



0764

**Minnesota State University, Mankato** HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5  
**Curriculum Proposal**

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

		(Check all that apply):	Proposal # <b>132</b>
College:	Science, Engineering and Technology	<input checked="" type="checkbox"/> Undergraduate	Effective Date of Change:
Department:	Computer and Information Sciences	<input checked="" type="checkbox"/> Graduate	Academic Year <b>06-07</b>
Program:	Computer Information science	CIP # 11.0701 00	(For Office Use Only)
Type of Change	COURSE PROPOSALS		Course Designator and Number
Proposed:	New Course		
Title Current:			Number of Credits
Title Proposed:	Network Administration and Programming		IT 462/ IT 562
24-Char. Abbrev:	Network Admin and Prog		4
			(if applicable)

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

Network and server systems administration. Domain administration; file system management; networked printers; user management; workstation configuration. Network programming assignments/ projects in Layered Software Systems, HTTP Server, UDP (TFTP or DNS), CGI program, IPV6, RPC/SCTP.  
 Pre: IT 350 or ISYS 350, IT 460  
 Variable

Rationale or Justification for change:

The CIS major is being redesigned and name changed to Information Technology (IT). This course is included in the required elective sequence for Networking and Information Security.

**\*\*\*For General Education or Cultural Diversity Courses Only\*\*\***

<b>General Education Course:</b>		<b>Cultural Diversity Course:</b> (Please check one.)
<b>GE Category #</b>	<b>GE Category Name (Maximum of 3 Categories)</b>	
N/A		
N/A		
? For Writing Intensive Courses, attach a description of the kind and quantity of writing. ? For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.		<input type="checkbox"/> <b>Core</b> (At least 75% devoted to topics of race, gender, sexual orientation, age, class, and disabilities as they occur in United States Society.)  <input type="checkbox"/> <b>Related</b> (At least 25% devoted to the above topics or to a global perspective on topics related to African American, Asian, Hispanic, and Native American inhabitants of the United States.)
Attach paper copies of the following: a. Syllabus or course outline. b. Course's student learning outcomes associated with each GE competency or CD designation. c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.		

**\*\*\*For New Courses\*\*\***

(Check all that apply):	Instructional Type: <input type="text" value="Lecture"/>	Course will be offered:
<input checked="" type="checkbox"/> Course is an elective.	Grading Format: <input checked="" type="checkbox"/> Grade <input type="checkbox"/> P/N	<input checked="" type="checkbox"/> Fall Semester
<input type="checkbox"/> Course is required for program	Information Technology (IT)	<input checked="" type="checkbox"/> Spring Semester
<input checked="" type="checkbox"/> Pre- or Co-requisites:	IT 350 or ISYS 350, IT 460	<input type="checkbox"/> Summer Session
<input type="checkbox"/> Other courses are being changed or eliminated. (Explain.)		

Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:

- Syllabus or course outline.
- Course's student learning outcomes.
- A list of resources required to offer and support this course.
- A description of how teaching this course will affect department staffing.
- If 400/500 level course, an explanation of added expectations of graduate students.



Minnesota State University, Mankato  
Curriculum Proposal

\*\*\*Signature Page\*\*\*

**Department**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

David J. Healy 10/9/06  
Department Chair Date

Comments:

**College Curriculum Committee**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

Karen C. Chou 11/2/06  
Committee Chair Date

Comments:

**College Dean**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

[Signature] 11/6/06  
Dean Date

Comments:

**General Education Subcommittee**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

\_\_\_\_\_  
General Education Subcommittee Chair Date

Comments:

**Undergraduate Curriculum and Academic Policy Committee**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

[Signature] 1-31-07  
UCAP Faculty Chair Date

Comments:

**Faculty Association Graduate Committee**

Recommended  
 Not Recommended

\_\_\_\_\_  
Faculty Association Graduate Chair Date

Comments:

**Graduate Dean**

Recommended  
 Not Recommended

\_\_\_\_\_  
Graduate Dean Date

Comments:

**Academic Affairs Council**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

[Signature] 2/9/07  
Assistant Vice President Date

Comments:

**Senior Vice President and Vice President for Academic Affairs**

Approved (Category/ies \_\_\_\_\_)  
 Not Approved (Category/ies \_\_\_\_\_)

[Signature] 2/13/07  
Sr. Vice President/ Vice Pres. Academic Affairs Date

Comments:

## IT 462/562 (4) Network Administration and Programming

### a. SYLLABUS

#### Textbook:

- Simpson, Ted and Simpson, Micheal. Guide to NetWare 6.0/6.5 Administration [Enhanced Edition]. Cambridge, Course Technology - ITP, 2004 [ISBN 0-619-21543-7]
- Zacker, Craig. Microsoft Official Academic Course: Managing and Maintaining a Microsoft Windows Server 2003 Environment. Redmond, Microsoft Press, 2004 [ISBN 0-07-294490-0][REF MCSE Exam 70-290]
- Corbin, Wendy. Microsoft Official Academic Course: Planning, Implementing and Maintaining a Microsoft Windows Server 2003 Active Directory Infrastructure. Redmond, Microsoft Press, 2004 [ISBN 0-07-294490-0][REF MCSE Exam 70-294]
- Harold, E. R. (2005) *Java Network Programming*, 3rd ed. O'Reilly, Cambridge, MA.

#### Recommended Text

- Douglas E. Comer and David L. Stevens, *Internetworking with TCP/IP Volume III: Client-Server Programming and Applications*, Linux/POSIX sockets version, Prentice Hall, 2001
- Douglas E. Comer, *Internetworking with TCP/IP Volume I: Principles, Protocols, and Architecture*, 5th edition, Prentice Hall, 2005.
- W. Richard Stevens, Bill Fenner, and Andrew Rudoff, *Unix Network Programming, The Sockets Networking API*, Volume 1, 3<sup>rd</sup> Edition, Addison-Wesley, 2004

#### Prerequisites:

IT 350 or ISYS 350, IT 460

#### Course Objectives:

This course is intended to provide students with an understanding how important Server operating systems work and how it can be managed effectively. Also, it focuses on design, development and coding of administration and networking software. Implementations include the application programming interface known as sockets. After completing this course the students should be able to configure, secure and administer Servers and Networks and gain hands-on experience through several programming assignments/projects in layered software systems.

- Understand the ethical issues of working as a system and Network Administrator.
- Be familiar with common network operating systems (NOSs) used by network servers.

- Understand directories, directories services, and their uses in a network environment, particularly X.500, LDAP and their derivatives
- Perform various Windows Server installation types such as attended, unattended, and upgrades.
- Configure and maintain the operating system environment and server hardware.
- Outline Active Directory and its key features and benefits.
- Be able to design and implement a Microsoft Active Directory (AD) installation
- Configure and manage users and groups (with both GUI and command-line tools).
- Configure secure access to network resources (shared files and printers).
- Install and configure key services and applications such as DNS, WINS, and IIS.
- Use Group Policy to effectively manage an Active Directory domain.
- Maintain a Windows server and ensure its availability.
- Understand network security issues
- Be able to work as a basic Network Administrator with AD
- Understand client server communication using HTTP protocol
- Develop code for a HTTP server
- Develop

Hands-on experience will be gained through several programming assignments/projects in Layered Software Systems, HTTP Server, UDP (TFTP or DNS), CGI program, IPV6, RPC/SCTP.

**Course Coverage:**

Network administration	50%
Network Programming	50%

**Course Contents:**

Week	Topics
1	Course Intro: Certification; Networks and NOSs; Network Administration responsibilities and ethics
2	Planning Directory Services - NDS/eDirectory Directory Design Tools DS Standard Introduction & Planning the NDS/eDirectory Tree
3	Active Directory , AD Directory Design Tools Planning the Network File System
4	Implementing Directory Services - NDS/eDirectory Directory Tree Structure & the Network File Structure
5	Managing Users, Groups and Login Security I LAB: Creating the NDS/eDirectory Directory Tree Structure, the NetWare Network File Structure, and User-Related Objects
6	Managing AD Trustee Rights Assignments and Directory/File Attributes Managing Network Login Scripts & User Environments
7	Managing Applications and Network Printing Managing Messaging Services
8	Sockets Programming, TCP Programming, TELNET, HTTP, Authd

9	UDP sockets, I/O Multiplexing, TFTP
10	DNS and address conversion, Buffer Overflow, The WWW & Web Programming (CGI)
11	Client/Server Programming, Advanced Sockets Programming Cookies, JavaScript, XML Handouts, Links
12	Router and Bridge Software, Threads programming, IPV6 Daemons, inetd, SMTP, POP, IMAP, FTP
13	XDR, RPC Programming
14	Multimedia Network Programming issues, RTSP, RTP and RTCP Wireless Network Programming Issues
15	CORBA Network Programming issues in different languages

### Catalog Description:

Topics to be covered in Windows server systems and network administration include: domain administration; file system management; networked printers; user management; and workstation configuration. Also hands-on network programming experience will be gained through several programming assignments/projects in Layered Software Systems, HTTP Server, UDP (TFTP or DNS), CGI program, IPV6, RPC/SCTP.

### Grading:

Class Quizzes	10%
Administration Lab tasks	10%
Homework and Programming Assignment	20%
Mid-term	20%
Course Project	20%
Final exam	20%

### b. LEARNING OUTCOMES

After completing this course the students should be able to:

- Be familiar with common system and network operating systems.
- Understand directories, directories services, and their uses in network environment, particularly X.500, LDAP and their derivatives.
- Be able to design and implement a Microsoft Active Directory installation.
- Be familiar with the design and implementation of Novell Directory installation.
- Understand ethical issues of working as a System and/or Network Administrator.
- Understand network security issues.
- Work as a basic Network Administrator.
- Demonstrate mastery of common network protocols: ARP, RARP, Ethernet, IPv4, IPv6, ICMP, TCP, UDP, DNS, HTTP, FTP, SNMP, and SMTP.
- Demonstrate mastery of socket programming.
- Develop network applications such as ftp, remote login (telnet, ssh), and web servers.

- Understand and network commands: netstat, ifconfig, ping, traceroute, tcpdump, sock, telnet, rlogin

**c. RESOURCES REQUIRED TO OFFER AND SUPPORT THIS COURSE**

Resources currently in place within the department and the University Library will support this new course. No new resources are required.

**d. IMPACT ON STAFFING IN THE DEPARTMENT**

There is no impact on department staffing.

**e. DIFFERENT ASPECT IN 500 LEVEL**

Graduate students must do independent research in a topic of current interest. Students are required to write a research paper about their topic and present their findings to the class.