to competitively extend business capabilities. Topics covered include business driver identification and business and IT alignment; key technology components of the IT strategy, including enterprise architecture, enterprise systems, SOA and other integration technologies, networks, and data management; portfolio management; sourcing and hosting alternatives; emerging technologies and entrepreneurship.

CIS 395-CN Topics in Information Systems: (1 Unit)

Topics vary. May be repeated for credit with different topic.

CIS 399-CN Independent Study - Projects (1 Unit)

COMM_ST 101-CN Interpersonal Communication (1 Unit)

Laboratory experience in human interaction. Analysis of communication within groups.

COMM_ST 102-CN Public Speaking (1 Unit)

Theory, composition, delivery, and criticism of public speeches.

COMM_ST 201-CN Research Methods in Communication Studies (1 Unit)

Foundations of knowledge in many areas of the field, including the nature of interpersonal interaction and the impact of mass media. How communication researchers do their work; how to judge the quality of research products.

COMM_ST 205-CN Theories of Persuasion (1 Unit)

Survey of major theories that explain how to change another person's attitudes and behaviors. Applications to persuasion within a variety of contexts, including relationships, organizations, legal campaigns, and the mass culture.

COMM_ST 205-DL Theories of Persuasion (1 Unit)

Survey of major theories that explain how to change another person's attitudes and behaviors. Applications to persuasion within a variety of contexts, including relationships, organizations, legal campaigns, and the mass culture.

COMM_ST 220-CN Theories of Argumentation (1 Unit)

Fundamental principles and practice of critical reasoning and public argument. For students interested in legal, academic, or political realms of communication and advocacy.

COMM_ST 241-CN Theories of Relational Communication (1 Unit)

An overview of communication theories and research dealing with developing, sustaining, and terminating interpersonal relationships. Direct application to friendship, work, and romantic relationships.

COMM_ST 250-CN Team Leadership and Decision Making (1 Unit)

Theories and research relating to communication in small groups and group decision making.

COMM_ST 250-DL Team Leadership and Decision Making (1 Unit)

Theories and research relating to communication in small groups and group decision making.

COMM_ST 270-CN Theories of Mediated Communication (1 Unit)

Introductory survey of current issues in research on the mass media, the Internet, and computer-mediated communication.

COMM_ST 275-CN Persuasive Images: The Rhetoric of Contemporary Culture (1 Unit)

Analysis of image-making in all forms of popular culture-in film and television but also shopping malls, supermarkets, car dealers, and doctors' offices.

COMM_ST 294-CN First-Year Seminar (1 Unit)

Study in seminar format of a topic in communication. Assignments emphasize expository writing.

COMM_ST 294-DL First-Year Seminar (1 Unit)

Study in seminar format of a topic in communication. Assignments emphasize expository writing.

COMM_ST 360-CN Theories of Organizational Communication (1 Unit)

Theories and research dealing with communication in formal organizations and institutions.

COMM_ST 362-CN Professional-Client Communication (1 Unit)

Various processes of professional-client communications, including organizational theory, social, and managerial activities.

COMM_ST 363-CN Bargaining and Negotiation (1 Unit)

Communication in bargaining and negotiation in organizational settings. Cognitive and motivational theories emphasizing bargaining and negotiation strategies.

COMM_ST 364-CN Collective Decision Making and Communication in Organizations (1 Unit)

Research on how organizations make, communicate, and implement collective decisions. Assessing decision effectiveness, group decision making, leadership in organizations, and organizational design.

COMM_ST 380-CN Political Communication (1 Unit)

Nature and functions of communication within established political institutions; decision-making strategies, deliberative discourse, and electoral campaigns; field study of advocacy and interest groups.

COMM_ST 386-CN Science, Technology, and Society (1 Unit)

Examination of developments in information and communication technology in the larger context of American science and technology since 1900.

COMM_ST 394-CN Communication Studies Research Seminar (1 Unit)

Small seminars in research topics led by different members of the department faculty. Students complete a research paper on a topic related to the seminar theme.

Prerequisite: completion of COMM_ST 294-CN First Year Seminar is recommended.

COMM_ST 394-DL Research Seminar (1 Unit)

Small seminars in research topics led by different members of the department faculty. Students complete a research paper on a topic related to the seminar theme.

Prerequisite: completion of COMM_ST 294-CN First Year Seminar is recommended.

COMM_ST 395-CN Special Topics (1 Unit)

Topics vary. May be repeated for credit with different topic.

COMM_ST 395-DL Topics in Communication Studies (1 Unit)

Topics vary. May be repeated for credit with different topic.

COMM_ST 399-CN Independent Study (1 Unit)