COURSE DESCRIPTION

Dept., Number	CSci 561	Course Title	Computer Networks
Semester hours	3	Course Coordinator	P. Tobin Maginnis, Associate Professor

Current Catalog Description

Analysis of loosely coupled computer communication, communication protocols, and network services; an open systems interconnection model is presented and compared to selected examples of computer networks.

Textbook

Stevens, W. Richard, et. al., *Unix Network Programming*, 3rd edition., Prentice-Hall, 2004.

References

Class website: http://pix.cs.olemiss.edu/csci561/

Course Outcomes

Upon successful completion of this course, the students can:

1. describe the role of networking, transport, and application layers in computer networking;
2. describe the basic transport layer services and how they are invoked by an application;
3. contrast socket services *versus* transport layer services;
4. contrast TCP, UDP, and SCTP transport services, matching application program requirements with each transport service;
5. describe the design trade-offs of 3-way and 4-way handshakes, open and closed mechanisms, and error control;
6. describe the role of, and give examples of, socket options;
7. contrast concurrent and iterative server design trade-offs.

Relationship between Course Outcomes and Program Outcomes

This is a course taken primarily by computer science and telecommunications graduate students; it is sometimes taken by undergraduate computer science students as an elective to enrich their programs. The course outcomes contribute to the program outcomes as follows: 1 though 7 to (a), (b) and (c).

Prerequisites by Topic

1. Operating systems (CSci 423)

Major Topics Covered in the Course

1. Introduction and overview of the Internet
2. Source code examination of a simple transport station
3. Overview of TCP, UDP, and SCTP communication protocols
4. Berkeley Standard Distribution (BSD) sockets and services
5. Network library services
6. Internet Domain Name Service
7. Congestion and flow control
8. ARP, Bootp, and DHCP service
9. IPtables and packet routing security
10. Performance tuning

Assessment Plan for the Course

This is an elective course offered yearly and primarily to computer science graduate students. An offering typically has 4 examinations and a semester project. Outcomes 1 through 7 are assessed by exam questions and through the semester programming project. The instructor evaluates the student performance informally and makes changes to the course content, organization, and pedagogy as indicated.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

Estimate Curriculum Category Content (Semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms			Software design		1
Data structures		1	Concepts of programming languages		1