

## NIS/CpE 565: Management of Local Area Networks

### Syllabus

**Catalog Data:** NIS/CpE 565. Management of Local Area Networks

Principles and practices of managing local area networks are presented from the perspective of a network systems engineer, including hands-on projects working with a real local area network (Cisco routers, switches, firewalls, etc). The SNMP protocols and network management using SNMP are presented in terms of the general organization of information regarding network components and from the perspective of creating basic network management functions using SNMP. Techniques for troubleshooting practical networks, along with setting up and maintaining an IP network are covered. The course includes a project-based learning experience.

### Textbook:

#### Course Textbooks

- **Required:** *Network Management*, M. Subramanian, 2000. Addison-Wesley. ISBN 0-201-35742-9. (Also used in NIS/CpE 560)
- **Recommended:** *Managing IP Networks*, Scott M. Ballew, 1997. [O'Reilly & Assoc.](#) ISBN 1-56592-320-0, 334 pp. (paperback).

### Software:

#### Gambit Communications Network Simulation (MIMIC) Software

The course will make use of a commercial software package from [Gambit Communications](#) allowing the building of networks (up to 50 nodes) using simulations of commercial networking hardware and execution of management actions (SNMP, etc) on the simulated network. A physical network has been established through a cooperative agreement with Gabriel Akintayo of Structured Networks. External access to the physical network presents problems due to campus security policies but it is intended to provide some degree of access to this physical network when possible. The Gambit simulation software tools can capture the architecture and settings of a physical network and construct a simulation of that physical network. Students will be provided with access to this software.

### Coordinator/Instructor:

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### Goals:

This course highlights the principles and the practical issues associated with management of local area networks (emphasizing TCP/IP networks). Management protocols such as SNMP are

covered along with techniques to troubleshoot networks.

**Prerequisites by Topic:** Basic understanding of Internet networks and familiarity with Windows operating systems

## **Schedule**

Details regarding the weekly topic will be provided on the "*Weekly Schedule*", linked from the main page.

**Week 1:** Introductory Topics: Part I.

**Week 2:** Introductory Topics: Part II.

**Week 3:** Exploring Existing Networks.

**Week 4:** Building a Simple Network: Physical View.

**Week 5:** Simple Network: Management View and Simulator

**Week 6:** Designing Large IP Networks

**Week 7:** Network Routing Protocols

**Week 8:** TBA

**Week 9:** Management Information Bases (MIBs)

**Week 10:** SNMP: Part I

**Week 11:** SNMP: Part II

**Week 12:** Remote Monitoring (RMON)

**Week 13:** Network Performance Monitoring

**Week 14:** Securing the Network