ViswambharaEducationalSociety

VAAGDEVI DEGREE & P.G.COLLEGE

Kishanapura, Hanamkonda, T.S

(Approvedby A.I.C.T.E.,NewDelhi, Affiliatedto Kakatiya University & TSCHE)

DEPARTMENT OF M.SC COMPUTER SCIENCE

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KAKATIYA UNIVERSITY
WARANGAL-506009

M.Sc. (Computer Science) Syllabus

Under the

CHOICE BASED CREDIT SYSTEM
(With effect from 2017-18 onwards)

DEPARTMENT OF COMPUTER SCIENCE

University College, KU, Warangal-506009

M.SC. I YEAR I SEMESTER:

Paper No	Paper Title/Subject	Workload Per Week (Theory & Lab)	MARKS			CREDITS
			Internal	External	Total	
MSCCS111	DISCRETE MATHEMATICS	04	20	80	100	4
MSCCS112	OOPS WITH JAVA	04	20	80	100	4
MSCCS113	OPERATING SYSTEMS	04	20	80	100	4
MSCCS114	COMPUTER NETWORKS	04	20	80	100	4
MSCCS115	OOPS WITH JAVA LABORATORY	04	0	75	75	3
MSCCS116	OPERATI NG SYSTEM LABORATORY	04	0	75	75	3
MSCCS117	COMPUTER NETWORK S LABORATORY	04	0	75	75	3
MSCCS118	SEMINAR	--	25		25	1
					650	26

MSCCS115	OOPS WITH JAVA LAB	SLL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

The concepts covered in the corresponding theory paper are to be implemented.

MSCCS116	OPERATING SYSTEMS LAB	OSL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

1. Simulate the following CPU Scheduling algorithms
    a) Round Robin
    b) SJF
    c) FCFS
    d) Priority
2. Simulate all file allocation strategies.
    a) Sequential
    b) Indexed
    c) Linked
3. Simulate MVT and MFT
4. Simulate all File organization techniques.
    a) Single level directory
    b) Two level
    c) Hierarchical
    d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm Dead Lock Prevention.
7. Simulate all Page replacement algorithms.
    a) FIFO
    b) LRU
    c) LFU
    d) Etc….
8. Simulate Paging Techniques of memory management.
9. Shell Programming.
    a) Writing Simple shell scripts
    b) Control structures - sequence, selection, iteration
    c) Pipes & Redirections
    d) Passing arguments to shell programs
    e) Simple programs using system calls
10. UNIX System Administration:
    a) User account maintenance
    b) Security
    c) Print jobs
    d) Backup
    e) Package installations
    f) Resource management
    g) Device drivers

MSCCS116	COMPUTER NETWORKS LAB	NAPL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

PART A – Simulation Exercises

The following experiments shall be conducted using either NS228/OPNET or any other simulators.

1. Simulate a three nodes point-to-point network with duplex links between them. Set the queue size vary the bandwidth and find the number of packets dropped.
2. Simulate a four node point-to-point network, and connect the links as follows: n0- n2, n1-n2 and n2-n3. Apply TCP agent between n0-n3 and UDP n1-n3. Apply relevant applications over TCP and UDP agents changing the parameter and determine the number of packets by TCP/UDP.
3. Simulate the different types of Internet traffic such as FTP a TELNET over a network and analyze the throughput.
4. Simulate the transmission of ping messaged over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.
5. Simulate an Ethernet LAN using N-nodes(6-10), change error rate and data rate and Compare the throughput.
6. Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and determine collision across different nodes.
7. Simulate an Ethernet LAN using N nodes and set multiple traffic nodes and plot congestion window for different source/destination.
8. Simulate simple ESS and with transmitting nodes in wire-less LAN by simulation And determine the performance with respect to transmission of packets.

M.SC. I YEAR II SEMESTER:

Paper No	Paper Title/Subject	Workload Per Week (Theory & Lab)	Marks			CREDITS
			Intern al	External	Total	
MSCCS121	COMPUTER ORGANIZATION	04	20	80	100	4
MSCCS122	ADVANCED JAVA	04	20	80	100	4
MSCCS123	UNIX NETWORK PROGRAMING	04	20	80	100	4
MSCCS124	SOFTWARE ENGINEERING	04	20	80	100	4
MSCCS125	ADVANCED JAVA LABORATORY	04	0	75	75	3
MSCCS126	UNIX NETWORK PROGRAMING LABORATORY	04	0	75	75	3
MSCCS127	SOFTWARE ENGINEERIG LABORATORY	04	0	75	75	3
MSCCS128	SEMINAR	--	25		25	1
					650	26

MSCCS125	ADVANCED JAVA LAB	ADJL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

The concepts covered in the corresponding theory paper are to be implemented.

MSCCS126	UNIX NETWORK PROGRAMMING LAB	UNPL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

Programs Using UNIX or LINUX

1. Write a program that takes one or more file/directory names as command line input and reports the following information on the file:
    a. File type
    b. Number of links
    c. Time of last access
    d. Read, Write, Execution permissions.
2. Write a 'C' program that illustrates how to execute two commands concurrently with a command pipe.
3. Write a 'C' program that illustrates the creation of child process using fork system call.
4. Write a 'C' program that illustrates the real time of a day every 60 seconds.
5. Write a 'C' program that illustrates implementation of ls command.
6. Write a 'C' program that illustrates simple file locking.
7. Write a 'C' program that illustrates to read or write from a file.
8. Write a 'C' program that illustrates the following a. Creation of FIFO
    b. Reading from FIFO
    c. Writing on to the FIFO.
9. Write a 'C' program that illustrates sending the data from parent to child using PIPE System Call.
10. Write a 'C' program which displays the current working directory by using **popen**.
11. Write a 'C' program that illustrates the file locking using semaphores.
12. Write a 'C' program that illustrates Read or Write operation using semaphore.
13. Write a 'C' program that illustrates the creation of shared memory.
14. Write a 'C' program that illustrates inter-process communication using shared memory system calls.
15. Write a 'C' program that illustrates the following a. Creating a message queue
    b. Writing to a message queue
    c. Reading from a message queue

BOOK FOR REFERENCE:

1. Unix The C Odyssey - M. Gandhi, Shetti, Shah (Bpb Publications)
2. Unix Network Programming - W. Richard Stevens

MSCCS217	SOFTWARE ENGINEERING LAB	STL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

SOFTWARE TESTING – Introduction, purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs. Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle. Basic Structural Modeling: Classes, Relationships, Class & Object Diagrams. Interactions, Interaction diagrams, Use cases, Use case Diagrams, Activity Diagrams, Component, Deployment, Component diagrams and Deployment diagrams; Caste Study on Unified Library Application(ULA).

To learn and use the testing tools to carry out the functional testing, load/stress testing and use the following (or similar) automated testing tools to automate testing:

a) Win Runner/QTP for functional testing.
b) Load Runner for Load/Stress testing.
c) Test Director for test management.

List of Sample Programs /Experiments

1. The student should take up the case study of Unified Library Application (ULA) which is mentioned in the theory, and Model it in different views i.e Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.

2. Student has to take up another case study of his/her own interest and do the same whatever mentioned in first problem. Some of the ideas regarding case studies are given in reference books which were mentioned and it would be referred for some new idea.

REFERENCE BOOKS:

1. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech
2. Software Testing Concepts and Tools, P.Nageswara Rao, Dreamtech Press.
3. Grady Booch, James Rumbaugh, Ivan Jacobson : The Unified Modeling Language User Guide, Pearson Education 2nd Edition

M.SC. II YEAR I SEMESTER:

Paper No	Paper Title/Subject	Workload Per Week (Theory & Lab)	M			CREDITS
			Internal	External	Total	
MSCCS211	AUTOMATA THEORY AND FINITE LANGUAGES	04	20	80	100	4
MSCCS212	DATA WAREHOUSING AND MINING	04	20	80	100	4
MSCCS213 **Elective-1**	a) .NET PROGRAMMING b) PYTHON PROGRAMMING	04	20	80	100	4
MSCCS214 **Elective-2**	a) PHP PROGRAMMING b) PROGRAMMING WITH R	04	20	80	100	4
MSCCS215	DATA WAREHOUSING AND MINING LAB	04	0	75	75	3
MSCCS216 **Elective-1**	a) .NET PROGRAMMING LAB b) PYTHON PROGRAMMING LAB	04	0	75	75	3
MSCCS217 **Elective-2**	c) PHP PROGRAMMING a) PROGRAMMING WITH R LAB	04	0	75	75	3
MSCCS218	SEMINAR	--	25		25	1
					675	27

MSCCS215	DATA MINING LABORATORY	DML
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a datasets#. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization.

Launching WEKA, COMMAND-LINE(simple CLI), EXPLORER-User Interface, Preprocessing, Classification, Clustering, Associating, Selecting Attributes, Visualizing; EXPERIMENTER-Simple, Advanced; KNOWLEDGEFLOW-Introduction, Features, Components; ArffViewer; Converters;etc.,

RESOURCES:

Manuals and Software:

- http://www.cs.waikato.ac.nz/ml/weka/index.html

Collections of Datasets:

- # http://www.cs.waikato.ac.nz/ml/weka/datasets.html

MSCCS216 ELECTIVE- 1 (A)	.NET PROGRAMMING LABORATORY	.NETL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

- The concepts covered in the corresponding theory paper are to be implemented.

MSCCS216 ELECTIVE-1 (B)	PYTHON PROGRAMMING LABORATORY	PPL
WORK LOAD: 4 PPW	REVIEW ASSESSMENT	EXTERNAL MARKS: 50

- The concepts covered in the corresponding theory paper are to be implemented.

MSCCS217 ELECTIVE-2 (A)	PHP PROGRAMMING LABORATORY	PHPL
WORK LOAD: 0 4	INTERNAL MARKS: 00	EXTERNAL MARKS: 50

- The concepts covered in the corresponding theory paper are to be implemented.

MSCCS217 ELECTIVE-2 (B)L	PROGRAMMING WITH R LABORATORY	PRL
WORK LOAD: 0 4	INTERNAL MARKS: 00	EXTERNAL MARKS: 50

- The concepts covered in the corresponding theory paper are to be implemented.

MSCCS218	SEMINAR	S
WORK LOAD: 0 2	INTERNAL MARKS: 25	EXTERNAL MARKS: 00

- This course is meant to give students practice of speaking in front of an audience and to explore topics of their own choosing in detail.
- Students have to search topics and organize presentations for faculty and other students. The topics may be any aspect of the Computer science and must be approved by the instructor in advance.
- To improve students speaking skills, each student has to receive feedback from the fellow students and the instructor.

Expectations:

- Attendance at each seminar is mandatory for all students enrolled.
- In addition, students are expected to attend all other seminars in the department, such as invited guest speakers. It is expected that students will actively participate by asking questions of the speaker.
- The effort by students to meet these expectations will be considered in the determination of your final grade.

M.SC. II YEAR II SEMESTER:

Paper No	Paper Title/Subject	Workload Per Week (Theory & Lab	Marks			CREDITS
			Internal	External	Total	
MSCCS221	ARTIFICAL INTELLIGENCE	04	20		100	4
MSCCS222	a) CRYPTOGRAPHY AND NET WORK SECURITY b) MOBILE COMPUTING	04	20		100	4
MSCCS223	a) BIG DATA ANALYTICS b) CLOUD COMPUTING	04	20		100	4
MSCCS224	MAJOR PROJECT	--	75	175	250	10
MSCCS225	COMPREHENSIVE VIVA	--	00	75	75	3
	SEMINAR	--	25	00	25	1
					650	26

MSCCS224	MAJOR PROJECT	MP
WORK LOAD: 0 0	INTERNAL MARKS: 75	EXTERNAL MARKS: 175

The Project work constitutes a major component in most professional programmes. It needs to be carried out with due care, and should be executed with seriousness by the students. The project work is not only a partial fulfilment of the MSC requirements, but also provide a mechanism to demonstrate ASK (Attitude, Skills, and Knowledge) with specialisation. The project work should compulsorily include the software development. Physical installations/configuring of LAN/WAN or theoretical projects or study of the systems, which doesn't involve s/w development, *ARE STRICTLY NOT ALLOWED*.

The students are expected to work on a real-life project preferably in some industry/ R&D Laboratories / Educational Institution / Software Company. Students are encouraged to work in their interested area. The student can formulate a project problem with the help of his / her Guide of the concerned college. APPROVAL OF THE PROJECT PROPOSAL IS MANDATORY by his/her Guide. If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project. Project problem domain selected and the specifications should be genuine.

MSCCS225	COMPREHENSIVE VIVA	CV
WORK LOAD: 0 0	INTERNAL MARKS: 00	EXTERNAL MARKS: 50

- Conducting Comprehensive viva-voce to test the overall understanding on the various fields related to Computer Science and allied subjects.

- Most important is, need to be aware of the entire syllabus of computer science right from your first year. Be thorough with at least the content in that particular subject; recall all the units and prepare for probable questions.