1. Title of Course, Course Number and Credits:

   CS335  Fundamentals of Computer Networking, 3 credits  
   (Required for CIS Minor; cannot be used to fulfill Computer Science major  
   requirement)

2. Course Prerequisites

   CS235

3. Description of the Course Consistent With the WPUNJ catalog

   This course is intended for the non-CS major students with an interest in computer  
   networking. The course presents the fundamentals of data communication and computer  
   networking. Major topics include state-of-the-art local and wide area networking  
   technologies; layered internetworking architecture; TCP/IP protocol suite and the  
   Internet; networking standards and standard organizations; network security, privacy,  
   management, and administration; network applications emphasizing the Internet;  
   networking industry; social impact of networking; and new trends and emerging  
   technologies such as the increasingly popular mobile and wireless data communication.

4. Course Objectives

   The main objective of this course is to learn the principles of computer  
   networking and its applications with an emphasis on the following:

   • Basic concepts of computer networking.
   • Layered model of computer networks.
   • Networking protocols and the TCP/IP.
   • Local, metropolitan, and wide area networking technologies.
   • Network applications and digital convergence.
   • Social impact of computer networks.

5. Student Learning Outcomes

   Upon completion of this course, students will be able to:
   • comprehend and demonstrate command in the principles of data  
     communication and computer networking.
   • describe the networking technologies including LANs, MANs, and WANS.
   • understand the functions of TCP/IP and the organization of the Internet.
• grasp the privacy and security issues prevalent and know how to enforce standards for them through technologies such as firewalls and encryption
• evaluate a network in terms of cost, performance, privacy and security.
• understand how business, education, and government organizations can use the Internet, intranets, and extranets to support their objectives
• plan and design a small and practical network for home or small business applications under a specified set of constraints.
• articulate how computer networks can positively benefit as well as negatively impact on society.
• recognize and appreciate digital convergence: multimedia network

Additionally, students are also expected to achieve in the context of the above topics the below university-wide student learning outcomes through lectures; classroom discussions; homework, essay and project assignments; and oral presentations.
• Demonstrate the ability to think critically. This is achieved by and best measured by problem-solving applying principles and methodologies of networking, which will be conducted in examinations and projects.
• Locate and use information on these topics. Projects and written assignments will involve current communications technologies, requiring research on the Internet and the library’s recent periodicals.
• Integrate knowledge and ideas in a coherent and meaningful manner. Projects and examinations will have problems applying and integrating various tools and components towards constructing networks, troubleshooting them, and adapting to new technologies such as wireless.
• Effectively express themselves in written and oral form. Students will be expected to deliver progress reports on network design projects. Another assessment tool for this outcome involves student reports on “current events”, new standards and technologies (such as 802.11a/b/g, Bluetooth and Blackberry devices). Examinations will have several essay questions on network design, security/privacy issues and hypothetical cases.

6. Topical Outline of the Course Content

Topics covered in the course will be taken from but not necessarily limited to the following:
• Concepts of distributed data processing
• Communication networks and applications
• Communication hardware and software
• Layered network architectures and functions
• Standards and standard organizations
• Classifying networks by topology, technology, and scope
• Circuit-switched voice and packet-switched data networks
• TCP/IP protocols and the Internet
• Telnet, FTP, SMTP, SNMP, HTTP, and WWW
• Multimedia and high-speed networks
• Network privacy, security, and management
• Communication industry and major service providers
• Issues related to the planning and designing a network
• Social impact of networks
• New trends and emerging technologies

7. Guidelines/Suggestions for Teaching Methods and Student Learning Activities

   Lecture, demonstrations, and hands–on activities
   Problem solving sessions
   Group work
   Written homework/exercises
   Inquiry–based instruction.

8. Guidelines/Suggestions for Methods of Student Assessment (student learning outcomes)

   Attendance will be taken.
   Homework and projects will be assigned.
   Written and group activities will be distributed and collected.
   Projects will be demonstrated.
   All students are expected to take an active role in the learning process.

9. Suggested Reading, Texts, Objects of Study


10. Bibliography of Supportive Texts and Other Materials


P. Gregory, *Computer Viruses For Dummies*, John Wiley 2003


11. Preparers’ Name and Date

12. Original Departmental Approval Date: March 7, 2006

13. Reviser’s Name and Date: NA

14. Departmental Revision Approval Date: NA