SCHEME OF COURSE WORK

Department of Information Technology

Course Details:

COURSE TITLE	UNIX Network Programming		
COURSE CODE	15CT1133	L T P C	4 0 0 3
PROGRAM	B.TECH		
SPECIALIZATION	CSE, IT		
SEMESTER	VII		
PRE REQUISITES	UNIX Shell Programming		
COURSES TO WHICH IT IS A PRE REQUISITE	N/A		

Course Outcomes (COs):

1	Identify interfaces and frameworks for developing network applications
2	Develop programs for data communication using socket functions
3	Implement functioning of TCP echo server.
4	Write UDP Client Server programs using socket functions.
5	Develop programs for inter-process communication

Course Outcome versus **Program Outcomes**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		3	3	3	2					2			2	1	1
CO2	2	3	2	3	3					2			2	1	
CO3		2	2	3	2		2			2			2	1	
CO4		2	3	2						2			2	1	
CO5		2	2		3					2			2	1	

Assessment Methods	Assignment / Quiz / Mid-Test /Seminar/viva

Programme Specific Outcomes (PSOs)

At the end of the Programme, a student will be able to

PSO1: Plan, develop, implement, and evaluate IT solutions to specific business problems usingspecific programming language and software tools.

PSO2: Design and Develop Network, Mobile and Web-based Computational systems underrealistic constraints.

PSO3: Design and implement fundamental network security solutions.

Programme Outcomes (POs)

At the end of the Programme, a student will be able to

PO1: Apply the knowledge of mathematics, science, engineering fundamentals and principles of Information Technology to solve problems in different domains.

PO2: Analyze a problem, identify and formulate the computing requirements appropriate to its solution.

PO3: Understand to design, develop and evaluate software components and applications that meet specifications within the realistic constraints including cultural, societal and environmental considerations.

PO4: Design and conduct experiments, as well as analyze and interpret data

PO5: Use appropriate techniques and tools to solve domain specific interdisciplinary problems.

PO6: Understand the impact of Information technology on environment and the evolution and importance of green computing.

PO7: Analyze the local and global impact of computing on individual as well as on society and incorporate the results in to engineering practice.

PO8: Demonstrate professional ethical practices and social responsibilities in global and societal contexts.

PO9: Function effectively as an individual, and as a member or leader in diverse andmultidisciplinary teams.

PO10: Communicate effectively with the engineering community and with society at large.

PO11: Understand engineering and management principles and apply these to one's own work, asa member and leader in a team, to manage projects.

PO12: Recognize the need for updating the knowledge in the chosen field and imbibing learning tolearn skills.

Teaching- Learning & Evaluation

Week	Topic/ Contents	Course Outcomes	Sample questions	Teaching learning strategy	Assessment method & schedule
1	OSImodel, Unix standards, TCP and UD, TCP connection establishment andtermination,	CO1	1. Explain OSI model. 2. Explain UNIX Standards. 3. Differentiate between TCP and UDP.	Lecture	Assignment-1, Test- 1 Quiz-1
2	Buffer sizes and limitations, Standard Internet services,Protocol usage by common internet applications	CO1	1. What are different classifications of ports? 2. Explain standard internet services.	Lecture	Assignment-1, Test- 1 Quiz-1
3	Address structures, Value – result arguments, Byte orderingand manipulation functions and related functions	CO2	1. Explain the socket address structure for IPV4. 2. Draw the block diagram of TCP Client Server Communication. 3. Explain about byte ordering functions.	Lecture Programming	Assignment-1, Test- 1 Quiz-1
4	Elementary TCP sockets– socket, connect, bind, listen, accept,	CO2	1. Explain bind function.	Lecture Programming	Assignment-1, Test- 1 Quiz-1
5	fork and exec functions,concurrent servers, close function and related functions.	CO2	1. Explain about fork () and exec () functions	Lecture Programming	Assignment-1, Test- 1 Quiz-1
6	Introduction, TCP Echo serverand client functions, Normal startup and Termination, Signal handling	CO3	1. Explain the steps in iterative echo client server communication. 2. Explain about signal handling.	Lecture	Assignment-1,2, Quiz-1, Test-1, 2
7	Server process termination, Crashing and Rebooting of server host,Shutdown of server host.	CO3	1. Explain the steps in the process of normal startup. 2. Explain about netstat and ps commands.	Lecture	Assignment-2, Test- 2, Quiz-2
8	Test 1				
9	I/O Models, select function, Batch input,shutdown function	CO3	1. What is IO multiplexing? How to achieve it. 2. Explain about select () function.	Lecture Programming	Assignment-2, Test- 2, Quiz-2
10	poll function, TCP Echo server. : Introduction, recvfrom	CO3, CO4	1. Explain about poll () function. 2. Explain about Batch input	Lecture	Assignment-2, Test- 2, Quiz-2

	and sendtofunctions		and buffering. 3. Differentiate between synchronous and asynchronous IO models.	Programming	
11	UDP Echo server and client functions, Lost datagrams, , Lackof flow control with UDP	CO4	1. Draw the block diagram for UDP Client Server communication. 2. Differentiate between read () and recvfrom () functions. 3. Differentiate between write () and sendto () functions.	Lecture Programming	Assignment-2, Test- 2, Quiz-2
12	determining outgoing interface with UDP, TCPand UDP echo server using select.	CO4	1. How to verify the lack of flow control with UDP. 2. How to find out the outgoing interface of UDP.	Lecture Programming	Assignment-2, Test- 2, Quiz-2
13	DNS,gethostbyname function, Resolver option,	CO4	1. Explain the entries of DNS. 2. Explain the structure hostent and explain gethostbyname() and gethostbyaddr() functions. 3. Explain the structure servent and explain getservbyname() and getservbyport() functions.	Lecture	Assignment-2, Test- 2, Quiz-2
14	gethostbyname2 functionand IPV6 support, uname function, getserverbyname and getservbyportfunctions , other networking information.	CO4	1. Explain about uname() function. 2. Which functions are supported by IPV6 to resolve its ip address?	Lecture	Assignment-2, Test- 2, Quiz-2
15	Introduction, File and record locking, Pipes, FIFOs, streams andmessages,	CO5	1. What is inter process communication? 2. What are the limitations of pipes? 3. Explain about named pipies.	Lecture Programming	Assignment-2, Test- 2, Quiz-2
16	Name spaces, system V IPC, Message queues, Semaphores,Shared memory	CO5	1. What are the different types of IPC? 2. Explain about message queue?	Lecture Programming	Assignment-2, Test- 2, Quiz-2
17	TEST-2				