List of Courses Focus on Employability/ Entrepreneurship/ Skill Development

Department : *Computer Science and Engineering*

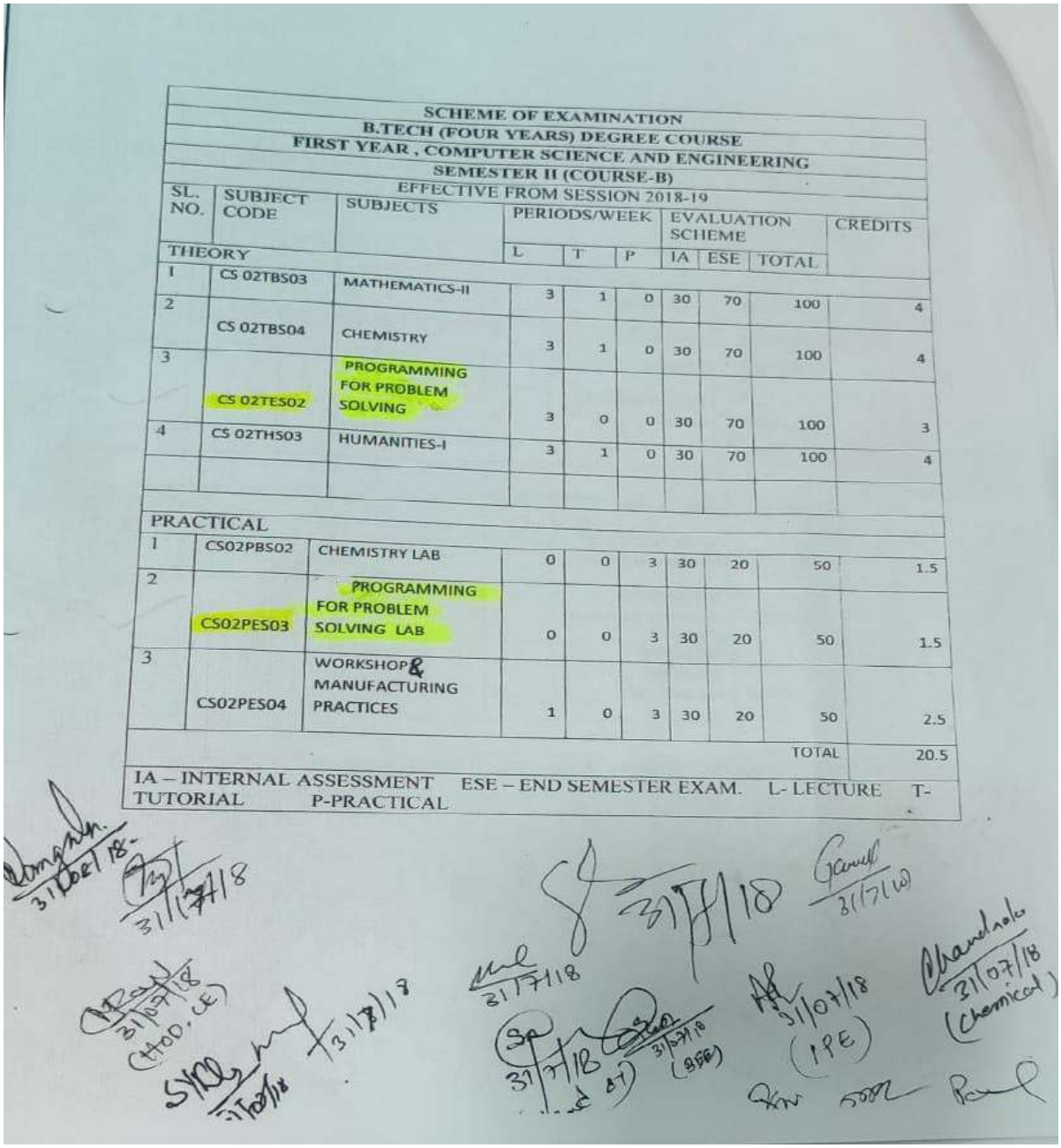
Programme Name : *B.Tech.*

Academic Year : 2018-19

List of Courses Focus on Employability/ Entrepreneurship/Skill Development

Sr. No.	Course Code	Name of the Course
01.	CS02TES02	Programming for Problem Solving
02.	CS3TES02	Digital Logic & Design
03.	CS3TPC01	Object Oriented Programming with C++
04.	CS4TPC01	Data Communication and Networks
05.	CS4TPC02	Java Programming
06.	CS4TPC03	Data Structure & Programming Methodology
07.	CS5TPC01	RDBMS
08.	CS5TPC02	Foundation of Computer Science
09.	CS5TOE01	Management Information System
10.	CS5TPE01	VB.Net
11.	CS5TPE02	Parallel Computing
12.	CS6TOE01	Computer Graphics
13.	CS6TPE01	Microprocessor and Interfaces
14.	CS6TPE02	Software Engineering
15.	CS7TPC01	Compiler Design
16.	CS7TPC02	Artificial Intelligence
17.	CS7TOE01	Web Technologies
18.	CS7TPE01	Data Mining
19.	CS7TPE02	Wireless Sensor Network
20.	CS8TPC01	Network Security
21.	CS8TOE01	Enterprise Resource Management
22.	CS8TPE01	Soft Computing
23.	CS02PES03	Programming for Problem Solving Lab

Scheme and Syllabus



SCHEME OF EXAMINATION
B.TECH (FOUR YEARS) DEGREE COURSE
FIRST YEAR , COMPUTER SCIENCE AND ENGINEERING
SEMESTER II (COURSE-B)
EFFECTIVE FROM SESSION 2018-19

SL. NO.	SUBJECT CODE	SUBJECTS	PERIODS/WEEK			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	TOTAL	
THEORY									
1	CS 02TBS03	MATHEMATICS-II	3	1	0	30	70	100	4
2	CS 02TBS04	CHEMISTRY	3	1	0	30	70	100	4
3	CS 02TES02	PROGRAMMING FOR PROBLEM SOLVING	3	0	0	30	70	100	3
4	CS 02THS03	HUMANITIES-I	3	1	0	30	70	100	4
PRACTICAL									
1	CS02PBS02	CHEMISTRY LAB	0	0	3	30	20	50	1.5
2	CS02PES03	PROGRAMMING FOR PROBLEM SOLVING LAB	0	0	3	30	20	50	1.5
3	CS02PES04	WORKSHOP & MANUFACTURING PRACTICES	1	0	3	30	20	50	2.5
								TOTAL	20.5

IA – INTERNAL ASSESSMENT ESE – END SEMESTER EXAM. L- LECTURE T- TUTORIAL P-PRACTICAL

Computer Science and Engineering
Institute of Technology
Guru Ghasidas Vishwavidyalaya C.G.
CBCS (With Effect from 2016-17)

Sem- III

S.No.	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L^1	T^2	P^3	IA	ESE	TOTAL	
1	CS3THS01	Engineering Economics	3	0	0	40	60	100	3
2	CS3TES01	Electronic Devices and Circuits	3	1	0	40	60	100	4
3	CS3TES02	Digital Logic & Design	3	1	0	40	60	100	4
4	CS3TBS01	Engineering Mathematics- III	3	0	0	40	60	100	3
5	CS3TPC01	Object Oriented Programming With C++	3	1	0	40	60	100	4
		PRACTICAL							
1	CS3LPES01	Electronic Devices and Circuit Lab	0	0	3	30	20	50	2
2	CS3LPES02	Digital Logic & Design Lab	0	0	3	30	20	50	2
3	CS3LPPC01	Object Oriented Programming with C++ Lab	0	0	3	30	20	50	2
					Total Credits			650	24

IA- Internal Assessment , ESE – End Semester Examination

Sem- IV

S.No.	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L^1	T^2	P^3	IA	ESE	TOTAL	
1	CS4TPC01	Data Communication and Networks	3	1	0	40	60	100	4
2	CS4TPC02	Java Programming	3	1	0	40	60	100	4
3	CS4TPC03	Data Structure & Programming Methodology	3	1	0	40	60	100	4
4		Open Elective - I	3	0	0	40	60	100	3
5		Open Elective - II	3	0	0	40	60	100	3
		PRACTICAL							
1	CS4LPPC01	Data Communication and Networks Lab	0	0	3	30	20	50	2
2	CS4LPPC02	Java Programming Lab	0	0	3	30	20	50	2
3	CS4LPPC03	Data Structure & Programming Methodology Lab	0	0	3	30	20	50	2
					Total Credits			650	24

IA- Internal Assessment , ESE – End Semester Examination

Open Elective Subjects		
S.No.	Subject Code	Subject
01	CS4TOE01	System Software
02	CS4TOE02	Computer Organization & Architecture
03	CS4TOE03	Discrete Mathematics and Fuzzy Techniques
04	CS4TOE04	System Analysis and Design

Semester- V

S N	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L[1]	T[2]	P[3]	IA	ESE	TOTAL	
1	CS5TPC01	RDBMS	3	1	0	40	60	100	4
2	CS5TPC02	Foundation of Computer Science	3	1	0	40	60	100	4
3	CS5TPEXX	PE Choice-I Vth Semester	3	1	0	40	60	100	4
4	CS5TPEXX	PE Choice-II Vth Semester	3	1	0	40	60	100	4
5	CS5TOEXX	OE-I Vth Semester	3	0	0	40	60	100	3
		PRACTICAL							
1	CS5LPC01	RDBMS Lab	0	0	3	30	20	50	2
2	CS5LPC02	Advance Programming Lab	0	0	3	30	20	50	2
3	CS5LPR01	Mini Project Lab-I in VB.NET	0	0	3	30	20	50	2
						Total Credits		650	25

IA- Internal Assessment , ESE – End Semester Examination

Open Elective Subjects Vth Semester			Credit	Professional Elective Subject Vth Semester			Credit
SN	Subject Code	Subject		SN	Subject Code	Subject	
1	CS5TOE01	Management Information System	3	1	CS5TPE01	VB.NET	4
2	CS5TOE02	Embedded System	3	2	CS5TPE02	Parallel Computing	4
3	CS5TOE03	Principle of Management	3	3	CS5TPE03	Grid Computing	4
4	CS5TOE04	Computer Oriented Numerical Methods	3	4	CS5TPE04	Mobile Communication	4

Semester- VI

SN	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L[1]	T[2]	P[3]	IA	ESE	TOTAL	
1	CS6TPC01	Operating System	3	1	0	40	60	100	4
2	CS6TPC02	Design and Analysis of Algorithm	3	1	0	40	60	100	4
3	CS6TPEXX	PE Choice-I VI th Semester	3	1	0	40	60	100	4
4	CS6TPEXX	PE Choice-II VIth Semester	3	1	0	40	60	100	4
5	CS6TOEXX	OE-I VIth Semester	3	0	0	40	60	100	3
		PRACTICAL							
1	CS6LPC01	Operating System Lab	0	0	3	30	20	50	2
2	CS6LPC02	Design and Analysis of Algorithm Lab	0	0	3	30	20	50	2
3	CS6LPR01	Mini Project Lab	0	0	3	30	20	50	2
						Total Credits		650	25

Open Elective Subjects VI th Semester			Credit	Professional Elective Subject VI th Semester			Credit
SN	Subject Code	Subject		SN	Subject Code	Subject	
1	CS6TOE01	Computer Graphics	3	1	CS6TPE01	Microprocessor and Interfaces	4
2	CS6TOE02	Robotics	3	2	CS6TPE02	Software Engineering	4
3	CS6TOE03	Operation Research	3	3	CS6TPE03	UNIX Operating System	4
4	CS6TOE04	Geo-Informatics and GIS Application	3	4	CS6TPE04	Multimedia System Design	4

Sem- VII

S No.	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L[1]	T[2]	P[3]	IA	ESE	TOTAL	
1	CS7TPC01	Compiler Design	3	1	0	40	60	100	4
2	CS7TPC02	Artificial Intelligence	3	1	0	40	60	100	4
3	CS7TPEXX	PE Choice –I VIIth Semester	3	1	0	40	60	100	4
4	CS7TPEXX	PE Choice –II VIIth Semester	3	1	0	40	60	100	4
5	CS7TOEXX	OE-I VII th Semester	3	0	0	40	60	100	3
	PRACTICAL								
1	CS7LPC01	Compiler Design Lab	0	0	3	30	20	50	2
2	CS7LPC02	Artificial Intelligence Lab	0	0	3	30	20	50	2
3	CS7LPR01	Seminar	0	0	3	30	20	50	2
4	CS7LPR02	Minor Project Lab	0	0	3	30	20	50	2
						Total Credits		700	27

IA- Internal Assessment , ESE – End Semester Examination

Open Elective Subjects VIIth Semester			Credit	Professional Elective Subject VII th Semester			Credit
SN	Subject Code	Subject		SN	Subject Code	Subject	
1	CS7TOE01	Web Technologies	3	1	CS7TPE01	Data Mining	4
2	CS7TOE02	Information Theory and Coding	3	2	CS7TPE02	Wireless Sensor Network	4
3	CS7TOE03	Swarm Intelligence, Co-evolution and Rough Sets	3	3	CS7TPE03	Intrusion Detection System	4
4	CS7TOE04	Digital Image Processing	3	4	CS7TPE04	Cyber Crime and Security	4

Sem- VIII

S. No.	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L[1]	T[2]	P[3]	IA	ESE	TOTAL	
1	CS8TPC01	Network Security	3	1	0	40	60	100	4
2	CS8TPEXX	PE-I VIIIth Semester	3	1	0	40	60	100	4
3	CS8TOEXX	OE-I VIIIth Semester	3	1	0	40	60	100	4
	PRACTICAL								
1	CS8LPR01	Major Project	0	0	20	150	100	250	10
2	CS8LPC01	Network Security Lab	0	0	3	30	20	50	2
						Total Credits		600	24

Open Elective Subjects VIII Semester			Credit	Professional Elective Subject VIII Semester			Credit
SN	Subject Code	Subject		SN	Subject Code	Subject	
1	CS8TOE01	Enterprise Resource Management	4	1	CS8TPE01	Soft Computing	4
2	CS8TOE02	Cloud Computing	4	2	CS8TPE02	Introduction to Computational Intelligence	4
3	CS8TOE03	Internet of Things	4	3	CS8TPE03	Neural Network Learning and Fuzzy Systems	4
4	CS8TOE04	Distributed Computing	4	4	CS8TPE04	TCP-IP	4

Subject code/NAME	L	T	P	Credit
CS02TES02/PROGRAMMING FOR PROBLEM SOLVING	3	0	0	3

Unit 1

Introduction to Programming (3 lectures)
Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.) -
Idea of Algorithm (3 lectures): steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudo code with examples.
From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code.

Unit 2

Arithmetic expressions and precedence (12 lectures)
Conditional Branching and Loops
Writing and evaluation of conditionals and consequent branching
Iteration and loops
Arrays (6 lectures) Arrays (1-D, 2-D), Character arrays and strings

Unit 3

Basic Algorithms (6 lectures)
Searching ,concept of binary search etc , Basic Sorting Algorithms Bubble sort etc.Finding roots of equations, introduction of Algorithm complexity

Unit *4*

Function (5 lectures)
Functions (including using built in libraries), Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference binary search etc
Recursion functions (5 lectures) Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, etc.

Unit 5

Structure (4 lectures)
Structures, Defining structures and Array of Structures
Pointers (3 lectures) Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation)

Suggested Text Books

(i) Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
(ii) E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill

Suggested Reference Books

(i) Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

31/7/18 31/7/18 31/7/18 31/7/18

SUBJECT CODE/NAME	L	T	P	Credit
CS02PES03/PROGRAMMING FOR PROBLEM SOLVING LAB	0	0	3	1.5

[The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given.]

Tutorial 1: Problem solving using computers:
Lab1: Familiarization with programming environment

Tutorial 2: Variable types and type conversions:
Lab 2: Simple computational problems using arithmetic expressions

Tutorial 3: Branching and logical expressions:
Lab 3: Problems involving if-then-else structures

Tutorial 4: Loops, while and for loops:
Lab 4: Iterative problems e.g., sum of series

Tutorial 5: 1D Arrays: searching, sorting:
Lab 5: 1D Array manipulation

Tutorial 6: 2D arrays and Strings
Lab 6: Matrix problems, String operations

Tutorial 7: Functions, call by value:
Lab 7: Simple functions

Tutorial 8 &9: Numerical methods (Root finding, numerical differentiation, numerical integration):
Lab 8 and 9: Programming for solving Numerical methods problems

Tutorial 10: Recursion, structure of recursive calls
Lab 10: Recursive functions

Tutorial 11: Pointers, structures and dynamic memory allocation
Lab 11: Pointers and structures

31/7/18 31/7/18 31/7/18 31/7/18 SYRhay

Class: **Bachelor of Technology Third Semester Computer Science and Engineering**
Subject Name: **Digital Logic & Design**
Subject Code: **CS3TES02**

Unit I:

BINARY SYSTEM: Binary Number , Number Base conversion , Octal and Hexadecimal Numbers Complements, Binary Codes Binary Storage and Registers , Binary Logic , Integrated Circuits.

BOOLEAN ALGBRA AND LOGIC GATES:

Basic Definitions, Axiomatic Definition of Boolean algebra. Basic Theorems and Properties of Boolean algebra, Boolean Functions, Canonical and Standard Forms. Other Logic Operations: Digital Logic Gates. IC - Digital Logic Families, NAND, NOR, Ex-OR gates.

Unit II:

BOOLEAN FUNCTIONS: K-map, Two and Three Variable K-Maps, Four Variable K-Map, Five Variable K-Map, Six Variable K-Map, Product of sums(POS) and Sum of Product(SOP) Simplification, NAND and NOR implementation, K-map using Don't Care Conditions, The Tabulation Method.

COMBINATIONAL LOGIC: Introduction, Design procedure Adders, Sub- tractors, Code Conversion, Analysis Equivalence Functions.

Unit III:

COMBINATIONAL LOGIC WITH MSI AND LSI: Introduction Binary Parallel Adder, Decimal, Adder, Magnitude Comparator, Decoders, Multiplexers, Read Only Memory (ROM), Programmable Logic Array (PLA).

Unit IV:

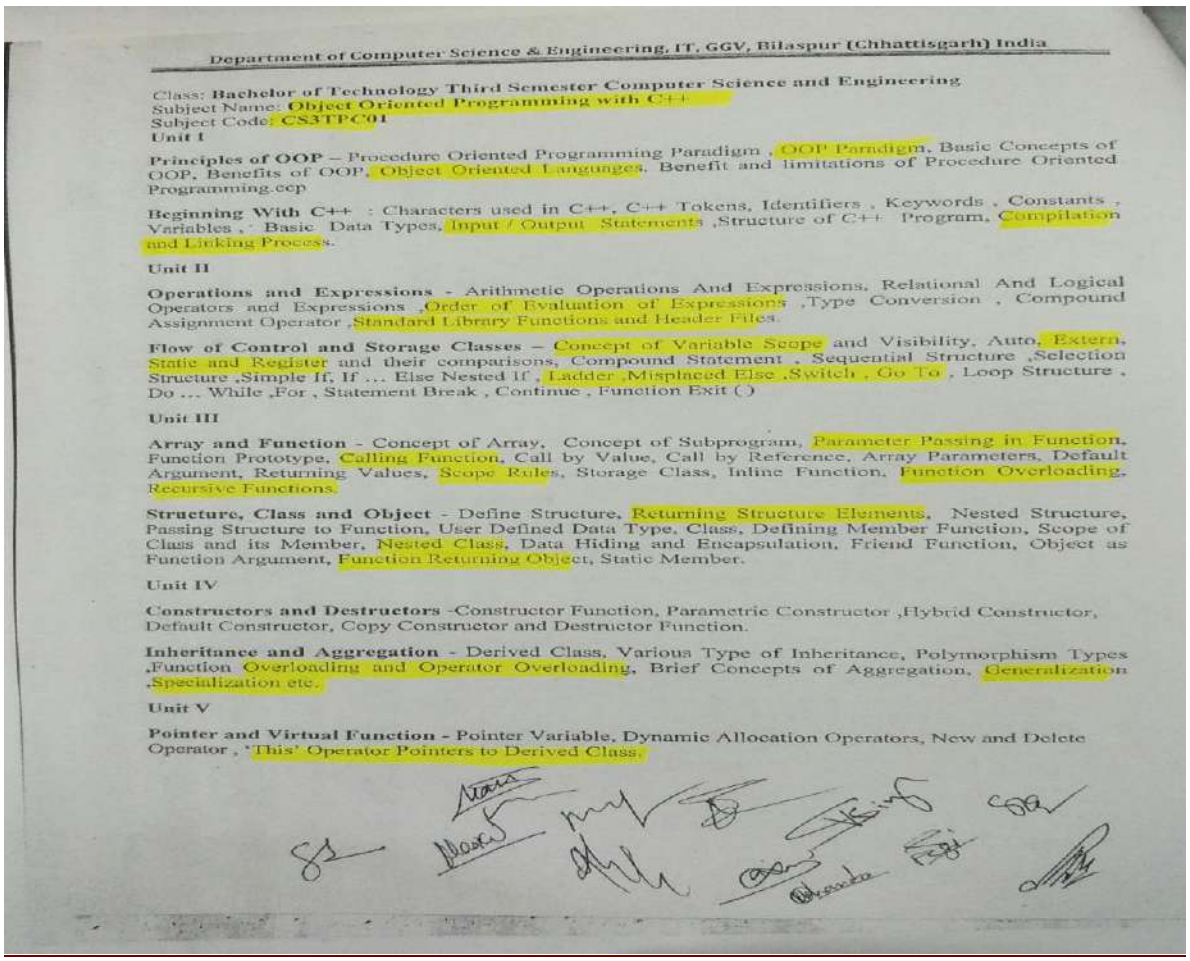
SEQUENTIAL LOGIC: Introduction, Flip –Flops, triggering of Flips –Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment. Flip –Flop Excitation Tables Design Procedure, Design of Counters, Design with State Equations.

Unit V:

REGISTERS, COUNTERS, MEMORY UNIT & FPGA PROGRAMING Introduction, Registers, Shift Registers, Ripple Counters, Synchronous Counters, Timing Sequences, The Memory Unit Examples of Random Access Memories, FPGA: Introduction, FPGA Programming.

Reference Books:

1. Digital Logic & Computer Design, M. Mano (PH1) .
2. Switching Circuit & Finite automata –ZVI Kohavi (TMH).
3. Fletcher W.I.: An engineering approach to Digital Design (PH1)



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: **Bachelor of Technology Third Semester Computer Science and Engineering**
Subject Name: **Object Oriented Programming with C++**
Subject Code: **CS3TPC01**

Unit I

Principles of OOP – Procedure Oriented Programming Paradigm , OOP Paradigm, Basic Concepts of OOP, Benefits of OOP, Object Oriented Languages, Benefit and limitations of Procedure Oriented Programming.ccp

Beginning With C++ : Characters used in C++, C++ Tokens, Identifiers , Keywords , Constants , Variables , Basic Data Types, Input / Output Statements ,Structure of C++ Program, Compilation and Linking Process.

Unit II

Operations and Expressions - Arithmetic Operations And Expressions, Relational And Logical Operators and Expressions ,Order of Evaluation of Expressions ,Type Conversion , Compound Assignment Operator ,Standard Library Functions and Header Files.

Flow of Control and Storage Classes – Concept of Variable Scope and Visibility, Auto, Extern, Static and Register and their comparisons, Compound Statement , Sequential Structure ,Selection Structure ,Simple If, If ... Else Nested If , Ladder ,Misplaced Else ,Switch , Go To , Loop Structure , Do ... While ,For , Statement Break , Continue , Function Exit ( )

Unit III

Array and Function - Concept of Array, Concept of Subprogram, Parameter Passing in Function, Function Prototype, Calling Function, Call by Value, Call by Reference, Array Parameters, Default Argument, Returning Values, Scope Rules, Storage Class, Inline Function, Function Overloading, Recursive Functions.

Structure, Class and Object - Define Structure, Returning Structure Elements, Nested Structure, Passing Structure to Function, User Defined Data Type, Class, Defining Member Function, Scope of Class and its Member, Nested Class, Data Hiding and Encapsulation, Friend Function, Object as Function Argument, Function Returning Object, Static Member.

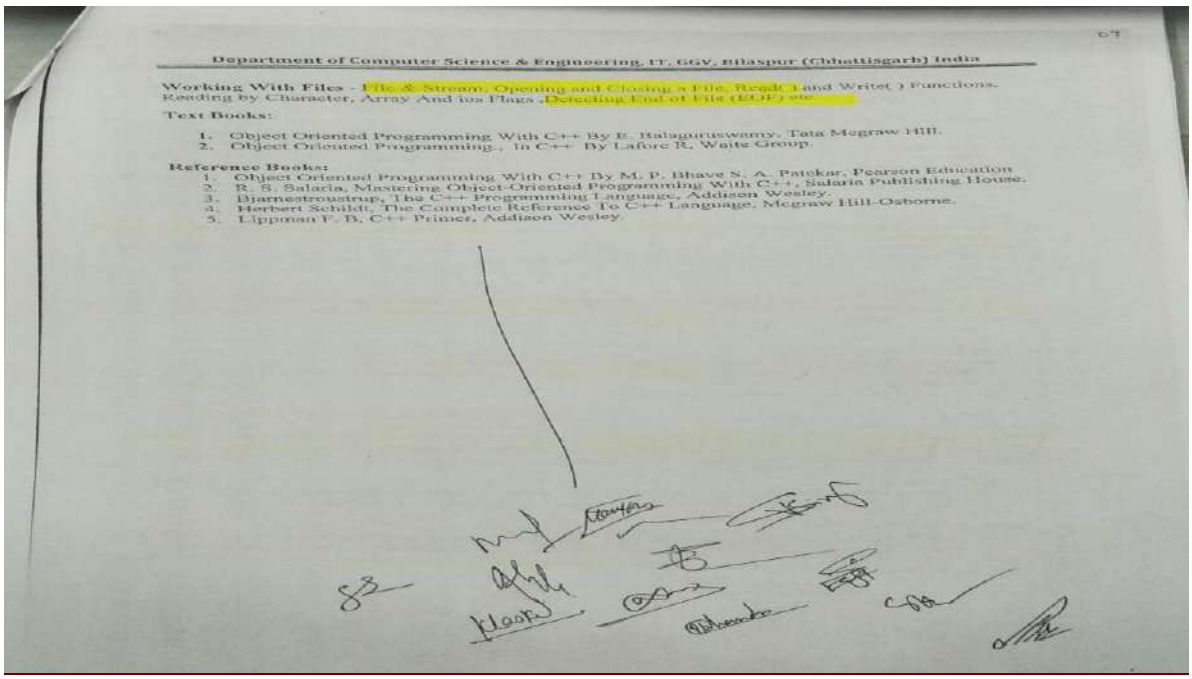
Unit IV

Constructors and Destructors -Constructor Function, Parametric Constructor ,Hybrid Constructor, Default Constructor, Copy Constructor and Destructor Function.

Inheritance and Aggregation - Derived Class, Various Type of Inheritance, Polymorphism Types ,Function Overloading and Operator Overloading, Brief Concepts of Aggregation, Generalization ,Specialization etc.

Unit V

Pointer and Virtual Function - Pointer Variable, Dynamic Allocation Operators, New and Delete Operator , 'This' Operator Pointers to Derived Class.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

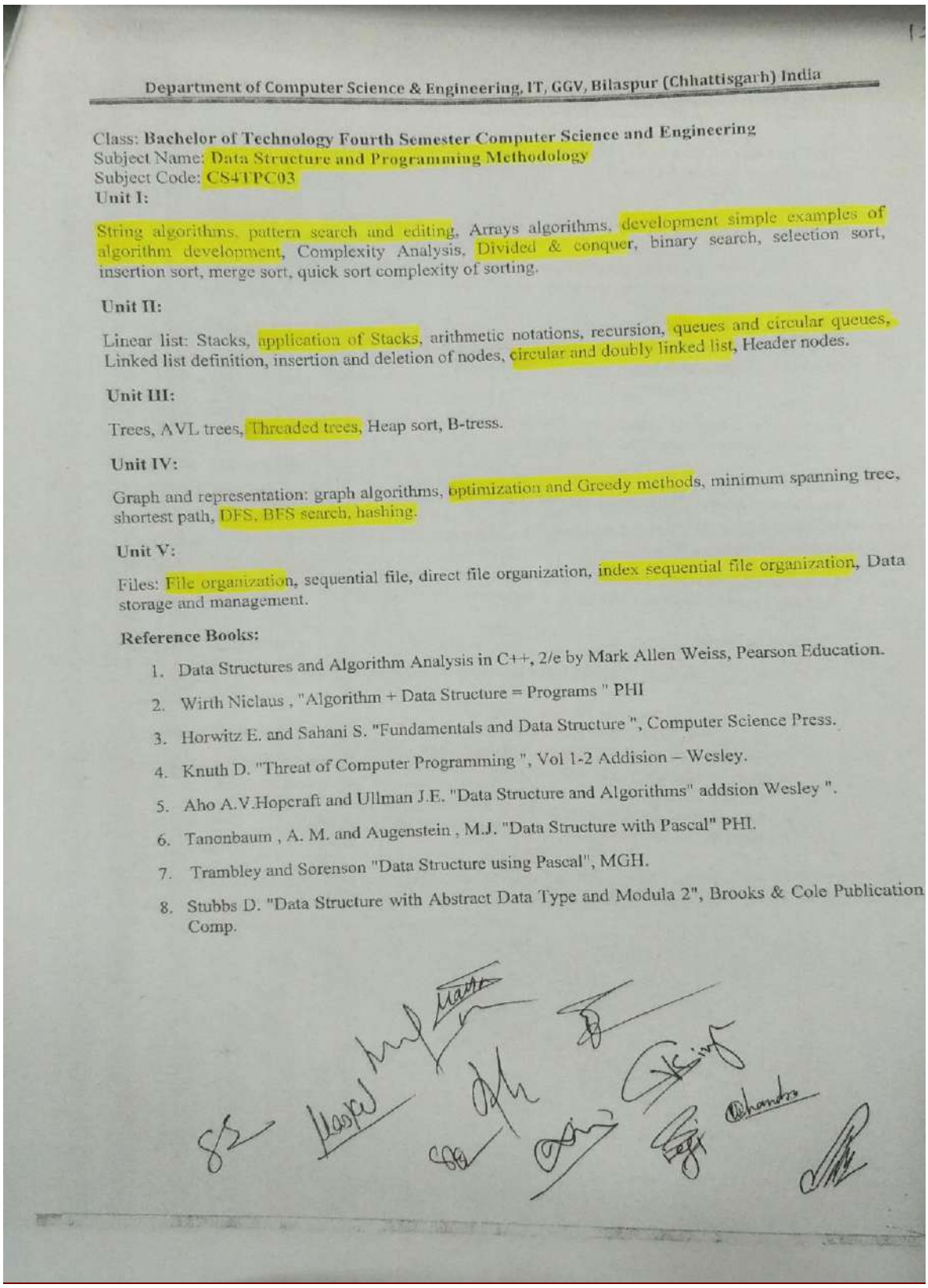
Working With Files - File & Stream, Opening and Closing a File, Read( ) and Write( ) Functions, Reading by Character, Array And ios Flags ,Detecting End of File (EOF) etc.

Text Books:

1. Object Oriented Programming With C++ By E. Balaguruswamy, Tata Megraw Hill.
2. Object Oriented Programming., In C++ By Lafore R, Waite Group.

Reference Books:

1. Object Oriented Programming With C++ By M. P. Bhave S. A. Patekar, Pearson Education
2. R. S. Salaria, Mastering Object-Oriented Programming With C++, Salaria Publishing House.
3. Bjarnestroustrup, The C++ Programming Language, Addison Wesley.
4. Herbert Schildt, The Complete Reference To C++ Language, Megraw Hill-Osborne.
5. Lippman F. B, C++ Primer, Addison Wesley



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: **Bachelor of Technology Fourth Semester Computer Science and Engineering**
Subject Name: **Data Structure and Programming Methodology**
Subject Code: **CS4TPC03**
Unit I:

String algorithms, pattern search and editing, Arrays algorithms, development simple examples of algorithm development, Complexity Analysis, Divided & conquer, binary search, selection sort, insertion sort, merge sort, quick sort complexity of sorting.

Unit II:

Linear list: Stacks, application of Stacks, arithmetic notations, recursion, queues and circular queues, Linked list definition, insertion and deletion of nodes, circular and doubly linked list, Header nodes.

Unit III:

Trees, AVL trees, Threaded trees, Heap sort, B-tress.

Unit IV:

Graph and representation: graph algorithms, optimization and Greedy methods, minimum spanning tree, shortest path, DFS, BFS search, hashing.

Unit V:

Files: File organization, sequential file, direct file organization, index sequential file organization, Data storage and management.

Reference Books:

1. Data Structures and Algorithm Analysis in C++, 2/e by Mark Allen Weiss, Pearson Education.
2. Wirth Niclaus , "Algorithm + Data Structure = Programs " PHI
3. Horwitz E. and Sahani S. "Fundamentals and Data Structure ", Computer Science Press.
4. Knuth D. "Threat of Computer Programming ", Vol 1-2 Addision – Wesley.
5. Aho A.V.Hopcraft and Ullman J.E. "Data Structure and Algorithms" addsion Wesley ".
6. Tanonbaum , A. M. and Augenstein , M.J. "Data Structure with Pascal" PHI.
7. Trambley and Sorenson "Data Structure using Pascal", MGH.
8. Stubbs D. "Data Structure with Abstract Data Type and Modula 2", Brooks & Cole Publication Comp.

Class: **Bachelor of Technology Fourth Semester Computer Science and Engineering**
Subject Name: **Java Programming**
Subject Code: CS4TPC02

UNIT-I

Object Oriented Paradigm, Basic Concepts of Object-Oriented Programming, Benefits of OOP, Applications of OOP, Java History, Java Features, How Java Differs from C and C++, Java and Internet, Java and World Wide Web, Web Browsers, Hardware and Software Requirements, Java Support Systems, Java Environment, Java Program Structure, Java Tokens, Java Statements, Installing and Configuring Java, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, Programming Style.

Unit-II

Constants, Variables and Data Types, Declaration of Variables, Giving values to variables, Scope of Variables, Symbolic Constants, Type Casting, Getting Values of Variables, Standard Default Values, Java Operators, Arithmetic Expression, Evaluation of Expressions, Precedence of Arithmetic Operators, Operator Precedence and Associativity , Mathematical Functions, Control Statements (if statement, switch statement and Conditional operator statement), Decision Making and Looping (while construct, do construct, for construct), Jumps in Loops, Labelled Loops.

Unit-III

Introduction of Class, Defining a Class, Fields Declaration, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance : Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalizer Methods, Abstract Methods and Classes, Methods with VARARGS, Visibility Control, Introduction of Array, One Dimensional Array, Creating an array, Two-Dimensional arrays, Strings, Vectors, Wrapper Classes, Enumerated Types. Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables, Java API Packages, Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, Hiding Classes, Static Import.

Unit-IV

Introduction to Multithreaded Programming, Difference between Multithreading and Multitasking, Creating threads, Extending the thread class, Stopping and Blocking a thread, Life Cycle of a thread, Using thread Methods, Thread Exception, Thread Priority, Synchronization, Implementing the Runnable Interface, Inter-thread Communication, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using Finally Statement, Throwing our own Exceptions.

Unit-V

Introduction of Applet Programming, How Applets Differ from Applications, 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, Attributes of Applet tag, Passing Parameters to Applets, Aligning the Display, Displaying Numeric values, Getting input from the user, Event handling, Introduction of Graphics Programming, Using Graphics class to draw Lines, Rectangles, Circles, Ellipses, Arcs, Polygons, Line Graphs, Bar Charts, Using Control Loops in Applets, Introduction to AWT package, Introduction of Input / Output files in Java, Concept of Streams, Stream

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: **Bachelor of Technology Fourth Semester Computer Science and Engineering**
Subject Name: **Data Communication and Networks**

Subject Code: CS4TPC01

Unit I
Introduction:
Components of Data Communication, Network Criterion, Network Topologies, Types of Networks. OSI, TCP/IP and other networks models, Examples of Networks: Arpanet, Internet.
Physical Layer: Introduction of transmission, Transmission media: Guided and Unguided, Switching and Encoding asynchronous communications, ISDN.

Unit II
Data link layer:
Logical Link Control Sub Layer: Design issues, Framing, Error Detection and Correction, CRC, Flow Control Protocols.
Medium Access Control Sub layer: Random Access Protocols, Controlled Access Protocols. Channelization Protocols, IEEE 802.X Standard Ethernet.

Unit III
Network Layer:
Forwarding and Routing, Virtual Circuit, Datagram Networks, Internet Protocol (IP)-IPv4 and IPv6, ICMP, Routing Protocols: Link State Routing, Distance Vector Routing, Hierarchical Routing, RIP, OSPF, BGP, Congestion Control, Mobile IP, IPsec.

Unit IV
Transport Layer:
Transport Layer Services: Multiplexing and Demultiplexing, UDP.
Connection-Oriented Transport: TCP-Segment Structure, RTT estimation, Flow Control, Connection Management, and Congestion Control.
Integrated and Differentiated Services.

Unit V
Application Layer:
Principles of Network Applications, World Wide Web, Protocols: HTTP, FTP, SMTP, MIME, DNS.
Network Security: Principles of Cryptography, Attacks and Countermeasures, Firewalls.
Recent technology on Computer Network.

TEXT BOOKS :
1. "Data Communications and Networking"-Behrouz A. Forouzan Third Edition TMH.
2. "Computer Networks"-Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI

REFERENCE BOOKS:
1. "An Engineering Approach to Computer Networks"-S.Keshav, 2nd Edition, Pearson Education
2. "Understanding communications and Networks", 3rd Edition, W.A. Shay, Thomson James

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering
Subject Name: RDBMS
Subject Code: CS5TPC01

UNIT- I [INTRODUCTION]

An overview of Database Management System, database system Vs file system, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure. Data Modelling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.

UNIT- II [RELATIONAL DATA MODEL AND LANGUAGE]

Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus, Introduction to SQL: Characteristics of SQL. Advantage of SQL.SQL data types and literals.Types of SQL commands.SQL operators and their procedure.Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.

UNIT- III [DATA BASE DESIGN & NORMALIZATION]

Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependences, loss less join decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design.

UNIT- IV [TRANSACTION PROCESSING CONCEPTS]

Transaction system, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling.

UNIT- V [CONCURRENCY CONTROL TECHNIQUES]

Concurrency control, locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi version schemes, Recovery with concurrent transaction.

Text Books:

1. Date C J, *An Introduction To Database System*, Addision Wesley.

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering
Subject Name: Visual Basic.NET
Subject Code: CS5TPE01

UNIT–I

Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Metadata,Assemblies : Public and Private. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser.

UNIT–II

The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions. Control flow statements: conditional statement, loop statement. Msgbox & Inputbox.

UNIT – III

Working with Forms : Loading, showing and hiding forms, controlling One form within another. GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer Properties, Methods and events. Dialog Control: OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label.

UNIT–IV

Object oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: Public Private, Projected. Overloading and overriding, My Base & My class keywords, Interface,Polymorphism: Interface based polymorphism and Inheritance based polymorphism

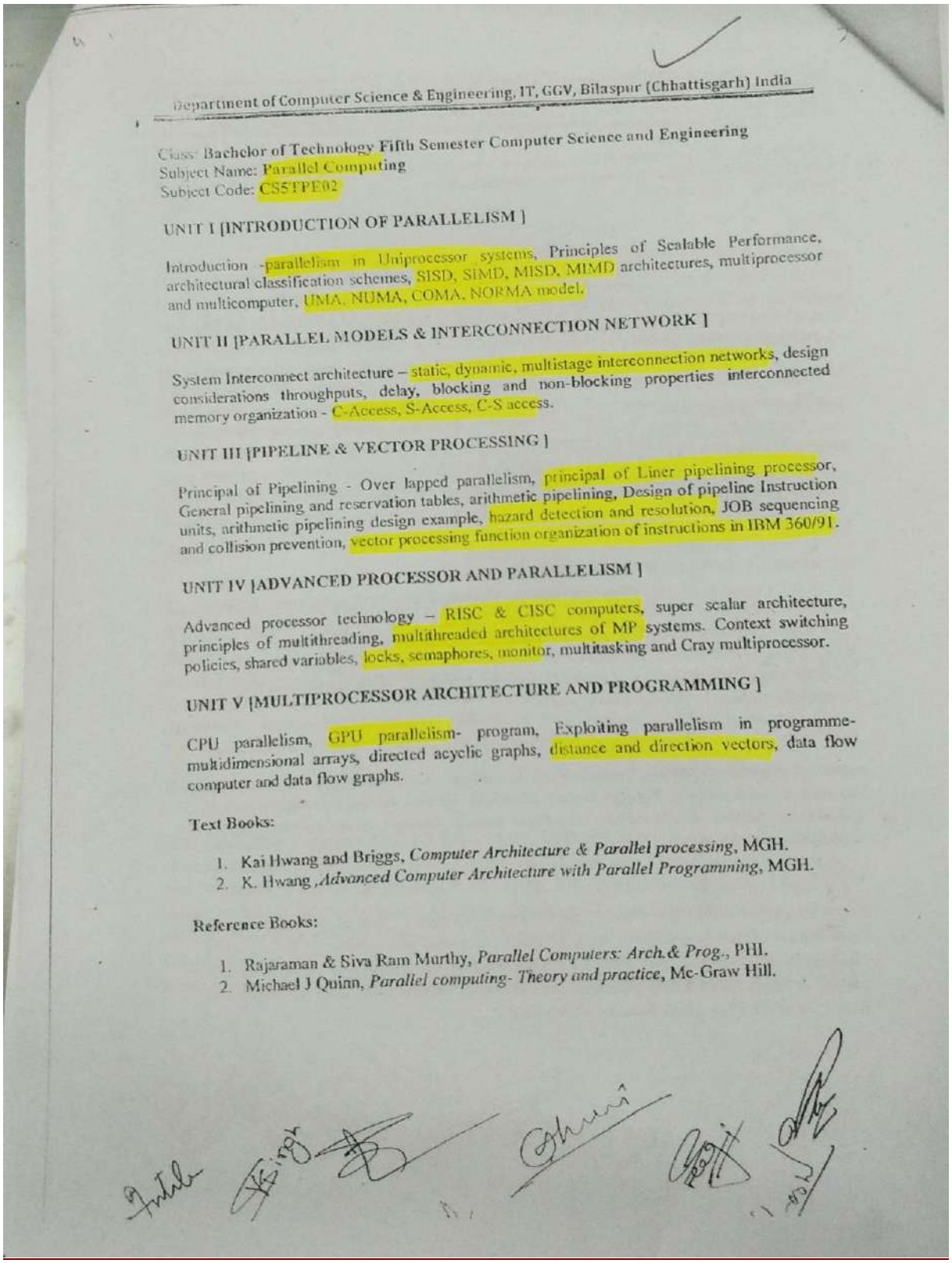
UNIT–V

Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.

Generate Reports Using CrystalReportViwer.

Text and Reference Books:

1. Stevenholzner, *VB.NET Programming Black Book*, Dreamtech publication.
2. Evangelospetroutsos, *Mastering VB.NET*, BPB publications.
3. *Introduction to .NET framework, Worx publication.*
4. msdn.microsoft.com/net/



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering
Subject Name: Parallel Computing
Subject Code: CS5TPE02

UNIT I [INTRODUCTION OF PARALLELISM]

Introduction -parallelism in Uniprocessor systems, Principles of Scalable Performance, architectural classification schemes, SISD, SIMD, MISD, MIMD architectures, multiprocessor and multicomputer, UMA, NUMA, COMA, NORMA model.

UNIT II [PARALLEL MODELS & INTERCONNECTION NETWORK]

System Interconnect architecture – static, dynamic, multistage interconnection networks, design considerations throughputs, delay, blocking and non-blocking properties interconnected memory organization - C-Access, S-Access, C-S access.

UNIT III [PIPELINE & VECTOR PROCESSING]

Principal of Pipelining - Over lapped parallelism, principal of Liner pipelining processor, General pipelining and reservation tables, arithmetic pipelining, Design of pipeline Instruction units, arithmetic pipelining design example, hazard detection and resolution, JOB sequencing and collision prevention, vector processing function organization of instructions in IBM 360/91.

UNIT IV [ADVANCED PROCESSOR AND PARALLELISM]

Advanced processor technology – RISC & CISC computers, super scalar architecture, principles of multithreading, multithreaded architectures of MP systems. Context switching policies, shared variables, locks, semaphores, monitor, multitasking and Cray multiprocessor.

UNIT V [MULTIPROCESSOR ARCHITECTURE AND PROGRAMMING]

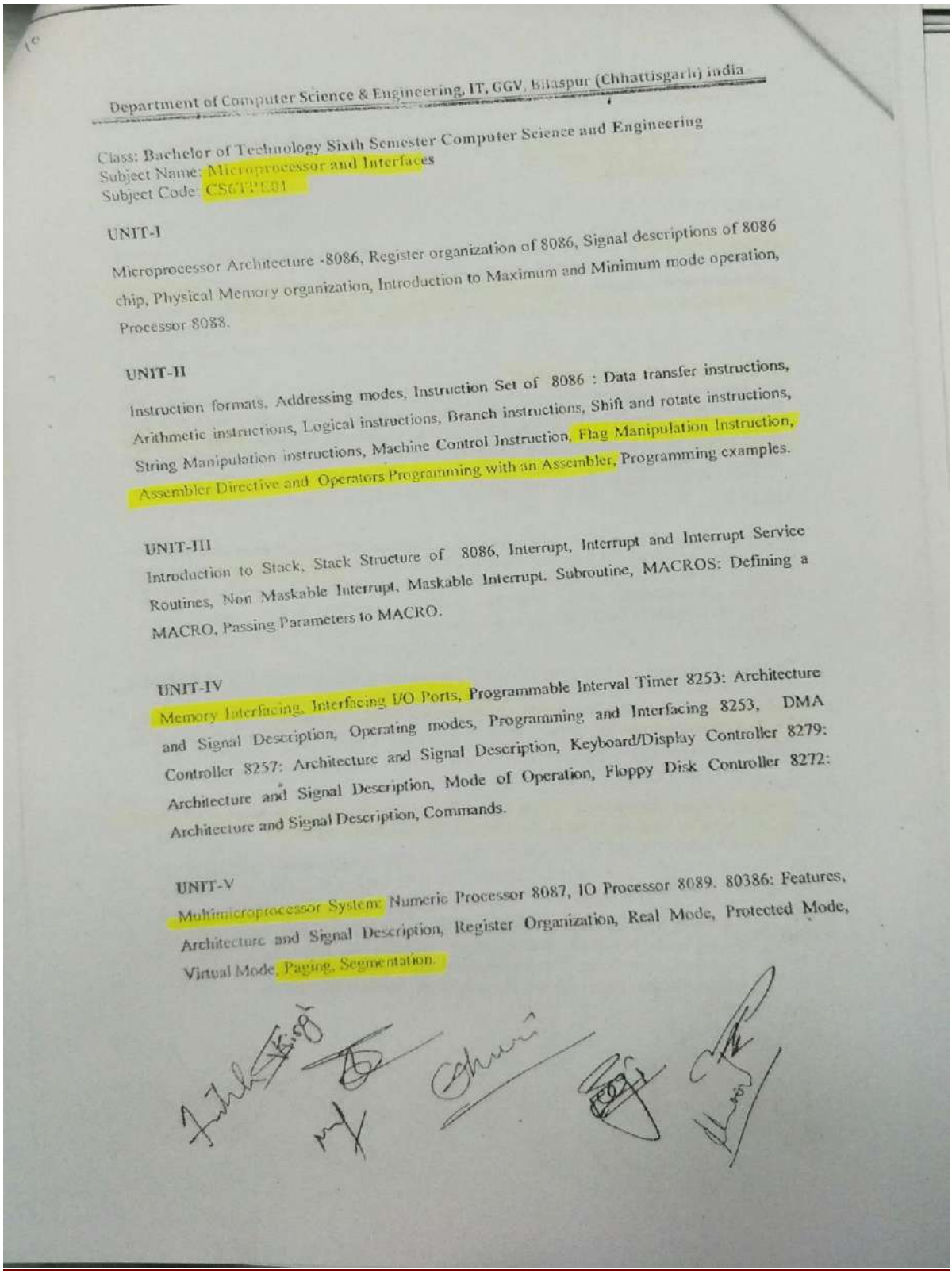
CPU parallelism, GPU parallelism- program, Exploiting parallelism in programme-mulkidimensional arrays, directed acyclic graphs, distance and direction vectors, data flow computer and data flow graphs.

Text Books:

1. Kai Hwang and Briggs, *Computer Architecture & Parallel processing*, MGH.
2. K. Hwang ,*Advanced Computer Architecture with Parallel Programming*, MGH.

Reference Books:

1. Rajaraman & Siva Ram Murthy, *Parallel Computers: Arch.& Prog.*, PHI.
2. Michael J Quinn, *Parallel computing- Theory and practice*, Mc-Graw Hill.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering
Subject Name: Microprocessor and Interfaces
Subject Code: CSGTPE01

UNIT-I

Microprocessor Architecture -8086, Register organization of 8086, Signal descriptions of 8086 chip, Physical Memory organization, Introduction to Maximum and Minimum mode operation, Processor 8088.

UNIT-II

Instruction formats, Addressing modes, Instruction Set of 8086 : Data transfer instructions, Arithmetic instructions, Logical instructions, Branch instructions, Shift and rotate instructions, String Manipulation instructions, Machine Control Instruction, Flag Manipulation Instruction, Assembler Directive and Operators Programming with an Assembler, Programming examples.

UNIT-III

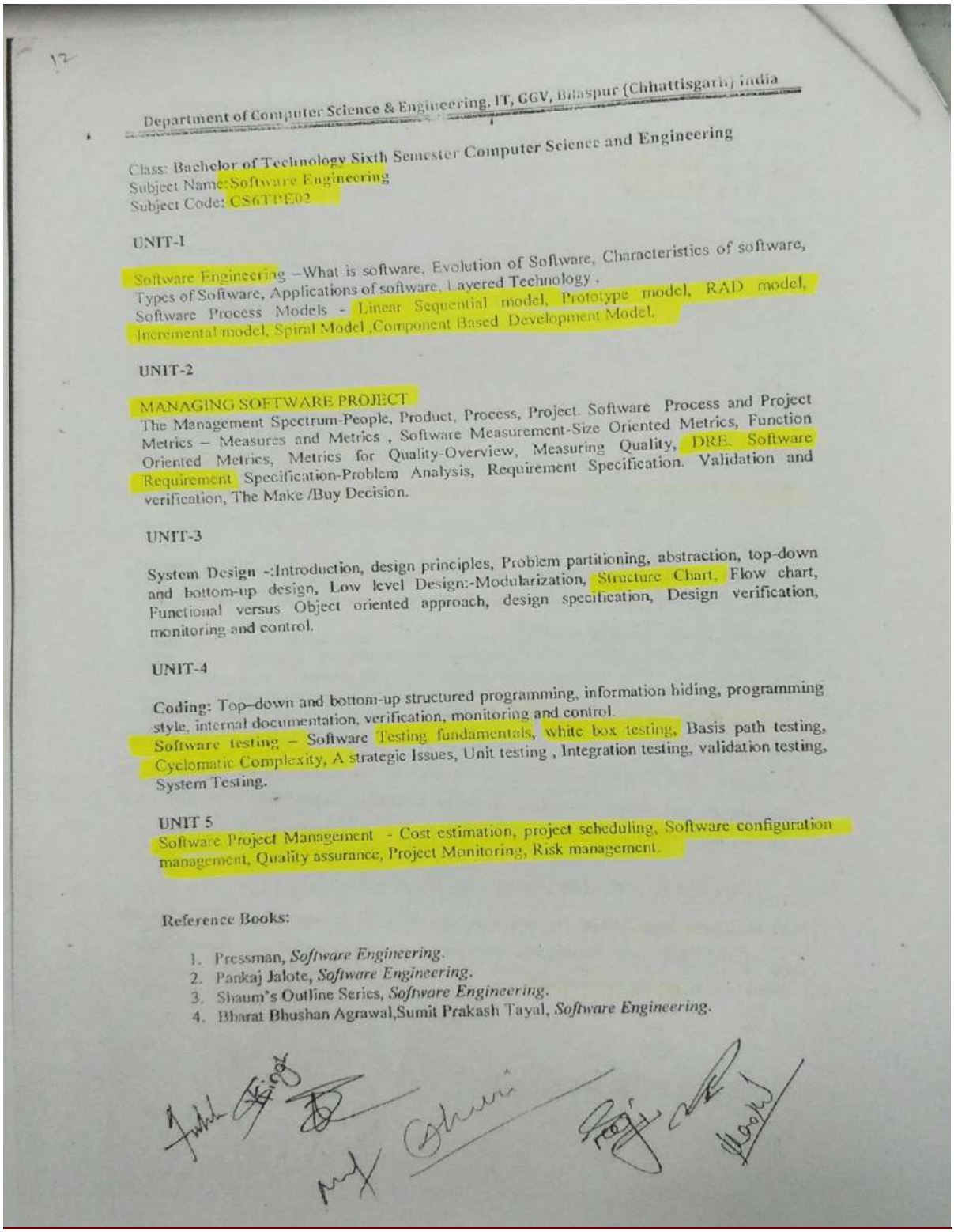
Introduction to Stack, Stack Structure of 8086, Interrupt, Interrupt and Interrupt Service Routines, Non Maskable Interrupt, Maskable Interrupt. Subroutine, MACROS: Defining a MACRO, Passing Parameters to MACRO.

UNIT-IV

Memory Interfacing, Interfacing I/O Ports, Programmable Interval Timer 8253: Architecture and Signal Description, Operating modes, Programming and Interfacing 8253, DMA Controller 8257: Architecture and Signal Description, Keyboard/Display Controller 8279: Architecture and Signal Description, Mode of Operation, Floppy Disk Controller 8272: Architecture and Signal Description, Commands.

UNIT-V

Multimicroprocessor System: Numeric Processor 8087, IO Processor 8089. 80386: Features, Architecture and Signal Description, Register Organization, Real Mode, Protected Mode, Virtual Mode, Paging, Segmentation.



12

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering
Subject Name: Software Engineering
Subject Code: CS6TPE02

UNIT-I

Software Engineering –What is software, Evolution of Software, Characteristics of software, Types of Software, Applications of software, Layered Technology , Software Process Models - Linear Sequential model, Prototype model, RAD model, Incremental model, Spiral Model ,Component Based Development Model.

UNIT-2

MANAGING SOFTWARE PROJECT
The Management Spectrum-People, Product, Process, Project. Software Process and Project Metrics – Measures and Metrics , Software Measurement-Size Oriented Metrics, Function Oriented Metrics, Metrics for Quality-Overview, Measuring Quality, DRE. Software Requirement Specification-Problem Analysis, Requirement Specification. Validation and verification, The Make /Buy Decision.

UNIT-3

System Design -:Introduction, design principles, Problem partitioning, abstraction, top-down and bottom-up design, Low level Design:-Modularization, Structure Chart, Flow chart, Functional versus Object oriented approach, design specification, Design verification, monitoring and control.

UNIT-4

Coding: Top–down and bottom-up structured programming, information hiding, programming style, internal documentation, verification, monitoring and control.
Software testing – Software Testing fundamentals, white box testing, Basis path testing, Cyclomatic Complexity, A strategic Issues, Unit testing , Integration testing, validation testing, System Testing.

UNIT 5
Software Project Management - Cost estimation, project scheduling, Software configuration management, Quality assurance, Project Monitoring, Risk management.

Reference Books:

1. Pressman, *Software Engineering*.
2. Pankaj Jalote, *Software Engineering*.
3. Shaum's Outline Series, *Software Engineering*.
4. Bharat Bhushan Agrawal,Sumit Prakash Tayal, *Software Engineering*.

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering
Subject Name: Computer Graphics
Subject Code: CS6TOE01

UNIT I

Line Generation Points, lines, Plaines Vector, pixels and frame buffers, Vector and character generation. Graphics Primitives, Display devices , Primitive operation , Display- file structure, Display control text.

UNIT II

Polygons: Polygons representation, Entering polygons, Filling Polygons.Transformation: Matrices Transformation, transformation routines Display procedures.

UNIT III

Segments: Segments table, Creating Deleting and renaming a segment Visibility, Image transformation. Windowing and Clipping : Viewing transforming, Clipping, Generalized clipping , multiple windowing.

UNIT IV

Three Dimensions: 3-D Geometry Primitives, Transformation, Projection, Clipping, Hidden line and Surfaces Back-face Removal Algorithms, Hidden line methods.

UNIT V

Rendering and Illumination: Introduction to curve generation. Bezier, Hermit and B-spline algorithms and their comparisons.

Reference book:

1. Hearn Baker, *Computer Graphics*, PHI.
2. Rogers , *Procedural Elements of Computer Graphics* , McGraw- Hill.
3. Newman & Sproulle , *Principles of Interacive Computer Graphics*, MGH.
4. Harringtons S., *Computer Graphics A Programming Approach*, MGH.
5. Rogers & Adams, *Mathematical Elements of Computers Graphics*, MGH.
6. Henary Baper , *Computer Graphics*.

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Fifth Semester Computer Science and Engineering
Subject Name: Management Information System
Subject Code: CS5TOE01

UNIT I

Introduction of Information System, Fundamentals of Information System, Strategic Role of Information in Organization and Management, Three dimensions of Information System, Information System and Organization, Business Process Re-Engineering, Traditional and Computer based information system.

UNIT II

Integration of Information, Types of Decision making in Organization, Decision Making Process, Models and Decision Support, Decision in business Areas, Strategic Analysis.

UNIT III

Information System Planning, Types of Controlling Information System, Development of MIS Methodology and Tools/Techniques for Systematic Identification, Evaluation, Modification of MIS, Information System Success and Failure Implementation.

UNIT IV

Information System for Business Operations: Cross Functional Information System, A study of major Financial, Production, Human Resource Information System and Marketing Information System.

UNIT V

Management of Information System and End - User Computing, Security and Ethical issues of Information System, Major issues in Information System, Auditing of Information System.

Reference Books:

1. Gerald V,. Post and David L. Anderson, *Management Information System: Solving Business Problems with Information Technology*, Tata McGraw - Hill Edition.
2. James A. O'Brien, *Management Information System: Managing Information Technology in the Internet worked Enterprise*, Tata McGraw -Hill Edition.
3. Kenneth C. Laudon and Jane Price Loudon., *Management Information System: A Contemporary Perspective*, Maxwell Macmillan International Editions.

Class: Bachelor of Technology Seventh Semester Computer Science and Engineering
Subject Name: Compiler Design
Subject Code: CS7TPC01

UNIT-I

Overview of translation process., Definition, Phases of Compiler, Lexical analysis: Introduction, Functions of lexical Analysis, automatic generation of lexical analyzers.

UNIT-II

Parsing theory: Introduction, Difference between Top Down and bottom up parses. Different Types of Parsers : Predictive Parser, Shift-Reduce Parser, LR Parsers(SLR, CLR, LALR), Operator Precedence Parser Automatic generation of parsers.

UNIT-III

Intermediate code generation: Different intermediate forms: Syntax tree , TAC , Quadruples, Triples, , Indirect Triples, Syntax directed translation mechanism and attributed definition.
Code Optimization: Global data flow analyses, A few selected optimizations like command sub expression removal, loop invariant code motion, strength reduction etc.

UNIT-IV

Code generation: DAG , Machine model, order of evaluation, registers allocation and code selection, Code generation algorithm.

UNIT-V
Run time theory management: static memory allocation and stack based memory allocation schemes. Symbol table management.

References:

1. A.V.Aho, Ravi Sethi, J.D.Ullman, *Compilers tools and Techniques*, Addison Wesley.
2. D.M.Dhamdhere, *Compiler Construction-Principles and practice*, Macmillan, India.
3. Tremblay J.P. and Sorenson, *P.G. the theory and practice of compiler writing*, McGraw Hill.
4. Waite W.N. and Goos G., *Compiler construction*, Springer Verlag.
5. Gulshan Goyal, *Compiler Design* , Sun India publication.
6. Anamika Jain, *Compiler Design*.

Class: Bachelor of Technology Seventh Semester Computer Science and Engineering
Subject Name: Artificial Intelligence
Subject Code: CS7TPC02

UNIT-I

Introduction of Artificial Intelligence(AI), Difference between Intelligence and Artificial Intelligence, Definitions of AI, Strong AI and Weak AI, Application areas of AI, Comparison of Conventional and AI Computing, History of AI, Turing Test, Branches of AI, Intelligent Agents, State Space Representation, Production System, Heuristic Search, Search Methods (Uninformed Search and Informed Search), Breadth First Search, Depth First Search, Difference between Breadth First Search and Depth First Search, Hill Climbing, Best First Search.

Unit-II

Role of Knowledge Representation in AI, Types of Knowledge, Properties of Knowledge Representation System, Categories of Knowledge Representation Scheme, First Order Predicate Calculus, Well Formed Formula in Predicate Logic, Conversion to Clausal Form, Resolution in Predicate Logic, Semantic Nets, Properties of Semantic Nets, Frames, Scripts, Advantages and Disadvantages of Scripts.

Unit-III

Introduction of Expert System, Comparison between Human Expert and Expert System, Comparison between Expert System and Software System, Difference between Knowledgebase and Database, Basic Components of an Expert System, Characteristics of Expert System, Life Cycle Development of Expert System, Advantages of Expert System, Limitation of Expert System, Expert System Tools, Existing Expert Systems (DENDRAL and MYCIN).

Unit-IV

Introduction to LISP : Syntax and Numeric Functions, Working with GNU CLISP, Basic Data Objects in GNU CLISP, Basic List Manipulation Functions in GNU CLISP (setq, car, cdr, cons, list, append, last, member, reverse), User Defined Functions in GNU CLISP, Predicates (atom, equal, evenp, numberp, oddp, zerop, >=, <=, listp, null) and Conditionals (cond and if) in GNU CLISP, Logical Functions (not, or, and) in GNU CLISP, Input / Output and Local Variables (read, print, princ, terpri, format, let, prog) in GNU CLISP, Recursion and Iteration(do) in GNU CLISP, Arrays in GNU CLISP.

Unit-V

Introduction to PROLOG, Term, Ground Term, Function, Predicate, Features of PROLOG, Program Clause, Unit Clause, Logic Program, Goal Clause, Empty Clause, Simple Query, Conjunctive Query, Structure of PROLOG Program, Working with SWI-Prolog, General

Syntax of PROLOG, Execution of a Query in Logic Program (Ground Query and Non-Ground Query), Law of Universal modus ponen, Ground Reduction, PROLOG Control Strategy, Search Tree and Proof Tree, Relational and Arithmetic Operators, Recursion in PROLOG, Lists manipulation in PROLOG, Iterative programming in PROLOG.

Recommended books:

Text Book:

1. E. Rich and K. Knight, *Artificial Intelligence*, Forty Sixth Edition, Tata McGrawHill, 2007.
2. D.W. Patterson, *Introduction to Artificial Intelligence and Expert Systems*, Tenth Edition, Prentice Hall of India, 2001.
3. S. Kaushik, *Logic and Prolog Programming*, New Age International Limited, 2006.

Other Reference:

1. www.wikipedia.org
2. www.tutorialspoint.com

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Seventh Semester Computer Science and Engineering
Subject Name: Data Mining
Subject Code: CS7TPE01

UNIT-I

Data Ware Housing :- Introduction, Multidimensional data model, OLAP Operation , Warehouse schema ,Data Ware Housing Architecture, Warehouse Server, Metadata , OLAP , engine. Data Mining:- Introduction, KDD Vs. Data mining, DBMS Vs DM , DM Techniques , Other mining problem , Issues & Challenges in DM , DM Application Areas.

UNIT-II

Association rules: -Introduction, methods to discover association rules, A Priori Algorithm, Partition Algorithm, Pincer –Search algorithm , Dynamic Item set counting algorithm , FP-tree Growth algorithm , Incremental algorithm, Border algorithm.

UNIT-III

Clustering Techniques :- Introduction , clustering paradigms , partitioning algorithms, k-Medoid Algorithm, CLARA ,CLARANS , Hierarchical clustering , DBSCAN , BIRCH, CURE, Categorical clustering algorithms , STIRR, ROCK , CACTUS.

UNIT -IV

Decision Trees:-Introduction, Tree construction principal , Best spilt splitting indices, splitting criteria , Decision tree construction algorithm, CART, ID3, C4.5 , CHAID , Decision tree construction with presorting , Rainforest , CLOUDS, BOAT .

UNIT-V

Web Mining: - Web mining, Web content mining, Web structure mining, Web usage mining, Textmining, Episode rule discovery for texts, Hierarchy of categories, text clustering.

Books & References:-

1. Arun K Pujari , *Data Mining techniques*, Universities press.
2. Jiaweihan , Michelinekamber , *Data Mining concepts & techniques*, Morgan Kaufmann publisher Elsevier India.
3. Cios , Pedrycz , swiniarski, *Data Mining methods for knowledge Discovery*, Kluwer academic publishers London.

Class: Bachelor of Technology Seventh Semester Computer Science and Engineering
Subject Name: Wireless Sensor Network
Subject Code: CS7TPE02

UNIT- I

Wireless Sensor Network: Introduction, Architecture, Hardware and Software used in Wireless Sensor Network.

UNIT- II

Sensor network application: Motion monitoring, Environmental monitoring, Generic Architecture, Sensor network Evolution.

UNIT- III

Wireless Sensor Network : Design , Goals and Issues , Sensor deployment, Scheduling and coverage issues, self-configuration and topology control, Querying, data collection and processing, Collaborative information processing and group connectivity.

UNIT- IV

Wireless Sensor Routing Protocols: Data Centric, Hierarchical, Location based, Energy efficient routing

UNIT- V

Sensor Network Challenges- Miniaturization, power management, scalability, remote management, usability, standardization and security, System Challenges- Tiny OS, Network Sensor Platforms.

Books & References:-

1. Robert Faludi Binding , *Building Wireless Sensor Networks* , Paperback Publisher: O'reilly.

2. Zhao Feng, Guibas Leonidas, *Wireless Sensor Networks*, Binding: Paperback Publisher: Elsevier India.

3. C. S Raghavendra, Krishna M. Sivalingam, TaiebZnati , *Wireless Sensor Networks*, Binding: Paperback Publisher: Springer/bsp Books.

Class: Bachelor of Technology Seventh Semester Computer Science and Engineering
Subject Name: **Web Technologies**
Subject Code: **CS7TOE01**

UNIT-I

Fundamentals of Web, History of the Web, Growth of the Web in post decade, Web function. Security aspects on he web, Computational features encompassing the Web. Working Web Browsers, concepts of search Engines, Searching the Web, Web Servers.

UNIT-II

Internet: - Networks, Client & Server, WWW, URL, HTTP, Internet requirements, Internet Services, Internet Java Script introduction, operators, statements, loops, object manipulation, function, objects, events handler, always, events.

UNIT-III

HTML: - Introduction, cascading style sheets, content positioning HTML content, Downloadable fonts, vising Java Script with positioned content, Layer object, Handling events using localized scripts, Animating images, VB script, Introduction, Adding VB script to Web Range, Working with variables, constants, arrays, objects, conditional statements loop statements, Forms.

UNIT-IV

Active Server Page(ASP)Introduction , Hs Internet Information System , A authentication , Basic authentication , NT challenge response , active server page, asp objects , server objects , file system objects , session ,accessing database with an ASP page, create an ODBC ADO connection object, common methods & Properties events , collections ADO record set object.

UNIT-V

XML :- Introduction, TO XML ,XML schemas ,DOM structure model, using XML queries. Building a path , Sharing functions. Introduction of personal home page (PHP) design.

References:

1. Achyut S Goldbole and atul khute, *Web Technology*, Tata McGraw Hill.
2. Gopalan NP Akilandeswari, *Web Technology : A neveloper's perspechive* , PHI.
3. C Xavier, *Web Technology & Design*, Tata McGraw Hill.

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Eighth Semester Computer Science and Engineering
Subject Name: Network Security
Subject Code: CS8TPC01

UNIT-I

Services , Mechanisms ,and Attacks , The OSI Security Architecture , A Model for Network Security , symmetric cipher model , substitution techniques Transposition techniques, Rotor machines , Steganography .

UNIT-II

Block ciphers and the Data Encryption Standard , simplified DES , Block cipher principles , The data Encryption Standard ,The Strength of DES. Differential and Linear Cryptanalysis ,Block Cipher Design principles ,Block Cipher Modes of Operation , Evaluation Criteria for AES The AES cipher , Triple DES , blowfish , RC5, RC4 Stream Cipher ,

UNIT–III

Principles of Public –Key Cryptosystems , Public –Key Cryptosystems , Applications for public –Key Cryptosystems , Requirements for public –Key Cryptosystems , Public –Key Cryptosystems , The RAS Algorithm , Computational Aspects , The Security of RSA , Key management , Distribution of public keys , public –Key Distribution of Secret Keys , Differ – Hellmann Key Exchange,

UNIT-IV

Web Security :Web Security Threats , Web Traffic Security Approaches , SSL Architecture , SSL Record Protocol , Change Cipher Spec Protocol ,Alert Protocol , Handshake Protocol , Cryptographic Computations ,Transport Layer Security , Secure Electronic Transaction ,

UNIT V

Intruders : Intrusion Techniques ,Intrusion Detection , Audit Records , Statistical Anomaly Detection ,Rule –Based Intrusion Detection ,The Base –Rate Fallacy , Distributed Intrusion Detection , Honeypots , Intrusion Detection Exchange Format Firewall Design principles , Firewall Characteristics , Types of Firewalls , Firewall Configurations .

Reference Books :

1. William Stallings, *Cryptography and Network Security* , Principles and Practice.

Class: Bachelor of Technology Seventh Semester Computer Science and Engineering
Subject Name: **Digital Image Processing**
Subject Code: **CS7TOE04**

UNIT- I

Introduction to Image Processing: Overview, Digital Image Representation,Types of Image,Image Processing steps, Application. Digital Imaging Systems: Overview, Physical Aspects of Image acquisition, sampling, Quantization, Image storage and formats.

UNIT-II

Digital Image Transform: Types of Image transform, Basis for transform, Fourier transform, Discrete Cosine transform, sine transform, Walsh transform, Hadamard transform, Haar transform, Slant transform.

UNIT-III

Image Enhancement : Need for Image Enhancement, Image Enhancement operation, Image Enhancement in Spatial Domain, Histogram based Techniques, Spatial Filtering concept, Image smoothing and sharpening in spatial Domain and Frequency Domain.

UNIT-IV

Image Restoration: Introduction to Degradation, types of Image Degradation, Noise Modeling, Image Restoration in presence of Noise: Mean filters,Geometric mean filter, Median filter, Maximum andMinimum filter, Midpoint filter, Band pass filter. Image Restoration Technique: Unconstrained method and constrained method.

UNIT-V

Image Compression: fundamental of Image compression, Compression Algorithm and its types, lossless compression algorithm and lossy compression algorithm.

References Books:

1. Gonzalez and Woods, *Digital Image Processing*, Pearson Education.
2. S.Sridhar, *Digital Image Processing*, Oxford University Press.
3. Jayaraman, Esakkirajan and Veerakumar, *Digital Image Processing*, TMH.
4. Anil Jain, *Fundamentals of Digital Image Processing*, PHI Learning.
5. Sonka, Hlavac and Boyle, *Digital Image Processing and Computer Vision*, Cengage Learning.

Class: Bachelor of Technology Eighth Semester Computer Science and Engineering
Subject Name: **Enterprise Resource Management**
Subject Code: **CS8TOE01**

UNIT-I

ERP: An Overview, Enterprise – An Overview, Benefits of ERP, ERP-I, ERP-II, Function of Business Organizations: Business Models, Functions and Integrated View of ERP for Accounting Financial Management, Marketing and Sales Management, Manufacturing Managements, Human Resource Management etc., Sales Order Processing.

UNIT-II

Business Functions and Processes ,Mainstream, Supportive and Administrative Processes in Enterprise, ERP and Related Technologies- Business Process Reengineering (BPR) Characteristics, Building Steps, Difference Between Business Improvement and BPR, Types of BPR etc. Electronic Commerce, Brief Introduction of Knowledge Based System, AI and Expert System, Networking and Multi Tier Architecture. Data Warehousing, Data Mining, OLAP, SCM.

UNIT-III

Management Information System: MIS, DSS,EIS and ESS, Data & Information, Levels of Management, Characteristics of Information, Information Attributes, Quality Issues of Information Prevention of Misuse of Information, etc.

UNIT-IV

Information and Planning: MRP, MRP-II, Forecasting and it's Varies Aspects, Qualitative and Quantitative Forecasting, Various Methods in Forecasting, Scheduling Like Single Machine/Job Scheduling etc.

UNIT-V

ERP Implementation: Lifecycle, Software Development Life Cycle, Pre-Evaluation Schemes, Post-Implement Issues, Hidden Costs, , Implementation Methodology, Vendors, Case Studies.

Text Books

1. Leon Alexis, *Enterprise Resource Planning*, McGraw-Hill
2. Kenneth C. Laudon, J. P. Laudon, *Management Information Systems*, Pearson Education

Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Eighth Semester Computer Science and Engineering
Subject Name: **Soft Computing**
Subject Code: **CS8TPE01**

UNIT-I

Introduction of Soft Computing, Difference between Hard and Soft Computing, Introduction of Artificial Neural Network (ANN), Features of Biological Neural Networks, Biological Neural Network, Performance Comparison of Computer and Biological Neural Network, Historical Development of Neural Network Principles, Benefits of Neural Networks, Basic Elements of Artificial Neural Network, Basic Representation Techniques of Artificial Neural Network (Block Diagram Representation, Signal Flow Graph, Architectural Graph) , Activation Functions, Network Architectures (Single-Layer Feed-forward, Multi-Layer Feed-forward and Recurrent Network), Examples of Artificial Neural Network Systems.

Unit-II

Mendel and McClaren Definition of Learning in the Context of Neural Network, Error Correction Learning, Hebbian Learning, Competitive Learning, Supervised and Unsupervised Learning, Some Basic Artificial Neural Network Models: McCulloch-Pitts Model and Rosenblatt's Perceptron Model, Delta Learning Rule, Widrow-Hoff Learning Rule, Construction of Logic Gates (AND, OR, NOR, NAND, NOT) using Artificial Neural Network, XOR Problem, Tourtzky and Pomerleau solution to the XOR problem, Backpropagation Algorithm, Multilayer Perceptron, Adaline, Madaline.

Unit-III

Introduction of Fuzzy Logic, Crisp Sets, Operations on Classical Sets, Properties of Crisp Sets, Fuzzy Sets, Membership Function, Fuzzy Set Operations, Properties of Fuzzy Sets, Crisp Relations, Operations on Crisp relations, Fuzzy Relation, Operation on Fuzzy Relations, FAM System Architecture, Similarities and Dissimilarities between Fuzzy Logic and Neural Networks.

Unit-IV

Introduction to Genetic Algorithms(GA), Genetic Algorithms, Flowchart of GA, Some Genetic Representations (Binary Representation, Octal Representation, Hexadecimal Representation), Selection, Genetic Operators, Mutation, Brief Introduction to Evolutionary Programming, Brief Introduction to Swarm Intelligence.

Unit-V

Introduction to Application of ANN, Direct Application (Travelling Salesman Problem), Application Areas (NETtalk, Phonetic Typewriter, Recognition of Handwritten Digits), Neural Truck Backer-Upper Control System, Fuzzy Truck Backer-Upper Control System, Comparison of Fuzzy and Neural Truck Backer-Upper Control Systems.