

Master of Science in Networking and Systems Administration

The B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology, New York, USA

PROGRAM OVERVIEW

The graduate degree in networking and systems administration combines technical knowledge with business and leadership concepts and educates students in the practices, methodologies, and techniques used in the management of a modern and secure IT infrastructure. The focus is on enterprise-level problems and solutions including enterprise security, networking forensics, auditing, network security, network cryptography, network design and implementation, and network administration. Students will earn the same degree and be taught by the same faculty as if they enrolled in the master's degree program being taught on the RIT campus in Rochester, New York.

CURRICULUM AND PROGRAM SCHEDULE

The graduate program of study consists of 12 courses (48 quarter credit hours), which include eight courses (32 quarter credit hours) of required core courses, plus four courses (16 quarter credit hours) of management and technical electives. Each student is required to complete a thesis. RIT faculty will offer the program entirely in Dubai. Students will be able to complete a master's degree in 18 months through a combination of online learning and quarterly intensive seminars and labs. Class schedules will cater to working professionals, and intensive seminar classes will be offered in the evening and on weekends.



ADMISSION REQUIREMENTS

Admission to the graduate degree program is granted to qualified applicants who show high potential for success. Prerequisites for admission include a baccalaureate degree from an accredited college or university with an equivalent grade point average of 3.0 out of a 4.0 scale, and solid educational or employment record in networking, security, and systems administration. In addition, all applicants are required to meet the English language requirement for graduate study at RIT by submitting either a TOEFL score (minimum score 80 Internet-based, 213 computer-based, or 550 paper-based) or an IELTS score of at least 6.5.

SAMPLE SCHEDULE

Fall Quarter (August – November)

Research Methods
Accounting for Decision Makers

Winter Quarter (November – February)

Emerging Network Technologies
Computer System Security

Spring Quarter (March – May)

Organizational Behavior and Leadership
Secured Wireless and Wired Networks

Summer Quarter (June-August)

Project Management
Research Methods

Fall Quarter (August – November)

Advanced Computer Forensics
Enterprise Security

Winter Quarter (November – February)

Security Audits of Web Servers and Applications
Introduction to Project Management

Spring Quarter (March – May)

Proposal Development
MS Thesis

COURSE DESCRIPTIONS

Organizational Behavior and Leadership

This course examines why people behave as they do in organizations and what managers can do to improve organizational performance by influencing people's behavior. Students will be exposed to the ways in which organizations and their members affect one another and to different frameworks for diagnosing and dealing with problems in organizational settings. Topics include motivation, team building, conflict resolution, leadership, organizational change, and managing organizational cultures.

Network Design and Performance

This course will examine the factors that impact the design and performance of computer networks. Students will use simulation tools to design networks based on identified needs, analyze the performance of these networks, and investigate the impact of design alternatives. Designs for site, campus, and enterprise networks, which combine WAN and LAN technologies, will be investigated. Consideration also will be given to the incorporation and impact of business goals and security needs.

Computer System Security

This course provides an introduction to computer system and network security. The areas covered will include the liability, exposure, opportunity, and ability to exploit various weaknesses in a networked computer environment. The forms of the attacks and the detection and defense of the attacks will be discussed. The techniques and facilities available to both the intruder and administrator will be examined and evaluated with illustrative laboratory exercises.

Research Methods

This seminar introduces students to the MS in networking, security, and system administration by providing an opportunity to meet the faculty involved in the program and their fellow students. Students will learn about current areas of research in networking, security, and system administration and the areas of research interest of the faculty. To encourage students to begin thinking about their final thesis, students will develop a research proposal that may serve as the basis for their later thesis proposal. Topics include experimental research, correlation, experiment observation, surveys, and case studies. Also included will be document structure, validation, and the process for submission and review to conferences and journals.

Accounting for Decision Makers

This course is an introduction to accounting concepts and the use of accounting information by decision makers. Topics include financial statements; measurement of assets, equities, and income; financial statement analysis, cost behavior and measurement; profitability analysis; relevant costs for special decisions; budgeting; and responsibility accounting.

Secured Wireless and Wired Networks

Providing security in today's complex networks is a difficult subject and requires network managers to be well versed in the many aspects comprising network security. In order to accommodate the rapid expansion of networks and the alarming rate in which network security is breached, there is a need for more and better educated people who understand the basics of security in a networked world. This course is designed to provide students with the foundation needed to understand the problems of network security, perform a risk analysis to ascertain the threats and cost of an attack, and design and implement security strategies to effectively build a defense to minimize the effects of these attacks.

Emerging Network Technologies

The Internet has experienced profound growing pains in the last several years that have called into question the adequacy of some of the underlying

technologies upon which it has been based. In response to this there are a substantial number of emerging network technologies that, if widely adopted, may allow the Internet to continue to grow and develop. This course is designed to provide students with an overview of several of these emerging network technologies. The course will consist of a combination of lectures, independent labs, and simulation and modeling exercises.

Protocol Design and Implementation

Students will use a package that provides them access to the lowest layers of the OSI model available to software. Employing this package, students will write programs to interact with established protocols, and to implement their own protocols. What a protocol is will be discussed and what makes a protocol good or bad also will be explored.

Project Management

This course is a study in the principles of project management. It focuses on the leadership role of the project manager, roles and responsibilities of the project management team members, and various tools and techniques for project planning and control. Considerable emphasis is placed on statements of work and work breakdown structures. This material is presented using a combination of lecture/discussion, group exercises, and case studies.

Enterprise Security

This course is designed to provide students with the advanced concepts needed to establish network security strategies to ensure adequate protection for the corporate environment and yet provide accessibility for the corporate community.

Advanced Computer Forensics

This course provides students with knowledge and understanding of computer forensics. It also will provide a theoretical foundation for the techniques and methods needed for the extraction of information from digital devices. Students will gain exposure to the spectrum of available computer forensics tools along with developing their own tools for "special needs" situations. The core forensics procedures necessary for ensuring the admissibility of evidence in

court, as well as the legal and ethical implications of the process, will be covered on both UNIX and Windows under multiple file systems.

MS Thesis/Capstone

This is the capstone experience for the master of science degree in networking and system administration. Students must submit an accepted proposal in order to enroll.



APPLICATION & ADMISSION

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