West Bengal State Council of Technical Education
(A Statutory Body under West Bengal Act XXI of 1995)
Kolkata Karigori Bhavan, 2nd Floor, 110 S. N. Banerjee Road, Kolkata - 700 013.

Format for Syllabus

Name of the Course: SOFTWARE ENGINEERING	
Course Code: CST/5/501	**Semester: Fifth**
Duration:	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	Mid Semester Exam.: 20 Marks
	Attendance, Assignment & Quiz: 10 Marks
	End Semester Exam.: 70 Marks
Credit: 3	

Aim:

Sl. No.	
1.	To learn different software processes and models.
2.	To learn software testing methods.

Objective: Student will be able to

Sl. No.	
1.	Plan & develop the frame work of project.
2.	Compare various project process models & use in project planning
3.	Use the principles of communication, planning, modeling construction & deployment
4.	Apply testing strategies & methods on software projects.
5.	Compare various testing methods.
6.	Identify the duties & responsibilities of People, team leader & stakeholders while planning the software project.
7.	Schedule the project according to time, size, shape, utility & application
8.	Monitor & manage the risk during the design of software project.
9.	Use the parameters of software quality assurance
10.	Calculate the cost of software, using cost estimation models such as COCOMO II.

Pre-Requisite:

Sl. No.	
1.	Basic knowledge of computer is helpful.

Contents (Theory)		Hrs./Unit	Marks
Unit: 1 Name of the Topics: **Overview of Software Engineering & the Software Development Process**	1.1 The evolving Role of software & changing nature of software. 1.2 Software Engineering –A layered Technology approach. 1.3 A process framework & software project tracking & control. 1.4 The Capability Maturity Model Integration technique. 1.5 Process patterns, process Assessment, personal & Team Process models & Process Technology Theories. 1.6 Process Models –Waterfall, Incremental, RAD, Prototype, Spiral.	08	
Unit: 2	2.1 Software Engineering core principles, Communication,	13	

Name of the Topics: **Software Engineering requirements & Development of Analysis & Design models.**	Planning, Modeling, Construction & Deployment principles. 2.2 Requirements Engineering Tasks, Initiating the requirement process. 2.3 Analysis approaches of software & preparation of Analysis model using Data modeling, Concepts, Object-oriented Analysis, Flow oriented model, Class-Based model, Behavioral Model. 2.4 Design approaches of software & preparation of design model using Design concepts, Design model, and pattern based design.		
Unit: 3 Name of the Topics: **Testing Strategies & Methods.**	3.1 Software Testing Fundamentals. 3.2 A Strategic approach to software testing. 3.3 Test Strategies for conventional software, Unit Testing, Integration Testing, Regression testing, smoke testing. 3.4 Validation testing using Alpha & beta testing, system testing using recovery, security, stress & performance testing. 3.5 Black Box & White Box Testing. 3.6 Debugging process strategies.	08	
Unit: 4 Name of the Topics: **Software Project Management**	4.1 The management spectrum – The people, The product, the process & the project. 4.2 Project scheduling – Basic concepts, relationship between people & effort, effort distribution, defining a task for the software project, Defining a task network & scheduling of project. 4.3 Risk Management – Reactive Vs Proactive risk strategies, software Risks, Risk Identification, Risk Projection & Risk refinement, monitoring & management. 4.4 Change Management – SCM scenario, SCM repository & process. 4.5 Formal method & clean room software development & management approach.	10	
Unit: 5 Name of the Topics: **Software Quality Management& Estimation**	5.1 Basic Quality Concepts. 5.2 Software Quality Assurance 5.3 Statistical software quality assurance, 5.4 Six sigma strategy. 5.5 Software Reliability 5.6 The ISO 9000 quality standards 5.7 McCall's quality factors. 5.8 Observations on estimation 5.9 The project Planning process ,software scope & feasibility ,Resources 5.10 Decomposition Techniques **5.11** COCOMO II model & the make / Buy design	06	
Total		**45**	

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Rajib Mall	Fundamental of Software Engineering		PHI
Bell	Software Engineering for Students, 4e		Pearson

Roger S. Pressman	Software Engineering –A Practitioner's Approach		TMH
Sommerville	Software Engineering, 9e		Pearson
Pfleeger	Software Engineering: Theory and Practice, 4e		Pearson
Mishra/ Mohanty	Software Engineering		Pearson
Khurana	Software Engineering: Principles and Practices		Vikas
Rajani Kanta matul	Software Engineering		Scitech
Reference Books:			
Name of Authors	Title of the Book	Edition	Name of the Publisher
Aalam	Application Software Re-engineering		Pearson
James	Software Engineering		PHI
Note:			
Sl. No.			
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**		

Format for Syllabus

Name of the Course: Computer Engineering Group **(JAVA PROGRAMMING)**	
Course Code: CST/5/502	**Semester: FIFTH**
Duration:	**Maximum Marks:100+100 ()**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	Mid Semester Exam.: 20 Marks
Tutorial: hrs./week	Assignment & Quiz: 10 Marks
Practical: 4 hrs./week	End Semester Exam.: 70 Marks
Credit: 3+2	**Practical 50(int) + 50(ext)**
Aim:	
Sl. No.	
1.	To learn & understand various programming paradigms.
2.	To implement platform independent model.
3.	To increase robustness & Security of software.
Objective:	
Sl. No.	Students will able to:
1.	· Design and implement classes and methods
2.	· Understand and implement basic programming constructs
3.	· Apply object oriented features to real time entities
4.	· Differentiate between primitive data types and class data types and implement conversion between them.

5.	· Understand and implement the concept of reusability and extensibility
6.	· Create packages and interfaces and used it in programs
7.	· Design and implement multithreaded programs
8.	· Manage errors and exceptions
9.	· Design and implement applet and graphics programming
10.	· Make use of Data streams in programs
11.	· Write programs by combining all features of Java.

Pre-Requisite:	
Sl. No.	
1.	Basic of Object Oriented Programming

Contents (Theory)		Hrs./Unit	Marks
Unit: 1	**Introduction to Java** 1.1 **Fundamentals of Object Oriented Programming** Object and Classes, Data abstraction and encapsulation,Inheritance, Polymorphism, Dynamic Binding 1.2 Java Features Compiled and Interpreted, Platform independent and portable, Object orientedDistributed, Multithreaded and interactive, High performance 1.3 Constant, Variables and Data TypesConstant, Data Types, Scope of variable, Symbolic Constant, Type casting, Standard default values 1.4 Operator and Expression Arithmetic Operators, Relational Operators, Logical Operators,Assignment Operator Increment and Decrement Operator, ConditionalOperator, Bit wise Operator, Special Operator 1.5 Decision making and Branching Decision making with if statement, Simple if statement, The if elsestatement, The else if ladder, The switch statement, The? : Operator 1.6 Decision making and LoopingThe While statement, The do statement, The for statement, Jumps in Loops, Labeled Loops	**08**	
Unit: 2	2.1 Classes, Object and Methods Defining a class, Creating object, Accessing class members, Constructor,Methods Overloading, Static Member 2.2 Inheritance Extending a Class (Defining a subclass Constructor,Multilevel inheritance, Hierarchical inheritance, Overriding Methods,Final variable and Methods, Final Classes, Abstract method and Classes 2.3 Visibility Control Public access, friend access, Protected access, Private access, PrivateProtected access 2.4 Array, Strings and Vectors Arrays, One Dimensional array, Creating an array, Two	**08**	

	Dimensionalarray, Strings, Vectors, Wrapper Classes		
Unit: 3	**Interfaces and Packages** 3.1 Interface: Multiple Inheritance Defining interfaces, Extending interfaces, Implementing interfaces,Accessing Interface variable 3.2 Packages: Putting Classes Together System Package, Using system Package, Naming Convention, CreatingPackage, Accessing a package, Using a package, adding a class to apackage	**06**	
Unit: 4	**Multithreaded Programming and Exception handling** 4.1 Multi Threading: Creating Thread, Extending a thread class, Stopping and Blocking athread, Life cycle of thread, Using thread method, Thread exceptions,Thread priority, Synchronization, Implementing a 'Runnable'' Interface. 4.2 Managing Errors and Exceptions Types of errors, Exception, Multiple catch statement, using finallystatement, Using Exception for Debugging	06	
Unit: 5	**Java Applets and Graphics Programming** 5.1 Applet Programming Local and remote applets, How applet differ from application, Preparing to write applets, Building applet code, Applet life cycle,Creating an Executable Applet, Designing a Web page, Applet tag,Adding Applet to HTML file, Running the Applet, Passing parameter to applet 5.2 Graphics Programming The Graphics Class, Lines and rectangle, Circle and Ellipse, DrawingArcs, Drawing Polygons, Line Graphs, Using control loops in Applets,Drawing Bar charts	06	
Unit: 6	**Streams and File I/O** 6.1 Stream Classes 6.2 Character Stream, Byte Stream 6.3 Serialization	05	
Unit: 7	**DATA BASE CONNECTIVITY : JDBC** i *Java Data Base Client/ Server* 3.1 Java as a Database front end Database client/server methodology Two-Tier Database Design Three-Tier Database Design *3.2 The JDBC API* The API Components, Limitations Using JDBC(Applications vs. Applets), Security Considerations, A JDBC Database ExampleJDBC Drivers ,JDBC-ODBC Bridge Current JDBC Drivers	**06**	
Total		**45**	

Contents (Practical)	
Sl. No.	Skills to be developed
1.	**Practical:** Skills to be developed:

	Intellectual skills: · Use of programming language constructs in program implementation. · To be able to apply different logics to solve given problem. · To be able to write program using different implementations for the same problem · Study different types of errors as syntax semantic, fatal, linker & logical · Debugging of programs · Understanding different steps to develop program such as · Problem definition · Analysis · Design of logic · Coding · Testing · Maintenance (Modifications, error corrections, making changes etc.)
2.	Motor Skills:· Proper handling of Computer System.

List of Practical:

LIST OF SAMPLE PROBLEMS FOR DATA STRUCTURE LAB(for example)

Write simple programs based on basic syntactical constructs of Java like:
a) Operators and expressions.
b) Looping statements.
c) Decision making statements.
d) Type casting.
2. Write a simple Java program to demonstrate use of command line arguments in Java..
3. Write a Java Program to define a class, describe its constructor, overload the constructors and instantiate its object
4. Write a Java Program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object
5. Write a Java Program to define a class, define instance methods and overload them and use them for dynamic method invocation.
6. Write a Java Program to demonstrate use of sub class
7. Write a Java Program to demonstrate use of nested class.
8.Write a Java Program to practice
- use of single Dimensional array.
- use of multidimensional array.
9. Write a Java Program to implement array of objects.
10.Write a Java program to practice
- using String class and its methods.
- using String Buffer class and its methods.
11. Write a Java Program to implement Vector class and its methods.
12. Write a Java Program to implement Wrapper classes and their methods.
13. Write a Java Program to implement single inheritance by applying various access controls to its data members and methods.
14. Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.
15. Write a Java Program to implement inheritance and demonstrate use of method overriding.
16.Write a program to demonstrate
- Use of implementing interfaces.

- Use of extending interfaces.
17. Write a Java program to implement the concept of importing classes from user defined package and creating packages.
18. Write a program to implement the concept of threading.
19.Write a program to implement the concept of Exception Handling
- using predefined exception.
- by creating user defined exceptions.
20.Write a program to implement the concept of Synchronization for
- object synchronization.
- Method synchronization.
21.Write a program using Applet
- To display a message in the Applet.
- For configuring Applets by passing parameters.
22.Write programs for using Graphics class
- To display basic shapes and fill them.
- draw different items using basic shapes
- set background and foreground colours.
23. Write program to demonstrate use of I/O streams.
24. 14 Write an Application program /Applet to make connectivity with database using JDBC API.
25. Write an Application program/Applet to send queries through JDBC bridge & handle result.

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Ivor Horton's	Beginning Java	7th	Wiley India
Gaddis	Starting Out with Java: From Control Structures through Objects, 4e		Pearson
Debasish Jana	Java and Object Oriented Programming Paradigm		PHI
Horstmann, Cornell	Core Java Vol I		PEARSON
Mahesh P.Matha	Core Java		PHI
Liang	Introduction to Java Programming, 7e		Pearson
Deitel	Java for Programmers		PEARSON
Pandey	**Java Programming**		Pearson
Rao	**Core Java**		Dreamtech
Herbert Schildt	JAVA 2: The Complete Reference		TMH
Murach	Murach's Java Programming		SPD
Mercy Rani	**FAQ's in JAVA**		Scitech
Rakshit	**HandBook of OOP with JAVA**		Schand

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Khandare	Programming in Java		Schand
Malhotra, Choudhary	Programming in Java		OXFORD
Knoernschild	Java Application Architecture: Modularity Patterns with Examples Using OSGi, 1/e		PEARSON
Liang	Introduction to Java Programming, Comprehensive Version, 7e		PEARSON
Rashmi Kanta Das	Basic Java		SCITECH

Suggested list of Laboratory Experiments:

Sl. No.	Laboratory Experiments

1.	java program to perform garbage collection
2.	Java Program to get IP Address
3.	Write a programm for stopwatch.
Suggested list of Assignments / Tutorial:	
Sl. No.	Topic on which tutorial is to be conducted
1.	What are Hash Code and equals in Java?
2.	When to use Comparator and Comparable Interface in java?
3.	How to create an immutable class?
Note:	
Sl. No.	
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**
2.	Question Paper setting tips

Format for Syllabus

Name of the Course: Computer Engineering Group **(OPERATING SYSTEM)**	
Course Code: CST/5/503	**Semester: FIFTH**
Duration:	**Maximum Marks:100 + 50**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	Mid Semester Exam.:20 Marks
Tutorial: hrs./week	Assignment & Quiz: 10 Marks
Practical: 2 hrs./week	End Semester Exam.: 70 Marks
Credit: 3+1	**Practical 25(int) + 25(ext)**
Aim:	
Sl. No.	
1.	To learn Basic concepts of operating systems.
2.	To learn in detail different types of OS.
3.	To learn all functionalities of OS in detail.
Objective:	
Sl. No.	Students will able to:
1.	· Learn the various milestones in the history of operating system and the modern trends in operating system.
2.	· Understand the features and functions of operating systems provided by various system calls.
3.	· Understand a process, deadlock & the concept of context switching & multiprogramming.
4.	· Learn various memory management and file management techniques.
5.	· Understand the tools and the components of the operating system.
6.	· Implement various algorithms of scheduling.
7.	· Compare and contrast the various standard solutions to operating system problems.
8.	· Make best use of facilities that computer systems offer them for solving problems.
9.	· Understand the UNIX vi editor and Unix utilities.

Pre-Requisite:			
Sl. No.			
1.	Handling of Windows OS.		
Contents (Theory)		Hrs./Unit	Marks
Unit: 1	**Introduction** 1.1 Operating system, Evolution, Generations –1st, 2nd, 3rd, 4th. 1.2 Mainframe Systems – Batch, Multi programmed, Multitasking, Time sharing, Desktop. 1.3 Multiprocessor Systems 1.4 Distributed Systems. 1.5 Clustered Systems. 1.6 Real Time Systems. 1.7 Special-Purpose Systems 1.8 Open-Source Operating System	**04**	
Unit: 2	**Operating System Structures** 2.1 System components - Process management, Main memory management, File Management, I/O system management, Secondary storage management. 2.2 Operating system services. 2.3 System calls – Uses, process control, file management, Device management, Information Maintenance, communication**.** 2.4 Operating system structure. Simple structure, layered, monolithic, microkernel. 2.5 Booting 2.6 Virtual Machine	**02**	
Unit: 3	Process Management 3.1 Processes - Concept, process, state, process Control block. 3.2 Process scheduling - Scheduling queues, Scheduler, context switch. 3.3 Operations on processes - creation, termination. 3.4 Inter process communication. Classical problems of synchronization, semaphores. 3.5 Threads - Benefits, user and kernel threads. 3.6 Multithreading Models - Many to one, one to one, many to many.	**06**	
Unit: 4	Scheduling 4.1 Scheduling – Objectives, concept, criteria, CPU and I/O burst cycle. 4.2 Types of Scheduling-Pre-emptive, Non pre-emptive. 4.3 Scheduling Algorithms. First come first served (FCFS), Shortest job first (SJF), Round Robin (RR), Priority. 4.4 Other Scheduling. Multilevel, Multiprocessor, real-time. 4.5 Deadlock. System model, principle necessary conditions, mutual exclusion, critical region.	04	

	4.6 Deadlock handling. Prevention and avoidance.		
Unit: 5	**File System and Memory Management** 5.1 File- Concept, Attributes, Operations, Types, Structure 5.2 Access Methods – Sequential, Direct. 5.3 Swapping 5.4 Allocation Methods – Contiguous, Linked, Indexed. 5.5 Directory Structure – Single level, Two level, Tree Structure. 5.6 Protection –Types of accesses, Access control. 5.7 Basic Memory Management –Partitioning, Fixed & Variable. 5.8 Free Space management techniques – Bitmap ,Linked List. 5.9 Virtual Memory – Concept ,Paging, Page fault ,Page Table. 5.10 Page Replacement algorithms – FIFO(First in First out) ,Optimal Page replacement, LRU (Least recently used),NRU (Not recently used)	08	
Unit: 6	**I/O Management** I/O hardware, polling, interrupts, DMA, application I/O interface (block and character devices, network devices, clocks and timers, blocking and nonblocking I/O), kernel I/O subsystem (scheduling,buffering, caching, spooling and device reservation, error handling), performance.	08	
Unit: 7	**Disk Management** disk structure, disk scheduling (FCFS, SSTF, SCAN,C-SCAN) , disk reliability, disk formatting, boot block, bad blocks.	**06**	
Unit: 8	**Case Studies** 8.1 General overview of Unix System System Structure, Operating System Structure 8.2 Introduction to kernel Kernel data structure, System Administration 8.3 Internal Representation of Files I nodes, Structureof regular file, Super block		
Total		**15**	

Contents (Practical)

Sl. No.	Skills to be developed
1.	**Practical:** Skills to be developed: Intellectual skills: · Understanding syntax of commands · Interpretation of commands · Execution of commands .

	Motor skills: · Proper handling of Computer System. *List of Practical:* 1) Identify the major desktop components, interfaces and their functions .Differentiate the various Windows Operating system.(Windows 9x,Windows NT, Windows 2000& Windows XP. 2) **Use of file and directory manipulation commands** – ls, rm, my, cp, join, split, cat, head, tail, touch, diff, comm., pr, chmod, mkdir, rmdir, cd, pwd, dir, cmp. 3) Use of text processing and communication commands – tr, wc, cut, paste, spell, sort, grep, msg, talk, wall, write, who, who am i ,news, mail. 4) Use of general purpose and process commands- ps, wait, sleep, exit, kill, bc, date, time, cal, clear, banner, tty, script, su, man. 5) Use of vi editor & perform all editor commands. **Study of:** **SHELL PROGRAMMING** i) Shell Script ii) System variables & shell variables. iii) Shell termination. iv) Looping statements; conditional statements; case statements. v) Logical operators, Mathematical expression. vi) Command line parameters – Positional parameters. vii) String handling. 6) Write and execute shell script to display the following output. i) Menu: a) List of files. b) Processes of user. c) Todays date d) Users of the system e) Quit to Unix ii) To check every argument and carry out the following. a) Argument is a directory, then display the number of files and directories present in that directory. b) If argument is a file, then display the size of file. c) If argument does not exist then create the directory. 7) Write and execute the programme to implement round robin scheduling Algorithm. **Study of:** **SYSTEM ADMINISTRATION** i) Adding & Modifying Users accounts, Controlling Password. ii) Creating & Mounting File System. iii) init process &inittabstartup files, Run levels. iv) Managing Disk Space(df , du , cpio) v) Searching Files with find command vi) Using ftp protocol to move files between computers. vii) 'Shutdown' command.
2.	Motor Skills:· Proper handling of Computer System.

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Silberschatz	Operating System Concepts	8th	Wiley

Galvin, Gagne			
Andrew S. Tanenbaum	Modern Operating Systems		PHI
Deitel	Operating System, 3e		PEARSON
Achyut S. Godbole	Operating Systems		Tata McGraw-Hill
R.Chopra	Operating System		S.Chand
Maurice J. Bach	The design of the Unix Operating System		PHI
B.M.Harwani	Unix and Shell Programming		OXFORD
Subhash	UNIX System Programming		PEARSON
Sobell	**Practical Guide to Linux Commands, Editors, and Shell Programming, 3/e**		PEARSON
P.B.Prasad	Operating Systems		Scitech
Khurana	Operating Systems		Vikas

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Tanenbaum	Operating Systems: Design and Implementation, 3rd ed.		pHI
Bhatt	Introduction to Operating Systems, An: Concepts and Practice, 4th ed.		pHI
Chandra mohan	Operating system		pHI
Stallings	Operating Systems 6e (Two Color Edition)		PEARSON
Ramasatish	Unix Programming		Scitech

Suggested list of Laboratory Experiments:

Sl. No.	Laboratory Experiments
1.	Installing windows OS.
2.	Introduction to Linux OS.
3.	C programs in VI editor on linux OS.

Suggested list of Assignments / Tutorial:

Sl. No.	Topic on which tutorial is to be conducted
1.	Solve examples by FCFS and draw gantt chart.
2.	Solve examples by SJF and draw gantt chart.
3.	Solve examples by RR and Priority draw gantt chart.

Note:

Sl. No.	
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**
2.	Question Paper setting tips

West Bengal State Council of Technical Education
(A Statutory Body under West Bengal Act XXI of 1995)
Kolkata Karigori Bhavan, 2nd Floor, 110 S. N. Banerjee Road, Kolkata - 700 013.

Format for Syllabus

Name of the Course: Theory of Computation	
Course Code: CST/5/504	**Semester: FIFTH**
Duration:	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	Mid Semester Exam.: 20 Marks
Tutorial: hrs./week	Attendance, Assignment & Quiz: 10 Marks
	End Semester Exam.: 70 Marks
Credit: 3	

Aim:	
Sl. No.	
1.	Students through this paper will enhance their knowledge in mathematical models of programming languages, computers and capability of a computer.
Objective: Student will be able to	
Sl. No.	
1.	UnderstandAutomata
2.	Able to convert NFA to DFA and vice-versa.
3.	To understand Regular Expression
4.	To understand PDA
5.	To Know Turing Machine and its working principle.

Pre-Requisite:	
Sl. No.	
1.	Basic knowledge of Set theory, graph, tree and relation is helpful.
2.	
3.	

Contents (Theory)		Hrs./Unit	Marks
Unit: 1 Name of the Topics: **Introduction to Theory of Computation**	1.1 Definition of Languages 1.2 Definition of Grammars 1.3 Definition of Automata 1.4 Some applications	4	
Unit: 2 Name of the Topics: **Finite Automata**	2.1 Definition of an Automaton, Definition of finite Automaton, Block diagram of finite Automaton, Transition system, Properties of Transition Functions, Acceptability of a string by Finite Automaton. 2.2 Definition of DFA and NDFA, The equivalence of DFA and NDFA, A theorem on equivalence of DFA and	10	

	NDFA. (Including Applications) 2.3 Mealy and Moore machine, Procedure for Transforming a Mealy Machine into a Moore Machine (with applications), Procedure for Transforming a Moore Machine to a Mealy Machine (with applications).		
Unit: 3 Name of the Topics: **Regular Expressions**	3.1 Definition of Regular expression and regular set, Identities of regular expressions, Arden's theorem (statement & application) 3.2 Relation between regular expression and finite automata, Transition system containing /\-mores (application), Conversion of Non-deterministic systems to deterministic system (application), Construction of finite automata equivalent to a regular expression (with application), Equivalence of two finite automata (application), Equivalence of two regular expressions; Pumping lemma (Statement & application), Closure properties of regular sets, Construction of regular grammar for a given DFA and a transition system for a given regular grammar G.	10	
Unit: 4 Name of the Topics: **Context free Languages**	4.1 Context free Grammars, Example of context free Languages and grammars, Leftmost and rightmost derivation, Derivation tree 4.2 Ambiguity in Context free Grammar and Parse tree, Removal of ambiguity 4.3 Simplification of Context free grammar, Removal of Useless symbols, Removal of Unit production, Removal of ε-Production. 4.4 Chomsky normal form and Greibach normal form.	10	
Unit: 5 Name of the Topics: **Push Down Automata**	5.1 Definition of a Pushdown Automaton 5.2 Two types of acceptance by PDA 5.3 Correspondence between PDA and Context Free Language – PDA corresponding to a given CFG – CFG corresponding to a given PDA – Only Concept of Deterministic PDA and Deterministic CFL.	6	
Unit: 6 Name of the Topics: **Turing Machine**	6.1 Structure and working of a simple Turing Machine. 6.2 Instantaneous description of Turing Machine 6.3 Turing Machine as Language accepter 6.4 Universal Turing Machine.	5	
Total		**45**	

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Kulkarni	Theory of Computation		Oxford
Mishra & Chandrasekaran	Theory of Computer Science (Automata, Languages and Computation)3rd ed.		PHI
Hopcroft	**Introduction to Automata Theory, Languages, and Computation, 3e**		**Pearson**
Kandar	**Introduction to Automata Theory, Formal Languages and Computation**		Pearson

Anami	Formal Languages & Automata Theory		Wiley
Mahesh	Theory of Computation		Wiley
KUMAR	Theory of Automata Languages & Computation		TMH
Kinber	Theory of Computing: A Gentle Introduction		Pearson
Krithivasan	Introduction to Formal Languages, Automata Theory and Computation		Pearson
Moret	The Theory of Computation		Pearson
Agarwal	The Theory of Computation		Vikas
C. Froberg	Introduction to Numerical Analysis		Addison Wesley

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Nagpal	**Formal Language and Automata Theory**		Oxford
Biswas, Chakraborty	**Formal Language and Automata Theory**		JBBL

Note:

Sl. No.	
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**

West Bengal State Council of Technical Education
(A Statutory Body under West Bengal Act XXI of 1995)
Kolkata Karigori Bhavan, 2nd Floor, 110 S. N. Banerjee Road, Kolkata - 700 013.

Format for Syllabus

Name of the Course: Computer Engineering Group **(Network Management and Administration(Elective-I))**	
Course Code: CST/5/505(I)	**Semester: FIFTH**
Duration:	**Maximum Marks: 100 + 50**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	Mid Semester Exam.: 20 Marks
Tutorial: hrs./week	Assignment & Quiz: 10 Marks
Practical: 3 hrs./week	End Semester Exam.: 70 Marks
Credit: 3+2	**Practical 25(int) + 25(ext)**

Aim:	
Sl. No.	
1.	Introduction to computer network
2.	Introduction to network management and Administration
3.	Introduction to network faults and troubleshooting

Objective:	
Sl. No.	Students will able to:
1.	· Compare different types of network.
2.	· Describe the different types of network directory services.
3.	· Design the computer network.
4.	· Design the computer network.
5.	· Know the network management and administration.
6.	· Apply the different types of network technologies for internet connection.
7.	· Troubleshoot and repair the network faults
8.	· Make best use of facilities that computer systems offer them for solving problems.

Pre-Requisite:	
Sl. No.	
1.	Handling of Windows OS.
2.	Basic concept of computer network.
3.	Basic knowledge of network management and Administration.
4.	Basic knowledge of network faults and troubleshooting.

Contents (Theory)		Hrs./Unit	Marks
Unit: 1	**1.1Duties of the System Administrator** Linux as well as other OS Administrator, Steps of Installing and Configuring Servers. 1.2 Planning the Network – describing the Topologies, planning and Implementing the Security. 1.3 Steps of Kick-start Installation- Installing the kickstart Configurator, Boot Loader Option Screen, Partition, Network Configuration, Authentication, Firewall Configuration, Creating a Bootable CD-ROM. 1.4 System Start-up and Shutdown- Examining the Boot Process, Boot Loader, The kernel	**08**	

	1.5. The File system- Understanding the file System Structure, Different OS Supported File Systems. 1.6 Examining the System Configuration Files		
Unit: 2	Network Services: 2.1 Managing the X Window System – Configuring the X Server with the X Configuration Tool, Manually Configuring X Server 2.2 Configuring Printer 2.3 TCP/IP Networking – Understanding Network Class, Configuring the Network, Exploring Directory Services and Remote Network Access. 2.4 The Network File System – NFS overview, Configure an NFS Server, Configure an NFS Client, NFS Security. 2.5 Network Related Jobs – Network Administrator, Network Engineer, Network Architecture / Designer, Other Network Related Jobs. 2.6 Directory Services - Define Directory Services, Definition of Novelle Directory, Windows NT domains, Microsoft's Active Directory, X500 Directory Access Protocol, Lightweight Directory Access Protocol, Forests, Trees, Roots and Leaves. Configuring Samba Server, 2.7 Active Directory Architecture – Object Types, Object Naming, Canonical Names, LDAP Notation, Globally unique identifiers, User Principle Names, Domain, Trees & Forests. 2.8 Remote Network Access – Need of Remote Network Access, Public Switched Telephone Network, Integrated Services Digital Network, Digital Subscriber Line, CATV. 2.9 Virtual Private Network – VPN Protocols, Types of VPNs, VPN Clients, SSL VPNs.	**08**	
Unit 3	Network Connection and Printing Services 3.1 Dynamic Host Configuration Protocol (DHCP) – DHCP Origins, Reverse Address Resolution Protocol (RARP), The Bootstrap Protocol (BOOTP), DHCP Objectives, IP Address Assignment, DHCP Architecture. 3.2 Introduction to Domain Name System(DNS) - DNS Objectives, Domain Naming, Top Level Domains, Second Level Domains, Sub domains, DNS Functions, Resource Records, DNS Name Resolution, Resolves, DNS Requests, Root Name Servers, Resolving a Domain Name, DNS Name Registration. 3.3 Understand Network Printing Concepts - Understand Network Printing Concepts, Locally connected print devices, Setting up local print devices, Shared print devices, Sharing Locally Attached Print Devices, Describe Windows Network Printing, and Add Print Wizard.	**08**	
Unit: 4	Implementation of Network 4.1 Designing Network – Accessing Network Needs, Applications, Users, Network Services, Security and Safety, Growth and Capacity Planning, Meeting Network	**06**	

	Needs – Choosing Network Type, Choosing Network Structure, Choosing Servers. 4.2 Configuring a Database Server 4.3 Creating VNC Server 4.4 Providing Additional Network Services – Configuring a Time Server, Providing a Caching Proxy Server. 4.5 Optimizing Network Services		
Unit: 5	Administering Windows 2000 Server (The Basics) 5.1 Working With User Accounts - Adding a User, Modifying User Account, Deleting or Disabling a User Account. 5.2 Working With Windows 2000 Security Groups – Creating Group, Maintaining Group Membership. 5.3 Working with Shares – Understanding Share Security, Cresting Shares, Mapping Drives 5.4 Administering Printer Shares – Setting up Network Printer, 5.3 Working with Windows 2000 Backup – Using Windows 2000 Servers Backup Software	05	
Unit : 6	System Administration 6.1Keeping Your System Updated with up2date and Red Hat Network. 6.2 Updating and Customizing the Kernel 6.3 Configuring the System at the Command Line 6.4 Administering Users and Groups	05	
Unit: 7	Troubleshooting and security of Network 7.1 Understanding the Problem – Troubleshooting, Segmenting the Problem, Isolating the Problem, Setting Priorities. 7.2 Troubleshooting Tools – Hardware Tools, Software Tools, Monitoring and Troubleshooting Tools 7.3 Internal Security – Account Security, File and Directory permissions, Practices and user education. 7.4 External Threats – Front Door threats, Back Door threats, Denial services threats, Viruses, worms and other Malicious codes.	05	
Total		**45**	

Contents (Practical)	
Sl. No.	Skills to be developed
1.	**Practical:** Skills to be developed: Intellectual skills: · Fault finding of network · Troubleshooting of network · Proper installation of network
2.	Motor Skills:· Proper handling of Computer System**.**

List of Practical:

Practical Name

1 Creating Windows 2003/2008 Server/Linux Boot Disk.

2 Installing Windows 2003/2008 Server/Linux
3 Installing Active Directory
4 Creating AD Objects
5 Setting up Local Print Device
6 Installing and Configuring a Network – Capable Print Device
7 Create new Users & give the Permission
8 Group of four students prepare a mini report on Latest Networking Technology.

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Collings and Wall	Red hat Linux Networking & System Administration		Wiley
Burke	**Network Management**		**PEARSON**
Subramania	**Network Management, 2e**		**PEARSON**
Sing	Network security and Management		PHI
Kirch & Dawson	Linux Network Administrator's Guide		SPD

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Microsoft Press	Networking + Certification Training Kit		
Sharma	Information Security and Cyber Laws		Vikas

Suggested list of Laboratory Experiments:

Sl. No.	Laboratory Experiments
1.	Basic TCP/IP utilities and commands. (eg: ping, ifconfig, tracert, arp, tcpdump, whois, host, netsat, nslookup, ftp, telnet etc...)
2.	Configure a router (Ethernet & Serial Interface) using router commands including access lists on any network simulator (eg. packet Tracer)
3.	Network design and implementation for small network using actual physical components with IP address scheme
4.	

Suggested list of Assignments / Tutorial:

Sl. No.	Topic on which tutorial is to be conducted
1.	Configuration of any three of the following of for each student a) Remote Login Service – TELNET/SSH b) Configuration of FTP server and accessing it via FTP Client.
2.	Installation of NS-2. Test network animation on Network Simulator2 (NS2).
3.	Configuration of any three of the following of for each student a) Remote Login Service – TELNET/SSH b) Configuration of FTP server and accessing it via FTP Client.

Note:

Sl. No.	
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**

Format for Syllabus

Name of the Course: ELECTIVE I (MULTIMEDIA AND ANIMATION TECHNIQUE)

Course Code: CST/5/505(II)	**Semester: Fifth**
Duration:	**Maximum Marks: 100 + 50**
Teaching Scheme	**Examination Scheme**
Theory: 3 hrs./week	Mid Semester Exam.: 20 Marks
Tutorial: hrs./week	Attendance, Assignment & Quiz: 10 Marks
Practical: 3 Hrs./week	End Semester Exam.: 70 Marks
Credit: 3+2	Practical: 25(INT)+25(EXT)

Aim:

Sl. No.	
1.	To combine moving images, graphics, text, and sound in meaningful ways is one of most powerful aspects of computer technology and which is multimedia and animation.
2.	To accessing data, allowing one to display video, animation, graphics, drawings, documents, and still images as needed during a presentation.
3.	To understand memory system and access mechanism of IO devices. To create visually compelling and technically accurate presentations for industrial and legal applications.

Objective: Student will be able to

Sl. No.	
1.	Import, Export Images.
2.	Edit Images.
3.	Create Animation.
4.	Build Flash Movie.
5.	Integrate Audio & Video.
6.	Build Text-Based Animation.
7.	Play Movie.
8.	Integrate Multimedia In Web Page.

Pre-Requisite:

Sl. No.	
1.	Basic knowledge of computer is helpful.
2.	Basic knowledge of image and graphics is helpful.
3.	

Contents (Theory)		Hrs./Unit	Marks
Unit: 1 Name of the Topics: Basics of Multimedia	1.1 Concept of Multimedia. 1.2 Multimedia data stream. 1.3 Hardware & Software requirement. 1.4 Application of Multimedia. 1.5 Steps of creating Multimedia presentation. 1.6 Concept of Hypermedia and Hypertext.	4	
Unit: 2 Name of the Topics: **Digital Audio & MIDI file format**	2.1 Audio sampling 2.2 Recording digital audio. 2.3 Audio standards for Multimedia applications. 2.4 MIDI file format. 2.5 MIDI event commands, meta-event & Messages. 2.6 MIDI hardware & Software.	5	
Unit: 3 Name of the Topics:	3.1 CODEC 3.2 Types of Compression.	13	

Image and Video Compression	3.3 Lossless/Statistical Compression techniques. 3.4 GIF image coding standard. 3.5 Lossy/Perceptual Compression techniques. 3.6 JPEG image coding steps. 3.7 MPEG Compression basics. 3.8 MPEG-1 Audio & Video. 3.9 MPEG-2 Audio & Video. 3.10 Concept of MPEG-4.		
Unit: 4 Name of the Topics: **Image File Format Details.**	4.1 BMP File Format 4.2 GIF File Format 4.3 JPEG File Format 4.4 TIFF File Format.	6	
Unit: 5 Name of the Topics: **Animation Techniques**	5.1 Definition of Animation. 5.2 Types of Animation. • Cell Animation • Path Animation • 2D vs. 3D Animation 5.3 Computer assisted Animation 5.4 Techniques of Animation • Onion skinning • Motion cycling • Masking • Color cycling • Morphing 5.5 Camera effects • Camera Location • Camera movement • Zones of vision 5.6 Special effects 5.7 Methods of controlling the Animation. • Procedural Animation • Tracking live action • Kinematics of controlling Animation • Tweening, Morphing, Warping, Color dissolve 5.8 Animation Software.	12	
Unit: 6 Name of the Topics: **Virtual Reality**	6.1 Immersive and Non-immersive Virtual Reality 6.2 Application of Virtual Reality 6.3 Concept of VRML 6.4 Conceptual Architecture of VRML 6.5 Visualization aspect 6.6 Base technologies used in Implementation 6.7 Navigation.	05	
Total		**45**	

Practical:

Practical Content:
All of the experiment shall be performed using PHOTOSHOP, MS-Flash or 3D-MAX or MAYA.
List of Experiments:
Photoshop

1. Use of different tools of Photoshop
2. Use of Colour tool of Photoshop
3. Use of blending modes of Photoshop
4. Learn Toning Tool, Different Media, Colour models.
5. Use of different effects of Photoshop

Comment [W1]:

6. Use of Layers, Masks, Filters of Photoshop.
7. Use of Adding Actions in Photoshop

Flash/3D Max/Maya

1. Create a cycle & name each part of cycle using different styles & format & animate text.
2. Draw seed & create small plant with use of at least 4 frames.
3. Create a forest of tree with flowers & fruits from a small plant using different layers & frame transition time.
4. Create a forest of trees using the object created earlier. Also add lighting and rain effect.
5. Insert audio to relevant frames that has lighting & rain effect.
6. Convert created work into file format which can be publish on web.
7. Interfacing digital-web-cam, capturing live image & editing using web-cam software.
8. Importing & exporting images, apply different image editing tools.
9. Mini Project: Students should create a movie of minimum 2 minutes playtime using either Flash or 3D-MAX or MAYA software.

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Ranjan Parekh	Principles of Multimedia		TMH
Buford	Multimedia Systems		Pearson
Jeffcoate	Multimedia in Practice		Pearson
M.K. Pakhira	Computer Graphics Multimedia and Animation		PHI
Steinmetz	Multimedia: Computing, Communications & Applications		Pearson

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Sherawat, Sharma	Multimedia and Application		Katson
Mukhopadhyay, Chattopadhayay	Introduction to Computer Graphics & Multimedia		Vikas

Note:

Sl. No.	
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**

Format for Syllabus

Name of the Course:ADVANCED MICROPROCESSOR (ELECTIVE-I)	
Course Code: CST/5/503(III)	**Semester: Fifth**
Duration:	**Maximum Marks: 100 + 50**
Teaching Scheme	**Examination Scheme**

Theory: 3 hrs./week	Mid Semester Exam.: 20 Marks
Tutorial: hrs./week	Attendance, Assignment & Quiz: 10 Marks
Practical: 3 Hrs./week	End Semester Exam.: 70 Marks
Credit: 3+2	Practical: 25(INT)+25(EXT)

Aim:

Sl. No.	
1.	To study architectures and addressing modes of 16-bit & 32-bit microprocessors.
2.	To study different MS-DOS functions for Interrupts handling.
3.	To introduce Intel's superscalar architecture.

Objective: Student will be able to

Sl. No.	
1.	Explain architecture and memory management of 80286.
2.	Explain concepts of multitasking
3.	Know architecture and memory management of 80386.
4.	State the concept of paging
5.	Describe features and architecture of 80486, Pentium.
6.	Programming in assembly using different functions of DOS & BIOS interrupts.

Pre-Requisite:

Sl. No.	
1.	Basic knowledge of 8086 and its programming is helpful.
2.	Basic knowledge DOS interrupt is helpful.

Contents (Theory)		Hrs./Unit	Marks
Unit: 1 Name of the Topics: **16-bit Microprocessor - Intel 80286.**	1.1 Salient features, Internal architecture, Register organization (General purpose register, segment register, status and control register, instruction pointer, segment descriptor cache register) 1.2 Addressing mode such as Real, Protected Virtual Addressing mode, Selector, Descriptors and its types, LDT, GDT, IDT, privilege protections and task switching. 1.3 Operations of 80286 in Real and PVAM.	12	
Unit: 2 Name of the Topics: **32-bit Microprocessor –Intel 80386.**	2.1 Salient features, internal architecture, Register organization (General purpose register, segment register, status and control register, instruction pointer. Segment descriptor cache register. System address register LDTR & GDTR, TR, Debug register, Test registers, Control register. 2.2 Modes of 80386: Real, PVAM, paging, virtual 8086. Address translation in real, PVAM, paging.	12	
Unit: 3 Name of the Topics: **Interrupts of X86 microprocessor:**	3.1 Introduction to X86 interrupts (Hardware, software and exceptions), Interrupt vector table, Interrupt processing sequence. Hardware or exception interrupts (Singles step, divide by zero/overflow, non-maskable, breakpoint, overflow) software interrupts (INT, INTO instructions) 3.2 Introduction to MS-DOS, The structure of MS-DOS (BIOS Module, DOS kernel, command processor), Loading of MS-DOS. Introduction to *.com* and *.exe* programs, DOS & BIOS Interface, Interrupt Services, DOS & BIOS Interrupts.	10	

Unit: 4 Name of the Topics: **Advanced Microprocessors**	4.1 Salient features of 486 and its register structure. Internal Architecture 4.2 Salient features of Pentium System architecture (Super-scalar Execution, Separate code & data cache, Floating Point Exceptions, Branch prediction.)	5	
Unit: 5 Name of the Topics: **Microcontroller 8051**	5.1 Difference between Microprocessor and microcontroller. 5.2 Features of 8051 microcontroller 5.3 Internal architecture of 8051 5.4 RAM, ROM and SFRs details 5.5 Addressing modes and Instruction Set 5.6 Interrupt structure of 8051.	6	
Total		**45**	

Practical:

Skills to be developed:
Intellectual skills:

- Use of programming language constructs in program implementation
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
- Problem definition.
- Analysis.
- Design of logic
- Coding.
- Testing.
- Maintenance (Modifications, Error corrections, Making changes etc.)

Motor skills:

- Proper handling of Computer System**.**

List of Practical:

1) Write an assignment on keyboard and display function 01H.,02H,08H,09H,0AH of DOS INT 21H and program to read password & validate the user.
2) Write an assignment on keyboard functions 02H of BIOS INT 16H (Get Keyboard Flags) and program to display the status of keys described in 02H functions of BIOS INT 16H.
3) Write an assignment on screen functions 06H (Scroll screen up), 07H (Scroll screen down) of BIOS INT 10H and program to simulate CLS (Clear Screen) command.
4) Write an assignment on ASCIIZ string, file handle, file functions 41H (delete file), 56H (Rename file) of DOS INT 21H and program to simulate DEL (Delete file) and REN (Rename file) command.
5) Write an assignment on file functions 43H (Set/Get file attribute) and 57H (Set/Get file time & date) of DOS INT 21H and program to display the attribute and date/ time of any file.
6) Write an assignment on directory functions 39H (Create directory), 3AH (Delete directory) of DOS INT 21H and program to simulate MD (Make directory), RD (Remove Directory) commands.
7) Write an assignment on directory functions 3BH (Change Directory), 47H(Get current directory) of DOS INT 21Hand program to simulate CD (Change directory) and PWD (Present Working Directory) commands.

8) Write an assignment on Disk Storage Organization i.e. track, sector, cylinder, cluster, disk system area, data area and disk processing functions 02H(Read Sector), 03H (Write sector) of BIOS INT 13H.
9) Write a program to access mouse by using DOS INT 33H.
10) Write an assignment on Printer Control Characters i.e. Horizontal TAB, Line Feed, Form Feed, Carriage Return, Printer function 40H, 05H of DOS INT 21 H and 00H (Print character) of BIOS INT 17H and program to print ASCII character set on printer.
11) Write a program to display the status of Flag register and Machine Status Word register of 286 on the screen.
12) Write a program to display the status of Flag register and Machine Status Word register of 386 on the screen.
***** Any program like sorting, searching or program using DOS interrupt will be appreciated.**

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
A. K. Ray & K. M. Bhurchandi	Advanced microprocessor & peripheral		TMH
BREY	The Intel Microprocessors		Pearson
Bahadure	Microprocessors: The 8086/8088, 80186/80286, 80386/80486 and the Pentium Family •		PHI
Mazidi	The 8051 Microcontrollers & Embedded Systems, 2e		Pearson
Peter Abel	IBM-PC assembly language		Pearson
SHAH	8051 Microcontrollers		Oxford
MacKenzie	The 8051 Microcontroller, 4e		Peearson

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Socha, Norton	Assembly language for the PC		PHI
Mazidi	**The X86 PC: Assembly Language, Design, and Interfacing, 5/e**		Pearson
Triebel	The 8088 and 8086 Microprocessors: Programming, Interfacing, Software, Hardware, and Applications, 4e		Pearson
Azeez, Shemeena	Microprocessors Interfacing and Microcontroller		Scitech
Subrata Ghoshal	Computer Architecture and Organization		Pearson

Note:

Sl. No.	
1.	Question Paper setting tips: **End Semester Examination: Question should be made as per class weight and must cover whole syllabus. Objective Type: 20 marks (answered in one or two sentences. Subjective type: 50 marks. To be set at least 8 question and to be answered 5 questions each carrying 10 marks**

Format for Syllabus

Name of the Course: Project (Phase-I & II)	
Course Code: CST/6/PI & II	**Semester: Fifth and Continued to sixth**
Duration: 4 hrs./week (Fifth Sem.)+ 6 Hrs/week (Sixth sem)	**Maximum Marks: 100 (to be given at end of Sixth semester)**
Teaching Scheme	**Examination Scheme**
Credit: 6	Practical: 50(INT)+50(EXT)
Aim:	

Sl. No.	
1.	To develop technical skill
2.	To make use of hardware in developing Software.
3.	Analysis of different type of case studies
Objective: Student will be able to	
Sl. No.	
1.	Work in Groups, Plan the work, and Coordinate the work.
2.	Develop leadership qualities.
3.	Develop Innovative ideas.
4.	Practically implement the acquired knowledge.
5.	Develop basic technical Skills by hands on experience.
6.	Write project report.
7.	Develop skills to use latest technology in Computer/Information Technology field.
8.	Analyse the different types of Case studies

Pre-Requisite:	
Sl. No.	
1.	How to prepare Project report
2.	Different software Domains
3.	Latest technology in market

Contents (Theory)		Hrs./Unit	Marks
Unit: 1 **How Project and Project report should be prepared?**	Initial idea should be given to the student about how to prepare for the Project and will be done through group work.	2	
Unit: 2 **Typical Software Projects**	(1) Develop Application Software for Hospital / Shopping Mall/Cinema/Theatre/Commercial Complex/Educational Institute/Industrial Complex. (2) Develop In-house Systems. (3) Case Studies Related to Industries – Operation / Maintenance / Repair and Fault Finding. (Refer Guideline Document). (4) Develop Information Processing System. (5) Develop Web Based Applications using Web Technologies. 6) Develop Network monitoring system. (7) Develop systems for financial organization. Develop System Program based system like compilers, editors, spreadsheets, mini database systems. (8) Develop Image Processing Systems. (9) Develop Expert Systems. (10) Develop Artificial Intelligence based Systems. (11) Develop mini operating system, assembler, Compiler or part of the system. **** Any other type of innovative projects will be appreciated.**	12	
Unit: 3 Hardware based Project	(1) Develop any Microprocessor or Microcontroller based project (2) Develop your own processor (3) Develop various types of interfacing Applications **** Any other type of innovative projects will be appreciated.**	8	

Note: You should concern about the latest technology from Magazines and take concept of your project from different Web sites.	
Sl. No.	
1.	Examination Scheme: **End Semester Examination: Examination will be held at the end of 6th semester. Internal marks should be given by the Project Guide. External marks should be given by the External examiner from any other Institutes or from Industries. **Each and every Lecturer of the corresponding Department must be associated with the project work.**

Format for Syllabus

Name of the Course:Professional Practice-III (Visual Basic)	
Course Code: CST/5/PP-III	**Semester: FIFTH**
Duration:	**Maximum Marks: 50 (Practical 50)**
Teaching Scheme	**Examination Scheme**
Theory: hrs./week	Mid Semester Exam.: Marks
Tutorial: hrs./week	Assignment & Quiz: Marks
Practical: 3 hrs./week	End Semester Exam.: Marks
Credit: 2	

Aim:	
Sl. No.	
1.	To learn basic concepts of VB programming.
2.	To learn how to make database connectivity and database report.
3.	To learn all the controls of VB 6.0 editor.

Objective:	
Sl. No.	Students will able to:
1.	· Use GUI tools of Visual Basic Programming.
2.	· Use basic and advance VB controls.
3.	· Interface back-end and front-end.
4.	· Generate report using Data Report and Crystal Reports.
5.	· Build Visual Basic applications.

Pre-Requisite:	
Sl. No.	
1.	Computer handling
Contents (Practical)	
Sl. No.	Skills to be developed
1.	**Practical:** Skills to be developed: Intellectual skills: 1) Design various types of forms 2) Use image control and scroll bar 3) Selection of windows for different operations Motor skills: 1. Develop various types of forms **List of Practical:** 1. Study of VB environment with following details : - Form and their types. - Intrinsic components – text box, label, combo, list, heck box, and option button. - Design time properties. - Different windows and their uses. 2. Design forms to perform mathematical operations like addition, subtraction, multiplication and division using: - Text box, labels. Design forms to use Date, Time, String, Mathematics functions with help of text box, label, radiobutton, check box, combo box and command button. 4. Using image control and scroll bar, design form to change height, width of image, movement toimage. Using picture box and image list, flip the image on click of command button. 5. Design explorer using Directory, drive, file list box and commondialog controls. 6. Design text editor with menu having copy, cut, paste, select,search, replace the text and load and save the file. 7. Design stop watch with faculty of start, stop, reset using timercontrol, option, label, text box. 8. Practical including Data bound controls like DBgrid, DBcombo,Textbox, Combo, List, MS Flex grid and Database control like ADO, DAO, RDO to perform insertion,deletion, updation, display, Search. 9. Design MDI form including Menu bar, Toolbar, Status bar. 10. Design the interface to perform following operation on the file like create, open , read , write,delete , search.

	11. Design the Active X control for login form and transport it to browser 12. Design the Active X control to perform database operation with get and let property 13. Design the experiment using RTF box to create file, load, save search and edit the file. 14. Integrate all above practical to form mini project including login form and splash form.
2.	Motor Skills:· Proper handling of Computer System.

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Halvorson	Microsoft Visual Basic 2010 Step by Step (microsoft press)		pHI
Foxall	Sams Teach Yourself Visual Basic 2010 in 24 Hours Complete Starter Kit		PEARSON
	Visual Basic 2010 Programming (Black Book)		dreamtech
Newsome	Beginning Visual Basic 2012		Wiley India
Boehn	Murach's Visual Basic 2010		SPD
Krishnan	Visual basic in 30 days		Scitech
Varalakshmi	Visual basic Programming for Beginners		Scitech

Suggested list of Laboratory Experiments:

Sl. No.	Laboratory Experiments
1.	Simple calculator
2.	Design notepad.
3.	Scientific calculator.

Suggested list of Assignments / Tutorial:

Sl. No.	Topic on which tutorial is to be conducted
1.	List file handling commands in VB.
2.	Write note on active controls in VB.
3.	Write note on controls and events in VB.