Rochester Institute of Technology
Master of Science in Information Technology
Degree Coursework
(Quarter system)

Fall 2003

0614 728: Operating Systems for Telecommunications
The course starts by examining the features and operation of a typical operating system for the local level computing. Basic functions are to execute user commands, provide for system resource sharing, management of memory, the creation and management of files, and to provide security and protection functions. A network operating system (NOS) adds features which perform a key role in networking and communications of distributed computer systems. Students will examine typical methods and techniques which implement the key operating system functions. A historical sequence of popular operating systems (MVS, Unix (and Linux), OS/400, and several generations of Windows) will be studied to compare and contrast how each provides its services and to determine the benefits and short comings that exist between them. The course includes an inspection of real-time and embedded operating systems and their interface with telecommunications applications in both present and future hardware products.

4002 822: Network Programming
Network Programming is a course in the writing of simple client/server programs, using the TCP/IP network protocol stack. It works through the establishment of simple connectionless communications, through connection oriented communications, to multi-client connection oriented communications. The objective is to expose the low level workings of TCP/IP at the transport layer, and to provide the students with experience in writing simple network applications.

4002 898: MS Project
Capstone experience for the Master of Science in Information Technology.

Spring 2003

4002 750: Distributed Systems
A study of the components necessary for distributed systems to be developed and deployed. Topics include basic models of distributed systems, basic network capabilities, interprocess communication, distributed objects and remote object invocation, operating system support, name services and security.

4002 816: Introduction to Network Administration
An investigation of key network services. Topics include DHCP, DNS, LDAP, NetBIOS and SNMP. As time allows, other related topics such as finger, ph, and whois will be explored. This course involves significant laboratory work.

4002 850: Network Planning & Control
This course will examine the issues related to planning new enterprise wide networks as well as implementing changes to existing networks. Students will learn to design a network based on identified needs and constraints. WAN technologies such as ATM and Frame Relay will be combined with LAN technologies in the design of an enterprise internetwork.

4002 714: Java Programming
An introduction to the Java programming language for experienced programmers. This course covers the creation of applets and application programs. Topics include: basic language concepts (declaring and evaluation of data, statements, expressions, control flow, and input/output), the development environment, the essentials of applet programming (URL, audio, image, test, animation), classes and objects, error handling, debugging, threads, and the client/server environment. Programming projects will be required.

Winter 2002-03

4002 815: Introduction to Routing and Switching
This course is a laboratory-based course on the establishment of a data stream across the Internet. The focus is on providing a TCP/IP data stream for higher-level services to operate over. It is primarily concerned with the network layer and below. Protocol suites other than TCP/IP may be studied. Students will learn how to connect together computers in a network, and then how to connect the separate networks together to form an internetwork. Bridging and switching concepts are investigated (such as the resolution of bridging loops through the appropriate algorithms). Routed and routing protocols and algorithms are studied and implemented.

4002 402: OS Scripting
This course is a survey of tools and techniques used to script common tasks in operating system environments. It will focus on Unix shell script programming. Students will gain experience in writing scripts for Unix and will be challenged to bend traditional programming paradigms to the writing of effective scripts in the OS environment. Programming projects will be required.

4002 745: Transmission Systems
This course focuses on details of transmission in wide area data networks. Included are discussions on analog and digital modulation, signal-to-noise ratios, sampling theory, transmission via copper, microwave, satellite, RF broadcast and fiber optics. Different types of transmission media will be compared with respect to bandwidth, error rates and cost effectiveness. Protocols and systems of interest to this course are SONET, ATM, Frame Relay, virtual circuits, Fast/Gigabit Ethernet and xDSL.

Fall 2002

4002 342: Internetworking Lab
This course is a laboratory-based course on the interconnection of digital devices for the purpose of enabling data communication. The focus is on the hardware for peripheral communication and network communication, with a substantial laboratory component. Accessing computers and networks from a remote site will also be studied. Students will be required to construct cables, install network cards, configure modems and establish a working connection between digital devices. Problems will be introduced into working systems and students will be required to use diagnostic tools (both software and hardware) to determine and repair the problem. The use of remote access techniques to control and diagnose computers and network will also be introduced.

4004 741: Fundamentals of Web-based Multimedia
This class provides an introduction to web based multimedia development and implementation. Topics covered include uses of web-based multimedia in business and historical contexts, differences between web-based and stand-alone multimedia, basic HTML and web page design, digital image creation and manipulation, and the incorporation of audio, video, and animated components in web-based multimedia. Students will learn to use computer-mediated communication and Internet utilities in support of multimedia development.

4002 718: Current Themes in Information Technology
This course provides entering graduate students in Information Technology with an overview of current theory and issues in the field. Topics covered would include social and cultural impacts of technology, virtuality, digital communication, and online communities. Using reading from a variety of books and periodicals, students will be presented with views on information technology in a socioeconomic context.