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# Master of Science in Computer and Information Science

## Chairman's Message

The Master of Science program in Computer and Information Science provides students with a strong theoretical and application-oriented education. Graduates from the program have been equally successfully in entering the work force and in continuing their graduate education. Students from this program have gone on to pursue their doctoral degrees from institutions such as Binghamton University State University of New York, Cornell University, University of Massachusetts, Northwestern University, Syracuse University, the University of Southern California, and the Steven's Institute of Technology.

The Computer Science Department is the largest within the School of Information Systems and Engineering Technology. The twelve full-time faculty members have diverse areas of academic expertise. They support the graduate program and two undergraduate programs, while continuing to pursue research and scholarly activities in their respective areas of interest. Many faculty and students maintain a close working relationship with researchers at the Air Force Research Laboratory in nearby Rome, New York.

The program regularly offers a wide variety of courses including systems theory, formal languages, artificial intelligence, computer vision, and courses emphasizing information storage and retrieval. The courses are complemented by several state-of-the-art laboratories employing a variety of computing environments.

The program is also supported by extensive library holdings. Over 200 journal titles maintained by the library directly support the graduate program in Computer and Information Science.

The Master of Science in Computer and Information Science program is designed for full and part-time students seeking a quality education in preparation for employment and career advancement in this rapidly developing field.

**Roger Cavallo, Ph.D.,**  
**Professor and Chair**  
**Computer and Information Science Department**

This program is designed to provide students with a broad overview of the major areas in the discipline and in-depth specialization in at least one area. Course offerings stress the principles and problem solving methodology required by computing professionals working in industry, business and education.

## Admissions Criteria

Some computer science background is required for admission to the program. However, students with an insufficient background may amend this deficiency by taking designated "bridge" courses. These courses are intended to provide students with fundamental knowledge in mathematics and computer science as appropriate and serve to prepare students for advanced coursework. Although some students may be advised to take up to five bridge courses, only two of these may be counted toward the elective component of the

degree requirements. The use of bridge courses allows students with technical backgrounds other than computer science to complete their graduate program within a reasonable period of time.

## Bridge Courses

CSC 500	Discrete Structures
CSC 501	Continuous Methods in Computer Science
CSC 502	Machine Structures
CSC 503	Data Structures
CSC 504	Computational Methods in Linear Algebra (Also listed as CS 421)

Students who need to make up deficiencies or enroll in bridge courses should consult with a graduate advisor to determine appropriate course selection. GRE general test scores are also part of the admission criteria. Information on this test appears in the general information section of this catalog.

## Degree Requirements

The basic requirements are completion of 33 semester hours of graduate study including successful completion of either a project (CCSC 598 – 3 credits) or a thesis (CSC 599 – 6 credits).

1. Coursework in which a B (3.0) average must be maintained shall include:

### CORE COURSES (3 courses)

CSC 511:	Formal Methods in Programming
CSC 521:	Analytical Models for Operating Systems
CSC 531:	Automata, Computability & Formal Languages
CSC 541	Information Storage and Access
CSC 551	Introduction to Systems Theory

### ELECTIVES (6-7 courses)

#### A. Designated Electives (minimum of 4):

Courses selected from the designated graduate electives of the department (see list at right).

#### B. General Electives:

Up to two courses, which may be chosen from among computer science courses or any of the graduate offerings of SUNYIT. Bridge courses and transferred courses count as General Electives.

2. "No formal defense is required for the project – students present their results informally at a colloquium or as invited speakers in a class related to their topics."

## Faculty

**Bruno Andriamanalimanana**, Associate Professor; Ph.D., Lehigh Combinatorics, Coding Theory, Cryptography.

**Roger Cavallo**, Professor; Ph.D., SUNY Binghamton Systems Theory, conceptual modeling, probabilistic database theory.

**William Confer**, Assistant Professor; Ph.D., Auburn University, Real-Time Systems, Embedded Systems, Computer Architecture.

**Raymond Jesaitis**, Professor; Ph.D., Cornell Distributed Systems, numerical methods.

**Rosemary Mullick**, Professor; Ph.D., Wayne State Operating Systems, computer networks, artificial intelligence, instructional computing.

**Jorge Novillo**, Professor; Ph.D., Lehigh Combinatorics, data security, bio-computing, artificial intelligence.

**Michael Pittarelli**, Professor; Ph.D., SUNY Binghamton Systems science, artificial intelligence, combinatorial search, database theory.

**Ron Sarnier**, Professor; Ph.D., SUNY Binghamton Data modeling, statistical inference in the social sciences, instructional computing.

**Sam Sengupta**, Professor; Ph.D., Waterloo Systems modeling, computer networks, system forensics, distributed systems, operating systems.

**Charles Shi**, Assistant Professor; Ph.D., Clemson, Distributed Systems, Selfstabilizing/Adaptive Protocols, Mobile Ad Hoc Networks (MANET), Software Development, Applied Graph Theory.

**Scott Spetka**, Professor; Ph.D., UCLA Distributed databases, operating systems, system administration.

**Heather Dussault**, Research Assistant Professor; Ph.D., Rensselaer Polytechnic Institute Computer Architecture, Computer Forensics, Graphics, Gaming.

**Kevin Kwiat**, Adjunct Professor; Ph.D., Syracuse Computer architecture, distributed systems, information assurance, architecture.

## SUNYIT Academic Computing Facilities

The use of computers is widely integrated into almost all facets of life at SUNYIT. Computing is used for instruction, research, communication, as well as the registration and business functions of SUNYIT. Every student receives a SUNYIT computer account that provides them with access to the campus-wide computing resources and computer labs. Students should expect that most of their classes will involve some use of computing, and that e-mail is the preferred method for communications with instructors as well as with campus administrative offices.

Students use their SUNYIT computer account to web register, view course grades and print unofficial transcripts; to log in to the computer labs, the Unix systems, and the web accessible Windows applications; and to access numerous web resources such as e-mail, the SUNYIT file system, and library databases. All registered students are given a home directory on the SUNYIT file system for their files, web pages and e-mail. Additional disk storage space is available to those engaged in special projects with the approval of the Director of Information Technology Services.

Academic programs at SUNYIT are supported by over 300 computing stations (personal computers and workstations) in open locations or general purpose laboratories, and many more in

laboratories dedicated to particular functions. Computing labs are located in both academic buildings (Donovan Hall and Kunsela Hall), and in the Mohawk Residence Hall complex; all dormitory rooms are wired to provide private, high-speed Ethernet data connections for each occupant. The Mohawk Residence lab is available to all registered students 24 hours a day, 7 days a week. Off-campus access is maintained through the Internet.

The campus network has a gigabit Ethernet backbone between all buildings. The backbone runs at a speed of 1000 mb/sec; segments run at either 100 mb/sec or 1000 mb/sec.

Payment of the mandatory Technology Fee entitles students to access computing facilities, although nominal additional charges apply for the production of high-quality color output on special media and for short-term checkout of laptop computers.

SUNYIT's computer related policies are published in the Computer Use Policy, Dorm Connection Policy, Computer Software Policy, Website Policy and Copyright Policy that are available from the Information Technology Services web pages.

## Internet Access

SUNYIT holds the domain name sunyit.edu. SUNYIT's Internet connection was recently upgraded to a fractional T-3 running at 15 mb/sec, thus, maintaining SUNYIT's status as having one of the highest bandwidth connections in Upstate New York. Internet services are extensively used throughout the curriculum, and student use is strongly encouraged.

Numerous courses are taught exclusively over the Internet through the SUNY Learning Network. Others provide on-line computing activities in lieu of some course meetings through SUNY CourseSpace. In addition, students have access to over 800 computer-based training courses on the SkillSoft web site.

SUNYIT maintains an extensive Web site ([www.sunyit.edu](http://www.sunyit.edu)) and is continually expanding its Web resources. Current web resources include: the library services such as the catalog, databases and interlibrary loan requests; the Campus Intranet for real-time registration activities such as course add/drop, schedule inquiry, grade inquiry, unofficial transcript production, and billing inquiry; the Citrix server for remote access to Windows applications; and MySUNYIT ([my.sunyit.edu](http://my.sunyit.edu)) for single sign-on access to a collection of web resources such as e-mail, file system, trouble ticket system, calendar and the Campus Intranet.

## Campus-Wide Systems

SUNYIT maintains a number of centrally administered systems that host the web services, ftp services, printer queues, directory services, user authentication and provide access to the Oracle database management system.

## Computing Labs

SUNYIT has over forty computer laboratories on the campus; some are dedicated to a particular curriculum or purpose, others are general purpose. PC labs consist primarily of Pentium III and IV class computers running under Microsoft Windows XP and connect to lab file servers. Some departmental labs also run under the UNIX, Linux and Macintosh operating systems.

Microsoft Office, consisting of Word, Excel, PowerPoint and Access, is the standard integrated office suite and is available in computer labs, classroom instruction stations, student rental laptops and on the Citrix server for remote access. The current versions available are 2000 and 2002 (XP). SUNYIT also holds site licenses for a variety of applications including Borland programming languages, and SPSS (Statistical Package for the Social Sciences), Mathematica, Maple and Minitab.

The standard lab computer is currently a Pentium III/750 MHz with 17" flat screen monitor and RW CD drive. Subject to available

funding, many labs are on a replacement cycle averaging three academic years or less. Substantial upgrades to computing labs are anticipated during the lifetime of this catalog.

The labs listed below are available to all students for general use, are not scheduled for classes, access over 100 applications on lab servers and access numerous web resources. Current software is listed on the Information Technology Services, Computer Labs web page.

**Mary Planow Lab (Kunsela Hall C-003)** – has thirty computers, monochrome laser printer, a color laser printer, and a scanning station.

**Donovan Student Lab (Donovan G-161)** – has thirty computers, monochrome laser printer and color laser printer.

**Learning Center (Donovan G-155)** – has sixteen computers and monochrome laser printer. The Learning Center provides assistance in using the computer and various software packages.

**Mohawk Lab (Mohawk Residence Hall Lounge)** – has twelve computers and monochrome laser printer. The lab is accessible 24 hours a day, 7 days a week.

## **Departmental Academic Computing Facilities**

*In addition to the above listed labs, each school maintains departmental computer labs for its majors.*

### **School of Arts & Sciences**

**Macintosh Lab (Donovan G-238)** – twenty Macintosh G4 computers, an associated file server, and peripherals. This lab is used primarily in support of courses in Psychology and Information Design and Technology.

**Technical Writing Lab (Donovan 1146)** – twenty-five computers and laser printer is used extensively in support of courses in report and technical writing.

**Physics Lab (Donovan 2107)** – features ten computers and laser printer. This lab is primarily used for physics lab courses and use software for video analysis and scientific graphing.

**Interdisciplinary Lab (Donovan 2147)** – approximately twenty-four computers, three monochrome laser printers, color laser printer and scanner. This lab also has several small-group work areas with computers in each area. Used to support courses in Professional and Technical Communications, Information Design and Technology and Sociology. Currently installed software includes Microsoft Office2002, Pagemaker, Photoshop, PaintShop Pro, SPSS, Quark and RoboHelp.

### **School of Information Systems & Engineering Technology**

**Local Area Network Lab (Donovan G-143)** – twenty-four computers (currently Pentium III/400) with 17" monitors and a color laser printer. This lab supports classes Local Area Network configuration and administration. Installed software includes Windows/NT Workstation, Windows/NT Server, Winmind, Opnet, and Comnet. A Robotel system permits the instructor to control the displays of all computers in this lab.

**Computer-Based Training (CBT) Lab (Donovan G-145)** – sixteen computers (currently Pentium 233) with 17" monitors and a laser printer. This lab provides access to over 600 computer based training modules.

**CIM Lab (Donovan G-225 and G-225A)** – approximately twenty-five computers (currently Pentium III/450) with 17" monitors and an assortment of monochrome and color printers and plotters. Currently installed software includes Algor Supersap, AutoCad, Hydrain, Microstation, and Microsoft Office2002. This lab sup-

ports courses in Civil Engineering Technology and Mechanical Engineering Technology.

**Advanced CAM Lab (Donovan 1159)** – ten computers, laser printer and plotter used in support of courses in Civil Engineering Technology and Industrial Engineering Technology. Currently installed software includes Algor Supersap, AutoCad, Hydrain, Microstation, SmartCam, TKSolver, and Microsoft Office2002.

### **Computer Science Laboratories**

The Computer Science department maintains four labs which contain a mix of operating systems and software. These labs are interconnected on a modern high speed network and supported by multiple file servers for central data storage which is available both on and off campus. In addition to providing disk storage to computer science and information systems majors, additional servers support the Computer Science department web site ([www.cs.sunyit.edu](http://www.cs.sunyit.edu)), remote access, databases (mySQL, PostgreSQL, and Oracle), 8 lines for dialup connections, and many other services. The Computer Science network is maintained by full time staff with the assistance of student administrators.

**DogNET UNIX Labs (Kunsela C012 and C107)** - provide access to UNIX workstations (named after dogs). Twenty-Five workstations (currently Pentium IV/3.4GHz with 17" flat-panel monitors) are in the C012 classroom lab. These machines run on the Gentoo Linux operating system and provide access to many programs for Internet access, multimedia applications, publishing, language compilers, etc. The C012 lab is open for use when classes are not in session. The C107 UNIX lab contains 20 workstations running the FreeBSD operating system. This lab is used for computer science courses in operating systems, networking, web development, and system administration.

**MS Windows Labs (Kunsela C014 and C109)** - provide access to the Windows operating system and software. The C014 classroom lab contains twenty-five workstations (currently Core Duo/3.4GHz with 17" flat-panel monitors and DVD±RW drives) and is open for use when classes are not in session. The C109 special purpose lab contains 6 workstations and is ideal for small groups working collaboratively on projects. All systems in both labs run the latest version of the Microsoft Windows operating system. They support instruction and experimentation in object-oriented programming, client-server and distributed computing (networking, system administration and interoperability with other platforms), collaborative computing (web development, videoconferencing, multimedia). Programming environments supported include SUN Java, Visual Studio NET (C#, J#, C++, Visual Basic), Fortran90, Proglog, LISP, ML-ObjectCaml, APL. Application software includes Microsoft Office, Frontpage, Publisher, Visio, Matlab and Maple.

### **School of Business**

**School of Business Lab (Donovan 1157)** – twenty-eight computers, monochrome laser printer, color laser printer and color scanner. This lab is often used for hands-on instruction in courses in the School of Business.

### **School of Nursing & Health Systems**

**Nursing Informatics Lab (Donovan 1149)** – thirteen computers and laser printer. This lab is used to support Nursing and Health Information Systems courses. Currently installed software includes Diagnostic Reasoning (DxR), Home Health Nursing, SPSS, Microsoft Office 2002 and numerous nursing and health applications.

**Health Information Management Lab (Donovan 1239)** – six computers and laser printer. This lab is used to support Health Information Systems courses. Currently installed software includes database applications, Microsoft Office 2002.