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# Telecommunications

The convergence of the telecommunications and data communications networks, and the rise of the Internet as an essential tool in the 21st century have created unprecedented demand for individuals with knowledge and skills in networking. SUNYIT has responded to the rapid changes in this industry by evolving our Telecommunications curriculum towards data networking, data/voice convergence, and wireless technologies. This broad field includes what today is known as Information Technology (IT), and also includes core material in the growing field of information security. Although there is substantial overlap with computer science and electrical engineering, the Telecommunications program has a focus towards understanding the fundamental aspects of data, wireless, and voice networks within a business environment in which networking professionals build and maintain networks.

Success in this field requires competent technical skills in combination with a strong interdisciplinary foundation that includes practical skills in the areas of business management and policy. College graduates who have been formally educated in data networking and telecommunications convergence are currently in high demand and the long-term career opportunities are very encouraging. A multitude of career opportunities are available for network professionals. Particularly sought after are those with training in network security, VoIP (Voice over Internet Protocol), and wireless networks. Areas where demand is strong also include network management, and network operations, sales engineering, product marketing, technical support, consulting, and product development.

## The Program

Students majoring in Telecommunications develop a working knowledge of networking, as well as an awareness of current issues, policies, advancements, and applications that characterize the field of telecommunications. The program focuses on the interrelationship and application of network technology as a primary catalyst for an information-driven society. Areas covered in coursework include optical networking, vendor selection, network integration, network design and administration, network management, domestic and international telecommunications policy. As with all programs at SUNYIT, the telecommunications program includes a strong emphasis in liberal arts and science. This provides students with a more diverse and more complete lifelong education that continues to grow after graduation.

## Accelerated BS/MS Program in Telecommunications

The joint BS/MS program is a well-integrated program that permits students to complete both a bachelor's degree and a master's degree in telecommunications in a reduced timeframe with a reduced total number of total credits.

## Requirements

Completion of the joint BS/MS program requires a minimum of 145 credit hours, including a minimum of 33 semester hours of graduate study. All specific requirements for both the BS and the MS degrees must be met. Students in the joint program may apply up to twelve credits of graduate coursework to both the undergraduate and graduate degrees simultaneously. The intent of this program option is to allow well-prepared students to finish both a bachelor's and master's degree within a 5 year period.

## Status

A student enrolled in the joint BS/MS program will be considered to remain in undergraduate status until the completion of 124 semester hours, and thereafter tuition and fees will be charged at the graduate level. The BS degree will be awarded at such time as all the requirements for that degree are satisfactorily met. Students are expected to complete their BS program requirements prior to pursuit of the MS degree except where those two programs overlap.

## Academic Standing

Admission to and continued matriculation in the joint BS/MS program requires maintenance of a GPA of 3.0 for courses taken at SUNYIT in each of the following categories: (a) all courses applicable to the undergraduate degree; (b) telecommunications courses applicable to the undergraduate degree; (c) all graduate courses. Students with a GPA of 2.75 to 2.99 in any of these categories will be placed on academic probation in the program. Students who are on academic probation for any two semesters or who have a GPA of less than 2.50 in any of these categories will be academically dismissed from the joint program. Students who are academically dismissed but have not yet completed the baccalaureate program but whose performance is satisfactory in the undergraduate program will automatically be placed in that program.

## Admission to the BS/MS Program

Admission to the BS/MS program may be achieved, and enrollment maintained, in one of the following ways:

A) As an entering freshman: continued enrollment in the joint program requires achievement of grades of B or better in all Telecommunications coursework and in calculus. In addition, students must have an overall GPA of at least 3.0 at the end of the semester in which the first 60 credits have been completed.

B) Upon initial transfer to SUNYIT: students must have earned grades of B or better in courses that receive transfer credit as Telecommunications course equivalents, and calculus. The student must have a transfer GPA of at least 3.0.

C) Subsequent to initial enrollment at SUNYIT: students must receive grades of B or better in those courses (or their transfer equivalents) listed in A) and B) above, have an overall GPA of at least 3.0 for all courses taken at SUNYIT, and have a GPA of at least 3.2 for courses in their major.

Students entering the joint BS/MS program must not have completed more than 94 credit hours toward their Bachelor's degree, and must be able to complete all requirements for the Bachelor's degree within the first 124 credit hours earned.

## B.S. Degree Requirement

To earn a Bachelor of Science (BS) degree in telecommunications, a student must complete a minimum of 124 credit hours and fulfill the following requirements. Students must maintain a minimum GPA of 2.0 in their major to graduate.

I. Arts & Science Requirements	Minimum credits
<b>A Liberal Arts</b>	
COM 300 – Oral/Speech Communications	3
COM 306 – Technical Writing	4
Social Science	3
American History	3
Western Civilization	2
Other World Civilizations	2
Humanities	3
The Arts	3
Foreign Language	3
ENG 101/105 – English Composition	3
<b>B Mathematics and Science</b>	
PHY 101 – Physics I	4
PHY 102 – Physics II	4
MAT 112/151 – Elem. of Calc/Calculus I	4
STA 100/225 – Statistics	3
College Math Elective	3
<b>C Computer Science</b>	
CS 307 – UNIX Programming Environment	2
CSC 317 – Computer Systems & C Program	3
Computer Science Electives	8
<b>II. Professional Coursework</b>	
<b>A Telecommunications Core Courses 12</b>	
TEL 100 – Introduction to Telecommunications	4
TEL 201 – Basic Voice Communications	4
TEL 205 – Basic Data Communications	4
<b>B Telecommunications Technical Electives 19</b>	
Must complete 19 credits from the following:	
TEL 310 – Transmission Technology	
TEL 316 – Data Network Design	
TEL 340 – Network Standards and Protocols	
TEL 381 – Introduction Information Assurance	
TEL 383 – Network Firewalls	
TEL 384 – Network Intrusion Detection	
TEL 400 – Wireless Telecommunications	
TEL 416 – Digital and Internet Telephony	
TEL 425 – Internetworking Telecom Systems	
TEL 430 – Local Area Networks	
TEL 493 – Special Topics in Telecommunications – Technical Topic	
TEL 494 – Telecommunications Internship	
<b>C Telecommunications Management/Policy 8</b>	
Must complete 8 credits from the following:	
TEL 330 – International Telecommunications	
TEL 382 – Information Assurance Policies and Disaster Recovery	
TEL 420 – Telecommunications System Analysis and Project Management	
TEL 493 – Special Topics in Telecommunications – Management Topic	
<b>D Business/Management 8</b>	
ACC 201 – Accounting I	
FIN 302 – Financial Management Principles	
<b>III. Open Electives</b>	
<b>Total Credits 124</b>	<b>Balance of 124</b>

## Student Internships

The Telecommunications Department strongly encourages its majors to apply their knowledge and skills in this field by participating in the summer internship program. Generally completed between their junior and senior years, the internship allows students to apply their knowledge and skills, to refine their awareness of the career opportunities available, and gain experience to give them an edge in the job market after graduation. During the past decade, interns from the telecommunications program have been placed with leading organizations geographically located across the United States as well as abroad.

## Placement

Since its inception in 1985, over 500 graduates of SUNYIT's Telecommunications program have obtained rewarding careers in their field of study. Some of the companies that have employed SUNYIT Telecommunications graduates include: iBasis, Avaya, Nortel Networks, Cabletron, Cigna, Cisco Systems, Compaq, Concert, Bell Atlantic, AT&T, WorldCom, Sprint, GE, GTE, EDS, Citizen Telecom, Quest, Verizon, UPS, Lucent Technologies, IBM, US Department of the Treasury, Global Crossing, Merrill Lynch, Diversified Investments, Texaco Corp., Travelers, Microsoft, SUNY, Fleet Services, and HSBC in addition to many other organizations.

## Student Organization

SUNYIT Telecom Club is an organization that works in conjunction with the Telecommunications Department. The club uses its connections through the department's advisory board and business contacts to enhance the education of its members by organizing activities related to the telecommunication field. These activities include guest speakers from the telecommunications industry, discussion of employment opportunities, and field trips to observe application of technology in the field.

## Telecommunications Advisory Board

The Advisory Board consists of industry executives representing the end-user community, service and equipment suppliers, consultants, academicians, and policy makers. The board meets on a regular basis to provide input ensuring the program's continued growth and development. Board 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.

## Telecommunications Laboratories

The Telecommunications Department maintains several labs for hands-on learning and experimentation. These include a wireless networking lab, router and switching lab, digital telephone switching and transmission lab, an information assurance computer lab, a computer network simulation lab, and an optical networking lab.