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# Master of Science in Telecommunications

## Director's Message

The M.S. in Telecommunications is an application oriented program designed to accommodate those individuals with a technology, business or general studies baccalaureate degree, and who are seeking graduate level telecommunications education in order to secure entrance to, or advancement within, the dynamic field of telecommunications.

The Master of Science program in telecommunications requires 33 credit hours of graduate coursework in telecommunications, business and computer information systems in combination with one of the following: thesis or research project. Courses and advisement are conveniently offered so that both full and part-time students can complete the degree in reasonable time.

Instruction is applications oriented, and takes place both in lectures and in hands-on laboratory exercises in four state of the art telecommunications laboratories. Students are also strongly encouraged to participate in the Telecommunications summer internship program.

The Telecommunications program at SUNYIT has gained an international reputation for its industry orientation. Advised by a dynamic thirty-person telecommunications industry advisory board, the Master of Science in Telecommunications investigates critical areas of advanced telecommunications technologies, network design and simulation, project management, regulation, international telecommunications policy and trade issues, strategic planning, and business continuity planning. Original and substantial student research on a significant topic is demonstrated in the thesis and research project.

The Department possesses an academically and industry experienced faculty with research, teaching and consulting achievements in the core telecommunications subject areas. The faculty's experience and current activities are diverse and global, having been obtained in North America, Europe and the Asia-Pacific region.

The Department has extended its quality academic and research interests through the creation of a twinning program for the Department's M.S. in Telecommunications degree with the Department of Telecommunications Science at the Assumption University in Bangkok Thailand.

The Department has created rewarding relationships with industry associations. Among these are a Cisco Networking Academy which is a cooperative venture between higher educational institutions and Cisco, the world's leading networking company. In a lab setting that closely corresponds to the corporate workplace, students get their hands on the building blocks of today's global information

networks, learning by doing as they design and bring to life local and wide-area networks.

The Telecommunications department is also an educational partner of the Global Wireless Education Consortium. GWEC is a collaboration of wireless industry companies and academic institutions. GWEC is focused on expanding wireless technology curriculum in two-year and four-year academic institutions.

The Department is a member of the Information Systems Security Association (ISSA), the Wall Street Technology Association (WSTA), and the Pacific Telecommunications Council (PTC). These prestigious organizations encourage excellence in telecommunications management; provide forums for the evaluation of emerging technologies and their business applications; stimulating peer-to-peer relationships and the sharing of information; providing ongoing insight into regulatory and trade issues; and fostering constructive relationships between telecommunications end users and a select group of higher education institutions that offer telecommunications degree programs. These organizations also sponsor seminars and workshops, conferences, trade shows and field trips.

SUNYIT possesses extensive library holdings in support of the telecommunications program. This includes a large number of periodicals in telecommunications subject areas. The M.S. in the Telecommunications program is designed to meet the needs of part- and full-time students seeking quality education and preparation for career advancement in the dynamic one trillion dollar per year global telecommunications industry.

Financial aid may be available for academically qualified students.

*Kevin R. Lefebvre, Ph.D.*

## Admissions Criteria

A baccalaureate degree with an upper division major in telecommunications, engineering, engineering technology, computer science, photonics, business or a related area from an accredited college or university is required.

Applicants with deficiencies in mathematics, computer science/information systems, business or telecommunications may be required to take appropriate prerequisite coursework.

Applicants must submit Graduate Record Exam test scores taken within the past five years. Information on this test appears in the general information section of the Graduate College Catalog.

## Prerequisite Coursework

- Calculus 1 or equivalent.
- Applied Statistical Analysis or equivalent
- Students who require prerequisite coursework or wish to apply to substitute professional industry experience must consult with graduate advisor to determine appropriate course selection or substitution.

## Other Admissions Criteria

1. Evidence of personal and professional qualifications via three professional references.
2. A narrative statement by the applicant describing his/her professional objectives for graduate study.
3. Applicants must have maintained an average of B or better for the last thirty credit hours toward a baccalaureate degree or graduate coursework (a GPA of 3.0 on a 4.0 scale). If undergraduate GPA is between 2.8 and 3.0, applicants may be considered if they can demonstrate graduate potential via other means. Applicants possessing undergraduate GPAs below 2.8 may be considered for discretionary admission after completion of non-degree coursework as required by the Department of Telecommunications.

## ADVANCEMENT TO CANDIDACY REQUIREMENTS

1. Students must successfully complete TEL 598 as part of their first 15 graduate credits. Students who fail to register for and complete TEL 598 during this time will be dismissed from the program.
2. A review of student academic performance will take place at the conclusion of TEL 598. Students who have a graduate GPA of 3.0 or higher in the program, and who received a Satisfactory grade ("S"), in TEL 598 will be advanced to candidacy.
3. Students who have a GPA of less than 3.0 will be placed on academic probation.
4. Students who have an Unsatisfactory ("U") in TEL 598 will be placed on academic probation and will be restricted to one course per semester while on probation. Such students will further be required to re-take TEL 598 the next time the course is offered. Should the student fail to re-take the course in a timely manner, or fail to achieve a Satisfactory ("S") grade when the course is retaken, the student will be dismissed from the program.

## MS Telecommunications Program

(33 total credits required for degree)

Prerequisites:

- Calculus I or equivalent
- Applied Statistical Analysis or equivalent

### RESEARCH CORE (9 credit hours)

- CSC 507: Data Analysis
- MGS 511: Management Science
- TEL 598: Telecom Research Methods

### CORE ELECTIVES (18 credits)

includes 6 courses from the following:

- TEL 500: Voice Communications
- TEL 501: International Telecommunications Policy & Trade
- TEL 502: Data Communications
- TEL 505: Network Design and Simulation
- TEL 520: Telecommunications Systems Analysis & Project Mgmt
- TEL 530: International Law and Policy
- TEL 540: Integration of Telecom & Computer Systems
- TEL 580: Strategic Integration of Telecom into a Comprehensive Environment
- TEL 581: Survey of Info Assurance
- TEL 582: Security for Telecom Networks
- TEL 585: Telecom Electronic Commerce
- TEL 590: Selected Topics in Advanced Telecommunications\*
- TEL 594: Graduate Internship

### CULMINATING REQUIREMENT OPTION

- TEL 597: Research Project (6 credits)
- OR
- TEL 599: Thesis (6 credits)

\* Students may take additional sections of TEL 590, as long as the Selected Topics covered are not the same.

## Faculty

**David M. Climek**, Lecturer, M.S. Telecommunications, SUNY Institute of Technology, M.S. Business, SUNY Institute of Technology. Information assurance, disaster planning and recovery Member Software Defined Radio Forum (SDR), IEEE, Armed Forces Communications and Electronics Association (AFCEA).

**Larry Hash**, Associate Professor of Telecommunications; Ph.D., North Carolina State University. Wireless telecommunications systems, data networks, and internetworking. Member of the IEEE, American Society of Engineering Educators, and the Interactive Media Association.

**Eugene J. Newman**, Professor of Telecommunications; Ph.D., University of Wisconsin. International telecommunications policy and trade issues, project management. Member of the IEEE Communications Society, the International Telecommunications User Group, the Pacific Telecommunications Council, the Wall Street Technology Association, and the Association of Public Safety Communications Officers (APCO).

**Kevin R. Lefebvre**, Assistant Professor; Ph.D., University of Connecticut. Information assurance, transport networks, optical networks. Member of IEEE, SPIE, OSA, Eta Kappa Nu, Sigma Pi Sigma, MRS, ASEE.

## **M.S. Telecommunications Twinning Program with Assumption University, Bangkok, Thailand**

The Department of Telecommunications at SUNYIT and the Department of Telecommunications Science at Assumption University have established a twinning program whereby students from Assumption University may transfer up to 15 credits of graduate telecommunications courses, with a grade of "B" or better, to the M.S. Telecommunications Program at SUNYIT, and then successfully complete the remainder of the requirements for the M.S. Telecommunications degree at SUNYIT.

## **Telecommunications Institute**

The mission of the Telecommunications Institute, located at SUNYIT, is to develop and extend research and training in the telecommunications industry. The Institute was established through the joint efforts of the Institute and NYNEX Systems Marketing.

The Telecommunications Institute focuses on providing both training and information to professionals in the field of telecommunications. The Institute's seminars deal with a wide variety of topics in telecommunications, including equipment, voice/data networks, system management, and cabling/wiring technology. These sessions may incorporate teleconferencing and other distance learning techniques, as well as equipment demonstrations. The Institute also draws on SUNYIT's extensive telecommunications laboratory and its integrated voice and data network to enhance its educational pursuits outside of the classroom.

## **Telecommunications Advisory Board**

The Advisory Board, consisting of over 30 industry executives including those representing the end-user community, service and equipment suppliers, consultants, academicians, and policy makers, meets on a regular basis to shape the program's continued growth and development. These members give their time and effort to keep SUNYIT's Telecommunications programs on the leading edge of this fast-paced industry, as well as arranging for scholarships and equipment donations.

Current members of the advisory board come from such companies and organizations as MCI, Sprint, United Parcel Service, AT&T, NORTEL, Citigroup, Intermedia Communications Inc., Securities Industry Association, GTE, New York State Telecommunications Association, Communications Managers Association, NYSERNET, Corning Glass, GN Net-test, Cigna and IBM Global Services.

## **Internships**

All telecommunications students are encouraged to participate in the Department's active summer internship program

## **Facilities**

The telecommunications program is supported by more than \$5 million in modern facilities and equipment. Most of this has been donated by industry, reflecting its strong support for the Department and its programs.

The Telecommunications Department maintains five "hands-on" laboratories for student and faculty experimentation. These include a digital telephone switching and transmission laboratory (Donovan Hall Room 1240), a Local Area Network laboratory (Donovan Hall Room G143), Router and Switching lab (Donovan Hall Room G145) a Computer Based Training lab (Donovan Hall Room 1190), and an optical networks laboratory (Donovan Hall Room 9133)

*An abbreviated list of the telecom laboratory resources follows:*

- Nortel-Bay ATM Centillion 50 switching platform
- Northern Telecom DMS-10 Central Office Switching System
- Northern Telecom Meridian 1 PBX System - fully optioned
- Northern Telecom Meridian Link Adjunct Processor
- Northern Telecom D4E Smart Channel Banks
- Northern Telecom DMS-1 Urban Digital Loop Carrier System
- Octel Voice Messaging System with Automated Attendant
- Newbridge MainStreet Channel Bank
- Tie Data/Star PBX System
- Redcom Labs MDX Central Office and Teletraffic Generator
- TTI Digital Access and Cross-Connect System
- ADC Fiber Patch Panel and Optical Loop Terminator
- NEC Fiber Optic Channel Multiplexors and Channel Banks
- TTC Fireberd 4000, 6000 and 224 Digital Transmission Sets
- Dialogic Corp. D4/X Voice Processing Platforms
- AT&T BNS 2000 SMDS Switching Platform
- Cisco Network Academy File Server
- Mil3 OPNET Simulation Software
- Cadence BONEs Designer Simulation Software Program
- CACI COMNET III Simulation Software
- Network Analysis Center Modular Interactive Network
- Network Sniffer LAN Analyzer