

COURSE DESCRIPTION

Department and Course Number	CS 435	Course Coordinator	Hyatt
Course Title	Network Programming	Total Credits	3

Current Catalog Description

Remote procedure call and client-server mechanisms. Protocol definition and compilation; client and server stubs and application code; transport independence; multiple client and server systems. Applications, e.g., remote database query and update and image filtering and archiving; systems programming and file systems contexts.

Textbook

Unix Network Programming, Volume 1: The Sockets Networking API, 3rd ed., by W. Richard Stevens, Bill Fenner, Andrew M. Rudoff, Addison-Wesley, 2003.

References *None*

Course Goals

To give students knowledge of distributed programming concepts using TCP/IP, UDP and RPC programming facilities. Students learn to write client-server applications, deal with error detection and correction, and eventually write a distributed application to improve performance of a program by using multiple computers simultaneously.

Prerequisites by Topic

Computer Organization and Assembly Language Programming

Major Topics Covered in the Course

TCP/IP sockets and communication, UDP protocol, RPC protocol, multi-threaded servers, distributed computing concepts.

Laboratory projects (specify number of weeks on each)

Client communication with server (2 weeks)

Multiple clients communicating with server (2 weeks)

Multiple clients communicating with multi-threaded server, one server process per client, including accepting commands from clients (2 weeks)

UDP client/server (2 weeks)

UDP server that will handle a "broadcast" so that a client can find out where the server is running without knowing in advance (2 weeks)

RPC client/server (2 weeks)

Application of above technologies to play blackjack (4 weeks)

Estimate CSAB Category Content

	CORE	ADVANCED some		CORE	ADVANCED
Data Structures	_____	_____	Computer Organization and Architecture	_____	10 _____
Algorithms Software Design	_____	30 _____	Concepts of Programming Languages	_____	_____

Oral and Written Communications

None

Social and Ethical Issues

None

Theoretical Content

Distributed programming concepts, approximately 2 weeks of consecutive lectures, plus another week or two mixed in with the programming assignment discussions

Problem Analysis

Students are given problems to be solved by direct programming solutions. Each assignment has unique analysis issues that have to be addressed in order to complete the assignment.

Solution Design

All of the assignments are programming assignments. Each assignment must be solved by programming using the specific network programming concepts covered prior to that assignment.