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Model Curricula: Ohio University

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Programs of Education Relating to Satellite and Space Communication in

Telecommunication

Communications Systems Management

Electrical Engineering and Computer Science

TELECOMMUNICATIONS

Name of University	Ohio University
Name of Academic Program	School of Telecommunications
Level of Academic Program	BA/MA/Ph.D.
Areas of Emphasis	Mass Communication, International Communication, Telecommunications Research and Theory, Management, Policy/Regulation and Critical Studies
Names/Descriptions of Courses	<p>Baccalaureate: For undergraduate students, the Ohio University professional school experience is grounded in a liberal arts education: Arts and Humanities, Social Sciences, Communication Sciences and Natural Sciences and Mathematics. Relevant courses for students seeking a career in Space or Satellite Communication include: Media, Technology and Culture; World Media Systems; Law and Regulations; Politics and Electronic Media; Electronic Media Management; Financial Management; Introduction to Digital Media; Digital Audio/Video Production; Instructional Telecommunications; Technical Bases of Telecommunications; New Technologies of Telecommunication; and Satellite Communication.</p> <p>Internships and pre-employment experiences within the industry are a planned part of the curriculum.</p> <p>Masters and Ph.D.: Telecommunications Financial Management; Economics of Telecommunications; Telecommunications Management; Broadcast and Cable Sales Management; Telecommunications Law and Regulations; Mass Communication Research; Audience Research; Quantitative Research; Qualitative Research; Action Research; Social Impact</p>

of Mass Communication; Mass Communication Theory; Critical/Cultural Theory; International Telecommunications; Comparative Systems of Telecommunications; Politics and the Electronic Media; Technology, Communication and Culture; New Technologies of Telecommunication; Satellite Communication; Cable Communication; Instructional Telecommunication; Nonbroadcast Video Systems; Public Telecommunication; Producing for Video.

Unique Features

Ohio University is a major state university offering a wide range of academic programs. At the undergraduate level, students are expected to sample widely among the liberal arts and professional programs of study offered. At the graduate level, programs of study are much more focused and individualized to suit the needs of the individual student.

In the Ohio University School of Telecommunications, a student interested in preparing for a career in satellite communication will work through a Faculty Committee to develop a unique Program of Study drawing not only on School courses but from other academic areas, such as Business Administration, Computer Science, Engineering and Technology, Theater and Film, Health and Human Services, Communication and Development, Economics, Environmental Studies, Geography (Remote Sensing), Human Resource Management, Journalism, Physics and Astronomy, Political Science, Recreation and Sport Sciences, Sports Administration and Visual Communication.

Ohio University is the lead institution in the NASA ACTS Consortium. Ohio was an early experimenter on the NASA Advanced Communication Technology Satellite, the all-digital Ka band spacecraft which provided platform tests for such advanced technologies as hopping spot beams, on board processing and rain fade correction. The Ohio Consortium for ACTS is managing a series of on-going experiments and demonstrations as ACTS, now in inclined orbit, has been handed over for scientific and educational use for the remainder of its operational life.

The School of Telecommunications is home to the Online Journal of Space Communication, sponsored by the Society for Satellite International (SSPI) of

	New York and managed by the Institute for Telecommunications Studies (ITS).
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Syllabus	Sample Course in Satellite Communications

COMMUNICATIONS SYSTEMS MANAGEMENT

Name of University	Ohio University
Name of Academic Program	McClure School of Communication Systems Management
Level of Academic Program	Baccalaureate
Areas of Emphasis	Operations, regulation and management of communication technologies, including the Internet, telephone systems, local and wide area networks, wireless and satellite systems, and video conferencing.
Names/Descriptions of Courses	For undergraduate students, the Ohio University professional school experience is grounded in a liberal arts education: Arts and Humanities, Social Sciences, Communication Sciences and Natural Sciences and Mathematics. Relevant courses for McClure School students seeking a career in Space or Satellite Communication include: Consumer Issues in Communication Systems Management; Introduction to Communication Systems Management; Communication Systems and Applications I and II; Fundamentals of Common Carrier Regulation; Applications of Common Carrier Regulation; Technologies Basics of Communication Systems; Technology of Voice/Data Systems; Data Networks; Protection of Communication Systems; Competition

and Markets; International Communication Networks; Communication Network Analysis and Design; Management of Communication Resources; Topical Seminars, Internships and Practicum in Communication Systems.

Unique Features

Ohio University is a major state university offering a wide range of academic programs. At the undergraduate level, students are expected to sample widely among the liberal arts and professional programs of study offered. In addition to the information technology, policy, and management courses offered by the McClure School, students will also establish a strong foundation in business administration through required courses offered by the College of Business. Courses in accounting, economics, marketing, management, statistics, computer science, and interpersonal communications add breadth of knowledge.

Ohio University is the lead institution in the NASA ACTS Consortium. The Ohio Consortium for Advanced Communications Technology (OCACT@ouvaxa.cats.ohiou.edu) is established to oversee the continued operation of the NASA Advanced Technology Satellite (ACTS) for the purpose of educating students in various areas of satellite operations and technology, and the continuation of satellite communications research in the Ka band.

Ohio was an early experimenter on ACTS, the all-digital Ka band spacecraft which enabled platform tests for such advanced technologies as hopping spot beams, on-board processing and rain fade correction. The Ohio Consortium is managing a series of on-going experiments and demonstrations as ACTS, now in inclined orbit, has been handed over for scientific and educational use for the remainder of its operational life. McClure students receive hands on learning experience working with the ACTS satellite.

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ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Name of University	Ohio University
Name of Academic Program	School of Electrical Engineering and Computer Science
Level of Academic Program	Baccalaureate; Master of Science degree in Computer Science; Master of Science and Doctor of Philosophy in Electrical Engineering.
Areas of Emphasis	Major areas of study include avionics, computers, artificial intelligence, applied and theoretical computer science, communications, controls, information theory, solid-state electronics, energy conversion, power electronics and systems, electromagnetics, signal processing, manufacturing, VLSI design, computer vision, robotics, electronic circuits and optoelectronics.
Names/Descriptions of Courses	B.S. students take introductory courses in analytical geometry and calculus, basic science, English composition, interpersonal communication, humanities and social science electives from a college-approved list in their first year. The sophomore, junior, and senior years focus primarily on core classes in the student's area of specialization, technical electives, and additional mathematics and science courses. Seniors take advanced class sequences depending on their chosen area of specialization.

Relevant courses for undergraduate students of Computer Engineering seeking a career in Space or Satellite Communication include: Introduction to Computer Science; Introduction to ECE Design; Foundations of ECE I/II/ III; Instrumentation Laboratory; Introduction of Discrete Structures; Data Structures; Applied Probability and Statistics; Intermediate CpE I/II; Intermediate ECE Design Experimentation; Software Design and Development; ECE Capstone Design A/B/C.

Electrical Engineering undergraduates will be

expected to take: Introduction to Electrical Engineering; Introduction to ECE Design; Fundamentals of ECE I/II/ III; Instrumentation Laboratory; Introduction of Discrete Structures; Data Structures; Applied Probability and Statistics; Intermediate ECE Design Experimentation A/B/C; Electromagnetics and Materials; Software Design and Development; ECE Capstone Design A/B/C.

Masters students in Computer Science will take such courses as: Introduction to Discrete Structures; Design and Analysis of Algorithms, Computational Theory; Formal Languages and Syntactic Analysis; Concurrent programming; Parallel Computing; Organization of Programming Languages; Operating Systems and Computer Architecture; Data Communications; Software Engineering; Operating Systems and Computer Architecture; Data Structures; Database Systems; Information Storage and Retrieval Systems; Artificial Intelligence; Advanced Algorithms; Computational Complexity; Parallel Compilers and Real Time Systems.

Masters and Ph.D. students in Electrical Engineering will take such courses as: Physical Electronics; Advanced Digital Circuits; Semiconductor Principles; Digital Filter Design; VHDL Design; Control Theory; Introduction to Lasers; Optoelectronic Materials and Devices; Microwave Theory and Devices; Antennas; Electromagnetics; Power Electronics; Digital Systems; Engineering Applications of Expert Systems; Communication Engineering; Digital Communication Systems; PCM Telemetry Systems; Electronic Navigation Systems; Electromagnetic Wave Propagation; Radar Systems; Inertial Navigation Systems; Satellite-based Navigation Systems; Navigation Receiver Design; Multipath in Navigation Satellite Systems; Integrated Optics; Digital image processing; Computer Vision; Information Transmission; Adaptive Signal Processing; Modulations Systems and Mobile Communications.

Unique Features

The School of Electrical Engineering and Computer Science is one of seven degree granting departments within the Russ College of Engineering and Technology at Ohio University.

The first courses in electrical engineering were offered at Ohio University in 1882. The first baccalaureate degree in Electrical Engineering was

awarded in 1904 and the Department of Electrical Engineering had become a separate entity by 1906. A degree program in Computer Science was first offered in 1968. This program was one of the first in the State of Ohio. The Department of Computer Science was founded in 1972. In 1995, the Department of Electrical and Computer Engineering and the Department of Computer Science merged to form what is now the School of Electrical Engineering and Computer Science.

The Avionics Engineering Center (AEC) at Ohio University is a unique research organization specializing in aviation research. For more than 37 years, AEC has been active in Communications, Navigation & Landing Systems, and Surveillance (CNS) research for the FAA, NASA, and DoD. The AEC is located in the School of Electrical Engineering and Computer Science.

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