Semester-7

M.D.UNIVERSITY, ROHTAK

Scheme of studies & Examination
Bachelor of Engineering (Computer Science & Engineering)
Scheme of studies / Examination
SEMESTER VII

Modified 'E' Scheme effective from 2006-07

Sl. No.	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)
			L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	CSE-401 E	Advanced Computer Architecture	3	1	-	4	50	100	-	150	3
2	CSE-403 E	Software Project Management (CSE,IT)	3	1	-	4	50	100	-	150	3
3	CSE-405 E	Compiler Design	3	1	-	4	50	100	-	150	3
4		OPEN ELECTIVES-1*	4	-	-	4	50	100	-	150	3
5	CSE-407E	Neural Networks	3	1	-	4	50	100	-	150	3
6	CSE-411-E	Compiler Design Lab.	-	-	3	3	25	-	50	75	3
7	CSE-409-E	Visual Programming Lab. (CSE, IT)	-	-	3	3	25	-	50	75	3
8	CSE-413 E	PROJECT	-	-	4	4	50	-	-	50	3
9	CSE-415 E	Mini Project	-	-	2	2	-	-	-	-	-
		TOTAL	**16**	**4**	**12**	32	350	500	100	950	

List of Open Electives

1	HUM-451-E	Language Skills for Engineers	8	CSE-451-E	Artificial Intelligence & Expert Systems
2	HUM-453-E	Human Resource Management	9	CSE-303-E	Computer Graphics
3	HUM-457-E	Business Communication	10	IC-455-E	Intelligent Instrumentation for Engineers
4	HUM-455-E	Entrepreneurship	11	IC-403-E	Embedded Systems
5	PHY-451-E	Nano technology	12	CH-453-E	Pollution & Control
6	PHY-453-E	Laser Technology	13	IT-471-E	Management Information System
7	ME-451-E	Mechatronics Systems	14	IT-204-E	Multimedia Technologies

Note:

1. **Students will be allowed to use non-programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.**
2. ***Student will be permitted to opt for any one elective run by the other departments. However, the departments will offer only those electives for which they have expertise. The choice of the students for any elective shall not be a binding for the department to offer, if the department does not have expertise.**
3. **Assessment of Mini Project, carried out at the end of VI semester, will be based on seminar, viva-voce and project report of the student from the industry. According to performance, letter grades A, B, C, F are to be awarded. A student who is awarded 'F' grade is required to repeat Practical Training.**

4. **Project load will be treated as 2 hours per week for Project Coordinator and 1 hour for each participating teacher. Project will commence in VII semester where the students will identify the Project problem, complete the design/procure the material/start the fabrication/complete the survey etc., depending upon the nature of the problem. Project will continue in VIII semester.**

CSE-401 E **Advanced Computer Architecture**

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

Unit–1: Architecture And Machines: Some definition and terms, interpretation and microprogramming. The instruction set, Basic data types, Instructions, Addressing and Memory. Virtual to real mapping. Basic Instruction Timing.

Unit–2: Time, Area And Instruction Sets: Time, cost-area, technology state of the Art, The Economics of a processor project: A study, Instruction sets, Professor Evaluation Matrix

Unit-3: Cache Memory Notion: Basic Notion, Cache Organization, Cache Data, adjusting the data for cache organization, write policies, strategies for line replacement at miss time, Cache Environment, other types of Cache. Split I and D-Caches, on chip caches, Two level Caches, write assembly Cache, Cache references per instruction, technology dependent Cache considerations, virtual to real translation, overlapping the Tcycle in V-R Translation, studies. Design summary.

Unit–4: Memory System Design: The physical memory, models of simple processor memory interaction, processor memory modeling using queuing theory, open, closed and mixed-queue models, waiting time, performance, and buffer size, review and selection of queueing models, processors with cache.

Unit–5: Concurrent Processors: Vector Processors, Vector Memory, Multiple Issue Machines, Comparing vector and Multiple Issue processors.

Shared Memory Multiprocessors: Basic issues, partitioning, synchronization and coherency, Type of shared Memory multiprocessors, Memory Coherence in shared Memory Multiprocessors.

Text Book:

- Advance computer architecture by Hwang & Briggs, 1993, TMH.

Reference Books:

- Pipelined and Parallel processor design by Michael J. Fiynn – 1995, Narosa.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

Text Books:

1. Kai Hwang, “Advanced Computer Architecture,” McGraw-Hill.
2. Hwang and Briggs, “Computer Architecture and Parallel Processing,” McGrawHill.
3. Parallel computing theory and practice by MICHAEL J. QUINN, McGraw Hill series in computer series, second edition, 1994 (or later edition)
4. Advanced Computer Architecture parallelism scalbiting, programmability KAI HWANG, Mcgraw Hill series in computer edition, 1993 (or later)

References:

1. The Design and Analysis of parallel algorithm-s.g. akL Prentice Hall, Englewood Cliffs, Nj (1989)
2. Modern Operating System- A.S. Tanenbaum Prentice Hall of India
3. Parallel Programming-R.H. Perrott, Addison-Wesley

CSE-403 E Software Project Management

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

Unit-1: Introduction to Software Project Management (SPM): Definition of a Software Project (SP), SP Vs. other types of projects activities covered by SPM, categorizing SPs, project as a system, management control, requirement specification, information and control in organization.

Unit-2: Stepwise Project planning: Introduction, selecting a project, identifying project scope and objectives, identifying project infrastructure, analyzing project characteristics, identifying project products and activities, estimate efforts each activity, identifying activity risk, allocate resources, review/ publicize plan.

Unit-3: Project Evaluation & Estimation: Cost benefit analysis, cash flow forecasting, cost benefit evaluation techniques, risk evaluation. Selection of an appropriate project report; Choosing technologies, choice of process model, structured methods, rapid application development, water fall-, V-process-, spiral- models. Prototyping, delivery. Albrecht function point analysis.

Unit-4: Activity planning & Risk Management: Objectives of activity planning, project schedule, projects and activities, sequencing and scheduling activities, network planning model, representation of lagged activities, adding the time dimension, backward and forward pass, identifying critical path, activity throat, shortening project , precedence networks.

Risk Management: Introduction, the nature of risk, managing risk, risk identification, risk analysis, reducing the risks, evaluating risks to the schedule, calculating the z values..

Unit-5: Resource allocation &Monitoring the control: Introduction, the nature of resources, identifying resource requirements, scheduling resources creating critical paths, counting the cost, being specific, publishing the resource schedule, cost schedules, the scheduling sequence.

Monitoring the control: Introduction, creating the frame work, collecting the data, visualizing progress, cost monitoring, earned value, prioritizing monitoring, getting the project back to target, change control.

Unit-6: Managing contracts and people: Introduction, types of contract, stages in contract, placement, typical terms of a contract, contract management, acceptance, Managing people and organizing terms: Introduction, understanding behavior, organizational behavior: a back ground, selecting the right person for the job, instruction in the best methods, motivation, working in groups, becoming a team, decision making, leadership, organizational structures, conclusion, further exercises..

Unit-7: Software quality: Introduction, the place of software quality in project planning, the importance of software quality, defining software quality, ISO 9126, Practical software quality measures, product versus process quality management, external standards, techniques to help enhance software quality.

Unit-8: Study of Any Software Project Management software: viz Project 2000 or equivalent

Text Book:

- Software Project Management (2nd Edition), by Bob Hughes and Mike Cotterell, 1999, TMH

Reference Books:

- Software Engineering – A Practitioner's approach, Roger S. Pressman (5th edi), 2001, MGH
- Software Project Management, Walker Royce, 1998, Addison Wesley.
- Project Management 2/c. Maylor
- Managing Global software Projects, Ramesh, 2001, TMH.

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-405-E Compiler Design

L	T	P
3	1	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

Unit–1: Introduction To Compilers: Compilers and translators, need of translators, structure of compiler :its different phases, Compiler construction tools.

Unit–2: Lexical Analysis: Role of lexical analyzer, design of lexical analyzer, regular expressions , Specification and recognition of tokens, input buffering, A language specifying lexical analyzer. Finite automata, conversion from regular expression to finite automata, and vice versa, minimizing number of states of DFA, Implementation of lexical analyzer.

Unit–3: Syntax Analysis: Role of parsers, context free grammars, definition of parsing.

Unit–4: Parsing Technique: Shift- reduce parsing, operator precedence parsing, top down par sing, predictive parsing.

Unit–5: LR parsers, SLR, LALR and Canonical LR parser.

Unit–6: Syntax Directed Translations: Syntax directed definition, construction of syntax trees, syntax directed translation scheme, implementation of syntax directed translation, three address code, quadruples and triples.

Unit–7: Symbol Table & Error Detection And Recovery: Symbol tables, its contents and data structure for symbol tables; trees, arrays, linked lists, hash tables. Errors, lexical phase error, syntactic phase error, semantic error.

Unit–8: Code Optimization & Code Generation: Code generation, forms of objects code, machine dependent code, optimization, register allocation for temporary and user defined variables.

Text Books:

- Compilers Principle, Techniques & Tools - Alfread V. AHO, Ravi Sethi & J.D. Ullman; - 1998Addison Wesley.
- Compiler Design by O.G. Kakde, 1995, Laxmi Publ.

Reference Books:

- Theory and practice of compiler writing, Tremblay & Sorenson, 1985, Mc. Graw Hill.
- System software by Dhamdae, 1986, MGH.
- Principles of compiler Design, Narosa Publication

Note: Eight questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

CSE-411- E **COMPILER DESIGN LAB**

L	T	P
-	-	3

Class Work: 25
Exam: 50
Total: 75
Duration of Exam: 3Hrs.

1. Practice of LEX/YACC of compiler writing.
2. Write a program to check whether a string belong to the grammar or not.
3. Write a program to generate a parse tree.
4. Write a program to find leading terminals.
5. Write a program to find trailing terminals.
6. Write a program to compute FIRST of non-terminal.
7. Write a program to compute FOLLOW of non-terminal.
8. Write a program to check whether a grammar is left Recursion and remove left Recursion.
9. Write a program to remove left factoring.
10. Write a program to check whether a grammar is operator precedent.
11. To show all the operations of a stack.
12. To show various operations i.e. red, write and modify in a text file.

Note : At least 10 programs are required to be developed in the semester.

CSE-409 E **Visual Programming Lab.**

L	T	P
-	-	3

Class Work: 25
Exam: 50
Total: 75
Duration of Exam: 3 Hrs.

Study of Visual Basic 6.0.NET and Visual C++ 6.0.NET.

1) Study Windows API's. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.
2) Get familiar with essential classes in a typical (Document- view architecture) VC++ Program and their relationship with each other.
3) Create an SDI application in VC++ that adds a popup menu to your application which uses File drop down menu attached with the menu bar as the pop-up menu. The pop-up menu should be displayed on the right click of the mouse.
4) Create an SDI application in VC++ using which the user can draw atmost 20 rectangles in the client area. All the rectangles that are drawn should remain visible on the screen even if the window is refreshed. Rectangle should be drawn on the second click of the left mouse button out of the two consecutive clicks. If the user tries to draw more than 20 rectangles, a message should get displayed in the client area that " No more rectangles can be drawn"
5) Create an application in VC++ that shows how menu items can be grayed, disabled and appended at run time.
6) Write a program in VC++ to implement serialization of inbuilt and user defined objects.
7) Write a program in VC++ to create archive class object from CFile class that reads and stores a simple structure (record).
8) Make an Active X control in VC++ derived from a standard control.
9) Write a program in VB to implement a simple calculator.
10) Create a simple database in MS Access Database /Oracle and a simple database application in VB that shows database connectivity through DAO and ADO.
11) Write a simple program that displays an appropriate message when the illegal operation is performed using error handling technique in VB.
12) Write a program in VB to create a notepad.
13) Create a DLL in VB.

Bright students may do the following exercises:

14) Write a program in VC++ to implement a simple calculator.
15) Write a program in VC++ to create a static link library and a dynamic link library.
16) Create a simple database in MS Access Database and a simple database application in VC++ that shows database connectivity through ADO model.
17) Make an Active X control of your own using VB.
18) With the help of VB, create an object of excel application and implement any action on it.

CSE-407- E **Neural Networks**

L	T	P
4	-	-

Class Work: 50
Exam: 100
Total: 150
Duration of Exam: 3 Hrs.

Unit-1: Overview of biological neurons: Structure of biological neurons relevant to ANNs.

Unit-2: Fundamental concepts of Artificial Neural Networks: Models of ANNs; Feedforward & feedback networks; learning rules; Hebbian learning rule, perception learning rule, delta learning rule, Widrow-Hoff learning rule, correction learning rule, Winner –lake all elarning rule, etc.

Unit-3: Single layer Perception Classifier: Classification model, Features & Decision regions; training & classification using discrete perceptron, algorithm, single layer continuous perceptron networks for linearlyseperable classifications.

Unit-4: Multi-layer Feed forward Networks: linearly non-seperable pattern classification, Delta learning rule for multi-perceptron layer, Generalized delta learning rule, Error back-propagation training, learning factors, Examples.

Unit-5: Single layer feed back Networks: Basic Concepts, Hopfield networks, Training & Examples.

Unit-6: Associative memories: Linear Association, Basic Concepts of recurrent Auto associative memory: rentrieval algorithm, storage algorithm; By directional associative memory, Architecture, Association encoding & decoding, Stability.

Unit-7: Self organizing networks: UN supervised learning of clusters, winner-take-all learning, recall mode, Initialisation of weights, seperability limitations

Text Books:

- Introduction to artificial Neural systems by Jacek M. Zurada, 1994, Jaico Publ. House.

Reference Books:

- "Neural Networks :A Comprehensive formulation", Simon Haykin, 1998, AW
- "Neural Networks", Kosko, 1992, PHI.
- "Neural Network Fundamentals" – N.K. Bose , P. Liang, 2002, T.M.H

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