COURSE TITLE: PROFESSIONAL SKILLS IN COMPUTER

Course objectives:

1. To understand the services provided by and the design of an operating system.
2. To understand the structure and organization of the file system.
3. To understand what a process is and how processes are synchronized and scheduled.
4. To understand different approaches to memory management.
5. Students should be able to use system calls for managing processes, memory and the file System.

PAPER I – OPERTAING SYSTEM

SR. NO.	TOPIC	NO. OF HOURS
UNIT – I	**Overview of operating systems** - functionalities and Objectives of OS. Processor Registers, Instruction Execution, Interrupts, Types of Interrupts, Process management, process concepts: - Process States, Process Control Block, Process and Threads, Processor Scheduling, Scheduling algorithms,	3
UNIT – II	**Principles of Concurrency** - critical sections -. Mutual exclusion - process co-operation, I.P.C.Deadlock:- prevention, detection, avoidance, dining Philosophers'Problem Semaphores: definition, init, wait, signal operations. Monitors, Message Passing,	6
UNIT – III	**Memory management**: Virtual memory concepts- paging and segmentation, address mapping. Virtual storage management, page replacement strategies.	3
UNIT – IV	**File organization:** - blocking and buffering, file descriptor, File and Directory structures, I/O Devices, Disk Scheduling **,**Security: - Security Threats, Protection, Trusted Systems, Windows Security Coordinated Case Study of Unix and Windows.	4

Reference Books:

1. Silberschatz, Galvin, Gagne —Operating System Concepts —8th Edition-John Willey & Sons INC, 2009
2. Andrew Tanenbaum, Modern Operating Systems, Prentice Hall.
3. Harvey M. Deitel, An introduction to operating systems. Addison-Wesley.

Student Activity:

Sr.No	Activity
1	Load any new operating system into your computer.
2	Partition the memory in your system
3	Create a semaphore for process synchronization
4	Given the list of processes, their CPU burst times and arrival times, display/print the Gantt Chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time.
5	Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average Waiting time and average turnaround time.
6	Developing applications using Inter Process Communication (using shared memory, pipes or Message queues)
7	Implement the Producer – Consumer problem using semaphores
8	Implement any two memory management schemes
9	Implement any two file allocation techniques (Linked, Indexed or Contiguous)
10	Implement any two Page Replacement Algorithms
11	Implement Deadlock prevention algorithm.
12	Implement any two disk scanning algorithms

Marking Scheme:

Student Activity Work	50 Marks
Theory Examination	50Marks

COURSE TITLE: PROFESSIONAL SKILLS IN COMPUTER

PAPER II- SOFTWARE ENGINEERING AND SOFTWARE TESTING METHODOLOGIES

Course objectives:
1. To define and highlight importance of software project management.
2. To formulate strategy in managing projects
3. To estimate the cost associated with a project
4. To plan, schedule and monitor projects for the risk management
5. To define the software management metrics.

SR. NO.	TOPIC	NO. OF HOURS
UNIT – I	**Introduction** Software Engineering Process paradigms - Project management – Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk Analysis - Software project scheduling. **Requirements analysis :**Requirement Engineering Processes – Feasibility Study –Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles Analysis Process ,Analysis Model	3
UNIT – II	**Software design:** Software design - Abstraction - Modularity - Software Architecture -Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.	3
UNIT – III	**Introduction:** Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of Bugs. **Flow Graphs and Path testing:** Basics concepts of path testing, predicates, path predicates and Achievable paths, path sensitizing, path instrumentation, application of path testing.	4
UNIT – IV	**Transaction Flow Testing:** Transaction flow, transaction flow testing techniques. **Dataflow testing:** Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing. **Domain Testing:** domains and paths, Nice & ugly domains, domain testing domains and interfaces Testing, domain and interface testing, domains and testability. **Paths, Path products and Regular Expressions:** Path products & path expression, reduction procedure, Applications, regular expressions & flow anomaly detection. **Logic Based Testing:** Overview, decision tables, path expressions kv charts, specifications.	6

Reference Books:

1. Roger Pressman S., "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw Hill, 2010.
2. Software Engineering Principles and Practice by Deepak jain, Oxford University Press
3. Sommerville, "Software Engineering", Eighth Edition, Pearson Education, 2007
4. Pfleeger, "Software Engineering-Theory & Practice", 3rd Edition, Pearson Education, 2009
5. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, "Fundamentals of Software Engineering", Pearson Education, 2003

Student Activity:
1. Develop requirement analysis report to develop software for any financial organization
2. Develop risk analysis report for any organization using software for its day to day transactions

Testing Tools Lab

1	Introduction to win runner testing tool
2	Recording test in context sensitive & analog mode
3	Synchronizing test.
4	Checking GUI objects
5	Checking bitmap objects.
6	Programming test with tsl
7	Creating data driven test
8	Maintaining test script
9	Batch test
10	Project (creating test report)

Marking Scheme:

Student Activity Work	50 Marks
Mini- Project	50Marks

COURSE TITLE: PROFESSIONAL SKILLS IN COMPUTER

PAPER III- GUI PROGRAMMING LANGUAGE

Course objectives:

1. To understand the visual basic IDE.
2. To understand the object class and class modules.
3. To understand file system and ODBC and ActiveX control.
4. To understand different approaches Event driven programming Language.

SR. NO.	TOPIC	NO. OF HOURS
UNIT – I	**IN Familiarization about the Visual Basic IDE Components.** Getting Starting with Visual Basic 6.0: Introduction to Visual Basic, Visual Basic 6.0 Programming Environment, working with Forms, Developing an Application, Variables, Data types and Modules, Procedures and Control Structures, Arrays in Visual Basic Working with Controls: Introduction, Creating and Using Controls, Working with Control Arrays. Menus, Mouse Events and Dialog Boxes: Introduction, Mouse Events, Dialog Boxes.	4
UNIT – II	**Objects, Classes and Add-Ins** Graphics, MDI and Flex Grid: Introduction, Graphics for application, Multiple Document Interface (MDI), Using Flex Grid Control. Object Linking and Embedding: Introduction, OLE Fundamentals, Using OLE Container Control, Using ILE Automation Objects, OLE Drag and Drop. Objects and Classes: Introduction to Objects. Working with Objects, Classes and Class Modules. Working with Add-Ins: Introduction to Add-Ins, Building Add-Ins.	4
UNIT – III	**File System, ODBC and ActiveX features** File and File system Controls: Introduction, File System Controls, Accessing Files, and Interface with Windows.ODBC and Data Access Objects: Evolution of Computing Architectures, Data Access Options.ODBC using Data Access Objects and Remote Data Objects: Open Database Connectivity, Remote Data Objects. Working with ActiveX Data Objects: An overview of ADO and OLEDB, ADO objects Model.	4
UNIT – IV	**Data Environment ActiveX EXE and DLL** Data Environment and Data Report: Introduction, Data Environment Designer, Data Report. All about ActiveX Controls: Introduction, Constituents of ActiveX Control, Exposing ActiveX Control Properties. ActiveX EXE and ActiveX DLL: Introduction to ActiveX EXE and ActiveX DLL, Creating and ActiveX EXE Component, Creating an ActiveX DLL Component.	4

Reference Books:

1. Visual Basic 6 Complete BPB publication
2. Visual Basic 6.0 Black

Student Activity:

Student activity conducted based on theory using different case studies, Programs, mini project

Marking Scheme:

Student Activity	50 Marks
Theory Examination	50Marks