DEV SANSKRITI
VISHWAVIDYALAYA

Bachelor of Science (Information technology)

Syllabus
(As per CBCS Guidelines)

Faculty of Science

Department of Computer Science

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B.Sc (IT) (Bachelor of Science in Information Technology)

Syllabus @ Glance

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Conventions

Core Papers	C
Discipline Specific Electives	DSE
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SEMESTER I

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 101	Fundamental of IT	3	1	0	4	70	30	-	-	100
2.	SBITC102	Fundamental concept of Programming	3	1	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 103	Fundamental of Yoga	3	1	0	4	70	30	-	-	100
		ABILITY ENHANCEMENT COURSE									
4.	SBITE 104	Environment Science	0	1	2	2	35	15	-	-	50
		PRACTICALS									
5.	SBITP 105	Fundamental of IT Lab	0	0	4	2	-	-	35	15	50
6.	LMUC 101	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:21		Total credit:				18	Total mark				450

SEMESTER II

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 201	Programming in C	3	1	0	4	70	30	-	-	100
2.	SBITC 202	Operating system	3	1	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 203	Applied mathematics	3	1	0	4	70	30	-	-	100
		ABILITY ENHANCEMENT COURSE									
4.	SBITE 204	Professional communication	0	1	2	2	35	15	-	-	50
		PRACTICALS									
5.	SBITP 205	Programming in C Lab	0	0	4	2	-	-	35	15	50
6.	LMUC 201	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:21		Total credit:				18	Total mark				450

SEMESTER III

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 301	Data Communication & Computer Network	3	1	0	4	70	30	-	-	100
2.	SBITC 302	Financial Accounting and management	3	1	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 303	Microprocessor	0	2	2	4	70	30	-	-	100
		SKILL ENHANCEMENT									
4.	SBITE 304	Open Source Technology-	0	1	2	2	-	-	35	15	50
		PRACTICALS									
5.	SBITP 305	Data Communication & Computer Network Lab	0	0	4	2	-	-	35	15	50
6.	LMUC301	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:21		Total credit:				18	Total mark				450

SEMESTER IV

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 401	Database Management System	3	1	0	4	70	30	-	-	100
2.	SBITC 402	Object Oriented Programming Using C++	4	0	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 403	E-commerce	0	2	2	4	70	30	-	-	100
		SKILL ENHANCEMENT									
4.	SBITE 405	Tally	0	1	2	2	-	-	35	15	50
		PRACTICALS									
5.	SBITP 406	Object Oriented Programming Using C++ Lab	0	0	4	2	-	-	35	15	50
6.	LMUC 401	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:33		Total credit:				26	Total mark				450

SEMESTER V

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 501	Web Technology	3	1	0	4	70	30	-	-	100
2.	SBITC 502	System Analysis And Design	4	0	0	4	70	30	-	-	100
		Discipline Specific Electives(any two)									
3.	SBITE 503	Transaction Processing System	3	1	0	4	70	30	-	-	100
	SBITE 504	Cyber Security	3	1	0	4					
4.	SBITE 505	Mobile Application development	2	0	0	2	35	15	-	-	50
	SBITE 506	Emerging Technology And Innovation	2	0	0	2					
		PRACTICALS									
8.	SBITP 507	Web Technology Lab	0	0	4	2			35	15	50
9.	LMUC 501	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:26		Total credit:				18	Total mark				450

SEMESTER VI

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 601	Entrepreneurial Development	3	1	0	4	70	30	-	-	100
		Discipline Specific Electives (one)									
2.	SBITE 602	Basic Of Multimedia And animation	3	1	0	4	70	30	-	-	100
	SBITE 603	Virtualization And Cloud Computing	3	1	0	4					
	SBITE 604	Green Computing	3	1	0	4					
		PRACTICALS									
4.	SBITP 605	Project	0	8	-	8	-	-	100	100	200
5.	LMUC 601	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:20		Total credit:				18	Total mark				450

SEMESTER I

SEMESTER I											
S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 101	Fundamental of IT	3	1	0	4	70	30	-	-	100
2.	SBITC102	Fundamental concept of Programming	3	1	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 103	Fundamental of Yoga	3	1	0	4	70	30	-	-	100
		ABILITY ENHANCEMENT COURSE									
4.	SBITE 104	Environment Science	0	1	2	2	35	15	-	-	50
		PRACTICALS									
5.	SBITP 105	Fundamental of IT Lab	0	0	4	2	-	-	35	15	50
6.	LMUC 101	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:21		Total credit:				18	Total mark				450

Code : SBITC 101

Fundamental of IT

Credits: 4 **Maximum Marks:** 100

Description: This course will let student understand the basics of an IT and computer.

Purpose: To get familiar with basic operation of information technology tools.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.

Recommended Study habit:

- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. "Computer Fundamental", P.K. Sinha, BPB Publication
2. "Introduction To Computer, Peter Nortan, Mcgraw-Hill Publication
3. Kaye, Barbaka K. Norman J Medoff(2001),The World Wide Web-A Mass Communication Perspective, Mc Graw Hill Higher Education ,New York.
4. Digital Computer Fundamentals By Bartee, Thomas C.

UNIT – I

Theme	Description	Lectures
Introduction To IT	• **Basic Concept of IT** • Data & Information • Characteristics of Information • Data Processing • Applications of Information Technology • **Introduction of computer**: History ,Classification • Types Of Computer • Concept Of Software & Hardware • **Types Of Software** :System Software And Application Software • Input Output Device	8

UNIT – II

Theme	Description	Lectures
Number system	• **Number system:** Decimal, Binary, octal, hexadecimal converting techniques in number system • 1'S complements,2's complements • Computer codes, rules and laws of Boolean algebra, basic gates(NOT,AND& OR)	8

UNIT – III

Theme	Description	Lectures
Memory & storage	• **Computer Memory:** Primary memory & Secondary memory • Random Access Memory (RAM) • Read Only Memory (ROM) • **Storage Device:** Hard Disk, DVD, Flash Memory	8

UNIT – IV

Theme	Description	Lectures
Working with Office	• **Word:** Toolbars, Menu, Editing A Document, Previewing Document, Printing Documents, Mail Merge • **Excel:** Creating Worksheet, Entering Data Into Worksheet, Handling Information, Formulation • **Power Point:** Menu, Insert, Format, Tools, Slide Show, And Formatting Slides	8

UNIT – V

Theme	Description	Lectures
Internet & its Use	• History & Internet • Web Browsers • Working of Internet • Internet Application	8

Code : SBITC 102

Fundamental Concept of Programming

Credit : 4 **Maximum Marks:** 100

Description: This course will let student understand the basics of Programming.

Purpose: To get familiar with basic Fundamental concept of Programming Language.
Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer

Recommended Study habit:

- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Fundamental of Programming Language by E. Horowitz.

UNIT – I

Theme	Description	Lectures
Problem Solving & Analysis	• Nature of Problem • Problem Solving • Problem Analysis • Problem Analysis Techniques	8

UNIT – II

Theme	Description	Lectures

Problem Solving Techniques	• Definition of Algorithm
	• Representation of Algorithm
	  ○ Pseudo codes:
	  ▪ Definition
	  ▪ Examples
	  ▪ Basic Guidelines
	  ○ Flow Charts:
	  ▪ Benefits
	  ▪ Types
	  ▪ Building Blocks(Symbols)
	  ○ Decision Tables
		8

UNIT – III

Theme	Description	Lectures

Programming	• Define Programming
	• Types of Programming
	  ○ Structured Programming
	  ○ Modular Programming
	  ○ Object Oriented Programming
	  ○ Event Driven Programming
		8

UNIT – IV

Theme	Description	Lectures
Programming Elements	• Variable • Data Types • Input and Output • Conditional Structures • Loops • Function and Subroutine	8

UNIT – V

Theme	Description	Lectures

Editors & Translators	• Editors
	• Translators:
	  ○ Compiler
	  ○ Interpreter
	• Debugger
	• Integrated Development Environment (IDE)
	• Rapid Application Development (RAD)
		8

Code: SBITP 105

Fundamental of IT Lab Manual

Credits: 2

Maximum Marks: 50

Aim: This course contains task list intended to explore the fundamental knowledge of implementing concept of MS Office as well as working on Internet.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer

Recommended Practices:

- ✓ Do Practice as instructions are given.

Contents

Tasks List	Description
Task 1	Create a Document and ○ Bullets and Numbers ○ Apply various Font Parameters. ○ Apply Left, Right, and Centre alignments. ○ Apply Hyperlinks ○ Insert Picture ○ Insert ClipArt ○ Show the use of WordArt ○ Add Borders and Shading ○ Show the use of Find and Replace. ○ Apply header/footers
Task 2	Create your resume using General Templates.
Task 3	Create a Student Table and do the following: ○ Insert new row and fill data ○ Delete any existing row ○ Resize rows and columns ○ Apply border and columns ○ Apply merging/splitting of cells ○ Apply sort ○ Apply various arithmetic and logical formulas.
Task 4	Implement the concept of mail merge.
Task 5	Creating Worksheet
Task 6	Entering data into Worksheet
Task 7	Generation of Mark Sheet of a student. Generate the following worksheet Roll No. Marks 2050 67 2051 49 2052 40 2053 74 2054 61
Task 8	Roll No. Marks 2055 57 2056 45 And do the Following: ○ Create charts of the marks ○ Computer sum of marks using, autosum, autocalculate and sum function. ○ Computer average of marks. ○ Show pass or fail if marks are above 50 or less than 50
Task 9	Put header and footer in the spread sheet Compare the cost, overheads and sales figures of a company for last three years through appropriate chart.
Task 10	Make a presentation of college Education System Using: ○ Blank Presentation ○ From Design Template
Task 11	Make a Presentation on “Wild Life” and apply the following: ○ Add audio and video effects ○ Apply various Color Schemes ○ Apply various animation schemes. ○ Apply Slide Show
Task 12	Create your E-Mail ID.
Task 13	Login through your E-Mail ID and do the following: ○ Read your E-Mail ○ Compose a new Mail ○ Send the Mail to one persons ○ Send the same Mail to various persons ○ Delete the Mail ○ Send files as attachment.
Task 14	Surf Internet using Google to find information about your state.
Task 15	Surf Internet using Google to find information about top 5 IT companies in India.

SEMESTER - II

SEMESTER II											
S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 201	Programming in C	3	1	0	4	70	30	-	-	100
2.	SBITC 202	Operating system	3	1	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 203	Applied mathematics	3	1	0	4	70	30	-	-	100
		ABILITY ENHANCEMENT COURSE									
4.	SBITE 204	Professional communication	0	1	2	2	35	15	-	-	50
		PRACTICALS									
5.	SBITP 205	Programming in C Lab	0	0	4	2	-	-	35	15	50
6.	LMUC 201	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:21		Total credit:				18	Total mark				450

Programming in C

Code : SBITC 201

Credit : 4 **Maximum Marks:** 100

Description: This course will let student understand the basics of programming.

Purpose: To get familiar with basics concept of C Programming Language.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.

Recommended Study habit:

- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Programming in C, by E. Balaguruswamy, Tata McGraw-Hill
2. Let us C by, Kanetkar, BPB Publication.
3. Programming with c, by Byron S. Gottrfie, Tata McGraw Hill
4. Structured Programming approach using C-Forouzah & Ceilberg Thomson learning.

UNIT – I

Theme	Description	Lectures
Overview of C	• History of C • Importance of C • Basic Structure of C program • Programming Style • Executing a C program	8

UNIT – II

Theme	**Description**	**Lectures**
C Fundamental	• C- Character set • Data Types • Constants • Variables • Operators • Pre - Processor • **Input - Output Statement** • I/O Function • % Format Specifies	8

UNIT – III

Theme	Description	Lectures
Function	• **Control Statement:** • Control Loops • Conditional Execution and Nesting of Loops • Conditional Statement • **Function:** • Defining • Accessing and Passing Arguments to a Function • Function Prototypes • Recursion	8

UNIT – IV

Theme	Description	Lectures
Arrays and Strings	• Single and Multidimensional Arrays • Introduction to Strings • String Processing	8

UNIT – V

Theme	Description	Lectures
Pointer, Structure and Union	• Understanding Pointer • Pointer and Arrays • Pointer to Function • Defining and processing Structures • Pointer and Structure • Concept of Union	8

Code : SBITC 202

Operating System

Credit : 4 **Maximum Marks:** 100

Description: This course will let student understand the basics of an Operating System.

Purpose: To get familiar with basic operation of an operating system and aware of its concepts.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.

Recommended Study habit:

- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Abraham Silberschatz, Peter B. Galvin, Operating System concepts, Addison - Wesley
2. Brinch Hansen, Operating System Principles, Prentice Hall
3. Brinch Hensen, the Architecture of Concurrent Programs, PHI
4. For Example Operating System by Godbole
5. H.M. Deitel, Operating Systems, Addison Wesley
6. V. Rajaraman, Fundamentals of Computer, PHI, New Delhi

UNIT – I

Theme	Description	Lectures
Introduction	• System Software • Introduction to Operating System • Function of Operating System • Types of Operating System • Open Source	4

UNIT – II

Theme	**Description**	**Lectures**
Process Management & CPU Scheduling	• Introduction to Processes, Process Scheduling • Definition of Context switch • CPU Scheduling • Basic Concepts • Scheduling Criteria • Scheduling Algorithms	8

UNIT – III

Theme	Description	Lectures
Memory Management	• Logical versus Physical Address Space • Swapping • Contiguous Allocation (Memory Allocation Fragmentation) • Paging (Basic Method Hardware Support) Segmentation (Basic Method, Hardware) • Virtual Memory • Demand Paging • Page Replacement • Page Replacement Algorithms	8

UNIT – IV

Theme	Description	Lectures
Deadlocks	• Deadlocks Characterization • Method for Handling Deadlock Prevention • Deadlock Avoidance • Deadlock Detection and Recovery	10

UNIT – V

Theme	Description	Lectures
Device Management & File Management	• **Device Management:** Disk Structure • Basic Concept of Disk Scheduling • Disk Scheduling Algorithm • **File Management:** Basic Concepts • Access and Allocation Methods • Free Space Management	8

Code : SBITP 205

Programming in C
Lab Manual

Credit : 2

Maximum Marks: 50

Aim: This course contains task list intended to explore the programming principles and takes the student step by step through a number of fundamental concepts including basic language constructs and Problem solving.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer
- ✓ Elementary knowledge of arithmetic

Recommended Practices:

- ✓ Always try to write down simple steps of the programs before typing it for execution.
  Keep the source code comprehensive using comments and proper indentation

Example:

```
/*
 ============================================================================
 Name        : Proc_01.c
 Author      : Student Name
 Course Code : MSCCS0104
 Date        : 15th Feb, 2016
 Description : Hello World in C, ANSI-Style
 ============================================================================
 */

#include <stdio.h>
#include <stdlib.h>

int main(void) {
    puts("!!!Hello World!!!"); /* prints !!!Hello World!!! */
    return 0;
}
```

Format Convention for practical File

Conventions	Sample
Source code must be typed in bold Courier font :	`int main()`
Main headings should be given bold Arial :	**Source Code**

Contents

Contents

SEMESTER III

SEMESTER III											
S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 301	Data Communication & Computer Network	3	1	0	4	70	30	-	-	100
2.	SBITC 302	Financial Accounting and management	3	1	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 303	Microprocessor	0	2	2	4	70	30	-	-	100
		SKILL ENHANCEMENT									
4.	SBITE 304	Open Source Technology-	0	1	2	2	-	-	35	15	50
		PRACTICALS									
5.	SBITP 305	Data Communication & Computer Network Lab	0	0	4	2	-	-	35	15	50
6.	LMUC301	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:21		Total credit:				18	Total mark				450

Code : SBITC 301

Data Communication and Computer Networks

Credit : 4 **Maximum Marks:** 100

Description: This course will let student to learn about Data Communication and Computer Networks.

Purpose: This Course is intended to explore various aspects of a Data Communication and Computer Networks.

Suggested Readings

1. Computer Networks by A. S Tanenbaum, 4th , Edition , Pearson Education.
2. Data and Computer Communication by W. Stallings, Macmillan Press.
3. Computer Networks & Internet with Internet Application by Comer Pearson Education.
4. Internet networking with TCP/IP by PHI.
5. Data Communication and Networking by Forouzan TMH.
6. Computer Networks with Internet Protocols by W Stallings, Pearson Education.
7. Local and Metropolitan Area Networks by W Stallings, VIth edition, Pearson Education.

UNIT – I

Theme	Description	Lectures

Principles of Data Communication & Basics of Computer Networks	• Analog and Digital transmission
	  ○ Multiplexing, Transmission Impairments
	• Concepts of frequency Spectrum and Bandwidth
	  ○ Bandwidth efficient modulation techniques
	  ○ Protocol Hierarchies
	  ○ Design Issues for the layers,
	  ○ Interfaces and services
	  ○ Concepts of circuit switching and packet switching
	  ○ Connection-Oriented and Connection-less Services
		8

UNIT – II

Theme	Description	Lectures

Reference Models	• OSI model and TCP/IP reference model.
	• Physical layer
	  ○ Transmission media-twisted pair, coaxial cable, optical fiber.
	  ○ Wireless transmission-radio, Microwave Infrared and millimeter waves.
	  ○ Telephone systems, Cell phones
		8

UNIT – III

Theme	Description	Lectures
Data Link Layer & Network layer	• Introduction to Data Link Layer ○ Services provided to the network layer ○ Framing, error control, flow control ○ Error Detection and Correction ○ Unrestricted simplex protocol stops and waits Protocol ○ Sliding window protocols. • Introduction to Network Layer ○ Design Issues ○ Routing algorithms ○ Congestion control ○ Internetworking: concepts of sub network, bridges, etc: X.25 frame relay	8

UNIT – IV

Theme	Description	Lectures
Transport Layer & Application Layer	• Introduction to Transport Layer ○ Services provided to the upper layers ○ Elements of Transport control protocols-addressing ○ Establishing a connection, releasing a connection ○ Flow control and buffering, Crash recovery ○ TCP and UDP • Introduction to Application Layer ○ SNMP, SMTP, FTP, TELNET	8

UNIT – V

Theme	Description	Lectures
IP Addresses & Media Access Control protocol	• Introduction to IP Addresses ○ IPV4 datagram ○ IP addressing ○ ICMP • Introduction to Media Access Protocol ○ Concept of LANS and MANS ○ ALOHA, slotted ALOHA, CSMA, CSMA/CD ○ Ethernet, token bus, token ring ○ FDDI	8

Code : SBITC 302

Financial Accounting and Management

Credits: 4 **Maximum Marks:** 100

Description: This course will provide knowledge about financial accounting and management. .

Purpose: Student will familiar with principles of Financial Accounting.

Recommended Study habit:

- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability

Suggested Readings

1. Ravi kalakota, Andrew Winston, "Frontiers of Electronic Commerce Addison Wesley.
2. Maheshwari & Maheshwari, "An Introduction to Accountancy 8th Edition, Vikas Publishing House, 2003
3. Gupta R.L, Gupta VK "Principles & Practice of Accountancy Sultan Chand & Sons, 1999
4. Khan & Jain, "Financial Accounting.
5. Maheshwari S.N, "Principles of Management Accounting 11th Edition, Sultan Chand & Sons, 2001
6. Shukla and Grewal "Advanced Accounts 14th Edition, Sultan Chand & Sons.

UNIT – I

Theme	Description	Lectures
Overview	• Meaning and Nature of Financial Accounting • Scope of Financial Accounting • Financial Accounting & Management Accounting	8

UNIT – II

Theme	Description	Lectures
Concepts	• Accounting concepts & convention • Accounting standards in India.	8

UNIT – III

Theme	Description	Lectures
Basics of Accounting	• Capital & Revenue items • Application of Computer in Accounting Double Entry System • Introduction to Journal	8

UNIT – IV

Theme	Description	Lectures
Concept of Apps development	• Ledger and Procedure for Recording and Posting • Introduction to Trail Balance • Preparation of Final Account • Profit & Loss Account and related concepts • Balance Sheet and related concept	8

UNIT – V

Theme	Description	Lectures
Payment Mode	• Types of Electronic Payment Systems • Cash Management • Inventory Management • Receivables Management	8

Code : SBITE 303

Microprocessor

Credits: 4 **Maximum Marks: 100**

Description: This course contains fundamental concepts of Microprocessor operations, basic I/O interfaces and Interrupts operations.
Purpose: The course objective is to introduce the operation, programming and application of microprocessor.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.
- ✓ Elementary knowledge of arithmetic.

Suggested Readings

1. A.P.Malvino and J.A.Brown, Digital Computer Electronics, 3rd Edition, Tata McGraw Hill D.V.Hall. Microprocessors and Interfacing– Programming and Hardware, McGraw Hill.
2. Ramesh S.Gaonkar, Microprocessor Architecture, Programming, and Applications with 8085, Prentice Hall .
3. 8000 to 8085 Introduction to 8085 Microprocessor for Engineers and Scientists, A.K.Gosh, Prentice Hall.

UNIT – I

Theme	Description	Lectures

Introduction	• Definition of microprocessor and its application
	• Evolution of microprocessor
	• Harvard architecture
	• Components of microprocessor
	  ○ Microprocessor: Arithmetic and Logic Unit (ALU), Control Unit (CU), Registers
	  ○ Memory
	  ○ Input / Output
	• System Bus: Data , Address and Control Bus
	• Microprocessor with Bus Organization
		8

UNIT – II

Theme	Description	Lectures
Basic Computer Architecture	• 8085 Microprocessor Architecture and Operations • Address, Data And Control Buses • Internal Data Operation and Registers • Externally Initiated Operations • Addressing Modes • Memory and Memory Operations • Flag and Flag Register • 8085 Pin Diagram and Functions • Multiplexing and De- multiplexing of address/data bus • Generation Of Control Signals	9

UNIT – III

Theme	Description	Lectures

Instruction Cycles	• Instruction Cycle, Machine Cycle and T-states
	  ○ Machine Cycle of 8085 Microprocessor: op-code fetch, memory read, memory write, I/O read, I/O write, interrupt
	• Fetch and Execute Operation, Timing Diagram
	  ○ Timing Diagram of MOV, MVI, IN, OUT, LDA, STA
	• Memory Interfacing and Generation of Chip Select Signal
		7

UNIT – IV

Theme	Description	Lectures
Assembly Language Programmings	Programming with Intel 8085 Microprocessor • Instruction and Data Format • Mnemonics and Operands • Multiplication and Division • Simple Sequence Programs, Branching, Looping • Array(Sorting) and Table Processing • Decimal to BCD Conversion • Overview of 8085 instruction Set • Writing Assembling Program	8

UNIT – V

Theme	Description	Lectures

Basic I/O, Memory,Interfaces & Interrupt Operations	• Memory mapped I/O, I/O Mapped I/O and Hybrid I/O
	• Direct Memory Access (DMA)
	  ○ Introduction, Advantage and Application
	• Parallel Communication – Introduction and Applications
	• Serial Communication
	  ○ Introduction and Applications
	• Simple I/O, Strobe I/O, Single handshake I/O, Double handshake I/O
	• Interrupt
	  ○ 8085 Interrupt Pins and Priority
	  ○ Maskable and Non-maskable Interrupts
	  ○ RST Instructions
	  ○ Vector and Polled Interrupt
		8

Code : SBITE 304

Open Source Technology

Credits: 2 **Maximum Marks: 50**

Description: This course will let student understand about Open Source Technology.

Purpose: This course is intended as a comprehensive guide about the technology which is free and having open source.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.
- ✓ Elementary knowledge of arithmetic.

Recommended Study habit:

- ✓ Always try to write down simple flow the programs before typing it for execution.
- ✓ Try to implement the concept mentioned here.
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

4. Open Source Technology and Policy Fadi P. Deek, James A. M. McHugh Cambridge University Press, 05-Nov 2007 Computers.
5. Open Source: A Multidisciplinary Approach Moreno Muffatto Imperial College Press.
6. Open Source Technology Concepts Methodologies, Tools, and Applications
7. Hardcover- Import by Information Resources Management Association (Editor)

UNIT – I

Theme	Description	Lectures
Introduction of Open Source Technology	• The philosophy of Oss • Richard Stallman • The Cathedral and the Bazaar (CatB) • Commercial software vs. OSS • Free software vs freeware • Open source development models • Application Programming Interface (API) • GNU Project, Free Software Foundation	8

UNIT – II

Theme	Description	Lectures
Community Building	• Importance of Communities in Open Source Movement • JBoss Community • Developing blog, group, forum, social network for social purpose	8

UNIT – III

Theme	Description	Lectures
Open Standards	• National Information Standards Organization (NISO). • The Digital Library Federation (DLF) • The Dublin Core Metadata Initiative • MARC standards • Resource Description and Access (RDA) • Open Archives Initiative OAI-PMH • Search/Retrieval via URL (SRU), SRW/CQL • Java Platform, Enterprise Edition (Java EE)	8

UNIT – IV

Theme	Description	Lectures
Open Source Licenses	• GNU General Public License (GPL) version 2,3 • GNU Lesser General Public License (LGPL) version 2.1.3 • GNU Affero General Public License (AGPL) version 3 • Apache License, Version 2.0 • Artistic License 2.0	8

UNIT – V

Theme	Description	Lectures
Open Source Software	• Category of Open Source Software • OSS for podcasts • RDBMS, online social networks • Open source bibliometric software: pajek, ucinet	8

Code : SBITP 305

Data Communication & Computer Network Lab

Credits: 2 **Maximum Marks:** 50

Aim: This course gives the preliminary knowledge Data Communication and Computer Network.

Prerequisite:

- ✓ Operational knowledge of operating System
- ✓ Basics of Networks

Recommended Study practices:

- ✓ Keeping concept in mind correlate the action for implementation.

Task List

Task	Description
Task 1	Server Installation & configuration
Task 2	Client Side installation & configuration
Task 3	Remote Accessing Clients
Task 4	IP Address configuration
Task 5	LAN Creation
Task 6	Network Resource Sharing
Task 7	Pinging Client machines

SEMESTER IV

SEMESTER IV											
S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
							THEORY		PRACTICAL		TOTAL MARKS
		THEORY	L	T	P	C	EX	IN	EX	IN	
1.	SBITC 401	Database Management System	3	1	0	4	70	30	-	-	100
2.	SBITC 402	Object Oriented Programming Using C++	4	0	0	4	70	30	-	-	100
		GENERAL ELECTIVE									
3.	SBITE 403	E-commerce	0	2	2	4	70	30	-	-	100
		SKILL ENHANCEMENT									
4.	SBITE 405	Tally	0	1	2	2	-	-	35	15	50
		PRACTICALS									
5.	SBITP 406	Object Oriented Programming Using C++ Lab	0	0	4	2	-	-	35	15	50
6.	LMUC 401	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:33		Total credit:				26	Total mark				450

Code : SBITC 401

Database Management System

Credits: 4 **Maximum Marks: 100**

Description: This course will let a student to learn about Database Management Systems.

Purpose: This course is intended to explore various aspects of a Database Management System results in conducting various functionalities.

Prerequisite:

- ✓ It is appropriate for Beginners.
- ✓ Elementary knowledge of Algebra, Calculus, Functional mapping.

Recommended Study practices:

- ✓ Try to figure out mechanism behind the concept and its applicability.

Suggested Readings

1. "Database System Concepts, Silberschatz Korth, Sudarshan, McGraw Hill.
2. "Introduction to Database Management Systems" (2006 15RD Group) Tata McGraw Hill.
3. "An Introduction to Database System", CJ. Date.
4. "Introduction to Relational Database and S01 programming Allen Tata McGraw Hill.
5. " SQl" Scott Urman.

UNIT – I

Theme	Description	Lectures
Introduction to Database	• Definition of Database • Components of DBMS • Three Level of Architecture proposal for DBMS • Advantage & Disadvantage of DBMS • Data independence • Purpose of Database Management Systems • DBA and its responsibilities • **Structure of DBMS:** Data Dictionary, Advantages of Data Dictionary	8

UNIT – II

Theme	Description	Lectures

Data Models	• Introduction to Data Models
	• Object Based Logical Model
	• Record Based Logical Model
	  ○ Relational Model
	  ○ Network Model
	  ○ Hierarchical Model
	• Entity Relationship Model: Entity Set, Attribute, Relationship Set
	• Entity Relationship Diagram (ERD)
	• Extended features of ERD
		8

UNIT – III

Theme	Description	Lectures

Relational Databases & Relational Algebra	• Introduction to Relational Databases and Terminology
	  ○ Relation, Tuple, Attribute, Cardinality, Degree, Domain
	  ○ Keys Super Key, Candidate Key, Primary Key, Foreign Key
	• Introduction to Relational Algebra
	  ○ Operations, Select, Project, Union, Difference, Intersection Cartesian product
	  ○ Join, Natural Join
		8

UNIT – IV

Theme	Description	Lectures

Structured Query Language (SQL) & Normalization	• Introduction to SQL
	  ○ History of SQL, Concept of SQL,
	  ○ Commands: DDL, DML, DCL
	  ○ Simple Queries, Nested Queries
	• Benefits of Normalization
	• Normal Forms INF, 2NF, 3NF, BCNF
	• Functional Dependency.
		8

UNIT – V

Theme	Description	Lectures
Relational Database Design	• Introduction to Relational Database Design • DBMS Vs. RDBMS • Integrity Rule • Concept of Concurrency Control • Database Security	8

Code : SBITC 402

Object Oriented Programming Using C++

Credits: 4 **Maximum Marks: 100**

Description: This course will let student understand the basics of Object Oriented programming.

Purpose: To get familiar with basic Concept of C++ Language.

Prerequisite:

- ✓ Students are expected to know basic operational knowledge of using computer.

Recommended Study habit:

- ✓ Try to implement the concept here.
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Object Oriented Programming with C++, by E.Balaguruswamy Tata McGraw Hill 2001.
2. Mastering in C++, by K.R.Venugopal, Rajkumar, T.Ravishankar, Tata McGraw Hill publication.
3. Object Oriented Programming in Turbo C++, Robert Lafore, Galgotia Publications, 1994
4. Let us C++,by Y. Kanetkar, BPB Publications.
5. Mastering Borland C++, by Tom Swan, Sams, 1992

UNIT – I

Theme	Description	Lectures
Introduction to OOP	• Evolution of OOP • Characteristics of OOP • Advantages of OOP • Disadvantages of OOP • Over functional Programming approach	8

UNIT – II

Theme	Description	Lectures
Fundamental of C++	• Introduction to C++ • Structure • Identifiers • Keywords • Constants • Variables • Data Type • C++ Operators and Expressions	8

UNIT – III

Theme	Description	Lectures
Arrays & Functions in C++	• Input/Output Statements • Control Statements • Storage Classes • Arrays • Functions in C++ • Function Prototyping • Designing a function • Types of function • Methods of Parameter Passing • Pointers	8

UNIT – IV

Theme	Description	Lectures
Classes & Object	• Introduction to classes • Objects • Constructors • Destructors	8

UNIT – V

Theme	Description	Lectures
Inheritance	• Concept of Inheritance • Polymorphism • Operator Overloading • Files	8

Code : SBITE 403

E- Commerce

F-

Credits: 4 **Maximum Marks:** 100

Description: This course will let a student to learn about the concept and application of e-Commerce.

Purpose: This course is intended to explore various concept, application, architecture and challenges in e-commerce.

Prerequisite:

- ✓ It is appropriate for Beginners.
- ✓ Elementary knowledge of how network works

Recommended Study practices:

- ✓ Try to figure out mechanism behind the concept and its applicability.

Suggested Readings

1. Ravi kalakota, Andrew Winston, "Frontiers of Electronic Commerce" , Addison Wesley
2. Bajaj and Nag, "E-Commerce the cutting edge of Business", TMH
3. P.Loshin, John Vacca, "Electronic Commerce" , Firewall Media, New Delhi

UNIT – I

Theme	Description	Lectures
Introduction	• Electronic Commerce - Technology and Prospects, • Definition of E- Commerce, Economic potential of electronic commerce • Incentives for engaging in electronic commerce, forces behind E-Commerce, Advantages and Disadvantages • Architectural framework • Impact of E-commerce on business	8

UNIT – II

Theme	Description	Lectures

Network Infrastructure for e-Commerce	• Internet and Intranet based E-commerce- Issues, problems and prospects,
	• Network Infrastructure
	  ○ Network Access Equipment
	  ○ Broadband telecommunication (ATM, ISDN, FRAME RELAY)
		8

UNIT – III

Theme	Description	Lectures
Web Security	• Security Issues on web, • Importance of Firewall, components of Firewall, • Transaction security • Emerging client server • Security Threats, Network Security, Factors to consider in Firewall design, Limitation of Firewalls	8

UNIT – IV

Theme	Description	Lectures
Encryption	• Encryption techniques ○ Symmetric Encryption- Keys and data encryption standard, Triple encryption, Asymmetric encryption- Secret key encryption, public and private pair key encryption, • Digital Signatures • Virtual Private Network	8

UNIT – V

Theme	Description	Lectures
Electronic Payments & EDI	• Overview, The SET protocol, Payment Gateway, • Certificate, digital Tokens, Smart card, credit card, magnetic strip card, E-Checks, Credit/Debit card based EPS • Online Banking • EDI Application in business • E- Commerce Law, Forms of Agreement, Govt. policies and Agenda	8

Code : SBITE 404

Tally

Credits: 2 **Maximum Marks:** 50

Description: This course is designed to give a basic knowledge of Accounting.

Purpose: To develop skits of accounting by using accounting software.

Prerequisite: None

Recommended Study practices:

- ✓ Use the concepts & techniques according to the need is the direction of career building at your own pace.

Suggested Readings

1. Mastering Tally ERP9 Basic Accounts, Invoice, Inventory, Ashok K. Nandani.

UNIT – I

Theme	Description	Lectures
Basics of Accounting	• Principles of Accounting • Types of Accounts • Introduction of Book Keeping • Financial Statements	

UNIT – II

Theme	Description	Lectures
Fundamentals of Tally	• Getting Functional with Tally • Alter/Create New Company • Creation/setting up of Company in Tally	

UNIT – III

Theme	Description	Lectures
Entries	• Making Accounting Entries • Receipt Entries • Contra Entries • Payment Entries	

UNIT – IV

Theme	Description	Lectures
Views	• Trail Balance view • Profit & Loss A/c View • Balance Keys view	

UNIT – V

Theme	Description	Lectures
Printing & Keys	• Printing Option • Shortcut Keys in Tally	

Code : SBITP 405

Object Oriented Programming Using C++ Lab

Credits: 2 **Maximum Marks:** 50

Aim: This course contains task st intended to explore the programming principles and takes the student step by step through a number of fundamental concepts including basic language constructs and Problem solving.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer
- ✓ Elementary knowledge of arithmetic.

Recommended Study practices:

- ✓ Always try to write down simple steps of the programs before typing it for execution.
- ✓ Keep the source code comprehensive using comments and proper indentation.

Task List

Task	Description
Task 1	Write a CPP program for the Scope Resolution Operator.
Task 2	Write a CPP program to show salary structure using manipulators.
Task 3	Write a CPP program to swap two numbers using call by reference concept.
Task 4	Write a CPP program to multiply two numbers using Inline functions.
Task 5	Write a CPP program to calculate interest using default arguments.
Task 6	Write a CPP program to show the function overloading.
Task 7	Write a CPP program of Nesting of member functions.
Task 8	Write a CPP program of Class declaration.
Task 9	Write a CPP program of Static class member.
Task 10	Write a CPP program of Static member functions.
Task 11	Write a CPP program of Array of objects.
Task 12	Write a CPP program of Object as arguments.
Task 13	Write a CPP program of Friend function.
Task 14	Write a CPP program of Function friendly to two classes.
Task 15	Write a CPP program of Swapping private data of classes.
Task 16	Write a CPP program of Returning objects.
Task 17	Write a CPP program of Dereferencing operators.
Task 18	Write a CPP program of Overloading constructors.
Task 19	Write a CPP program of Copy constructors.
Task 20	Write a CPP program of Implementation of destructors.
Task 21	Write a CPP program of Single inheritance: public.
Task 22	Write a CPP program of Single inheritance: private.
Task 23	Write a CPP program of multilevel Inheritance.
Task 24	Write a CPP program of multiple Inheritance.
Task 25	Write a CPP program of Hybrid inheritance..
Task 26	Write a CPP program of Virtual base class.
Task 27	Write a CPP program of Construct a derive class.
Task 28	Write a CPP program of Overloading unary minus.
Task 29	Write a CPP program of Overloading +operator.
Task 30	Write a CPP program of Mathematical operations on strings.
Task 31	Write a CPP program of Working with Single file.
Task 32	Write a CPP program of Working with Multiple file.
Task 33	Write a CPP program of Reading from two files simultaneously

SEMESTER V

SEMESTER V												
S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 501	Web Technology	3	1	0	4	70	30	-	-	100
2.	SBITC 502	System Analysis And Design	4	0	0	4	70	30	-	-	100
		Discipline Specific Electives(any two)									
3.	SBITE 503	Transaction Processing System	3	1	0	4	70	30	-	-	100
	SBITE 504	Cyber Security	3	1	0	4					
4.	SBITE 505	Mobile Application development	2	0	0	2	35	15	-	-	50
	SBITE 506	Emerging Technology And Innovation	2	0	0	2					
		PRACTICALS									
8.	SBITP 507	Web Technology Lab	0	0	4	2			35	15	50
9.	LMUC 501	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:26		Total credit:				18	Total mark				450

Code : SBITC 501

Web Technology

Credits: 4 **Maximum Marks:** 100

Purpose: This course enables students to understand web page site planning management and maintenance. The course explains the concepts of developing advanced HTML pages with the help of frames, scripting languages, and evolving technologies like DHTML, and XML

Prerequisite:

- ✓ Fundamental knowledge of OOPs and C. language.

Suggested Readings

1. Beginning PHP and My SQL by W Jason Gilmore.
2. Webmaster in Nutshell by Stephen Spainhour, Robert Eckstein, O'Reilly Publication.
3. HTML and Java Script for Vaual Learners by Chris Charuhas, Laxmi Publication.
4. Straight to the point PHP by Dinesh Maidasani, Laxmi Publication.
5. Straight to the point MySQLS.0 by Dinesh Maidasan, Laxmi Publication.l

UNIT – I

Theme	Description	Lectures
Introduction of Web Technology	• History of the web • Growth of the web • Introduction to E-Commerce • Cyber laws in India and International Cyber laws	8

UNIT – II

Theme	Description	Lectures
HTML	• Introduction • Formatting Tag • Creating Table, • Forms • Style sheets	8

UNIT – III

Theme	Description	Lectures
JavaScript	• Advantages of JavaScript • Syntax of JavaScript • Data type • Variable • Array • Operator and Expression • Looping Constructs • Function • Record Listener	8

UNIT – IV

Theme	Description	Lectures
PHP	• Introduction • Opening and ending PHP tags Comments • Variables • Control Structures • Functions, and Using Forms • Super global Variables • Session Handlers • Database Connection	8

UNIT – V

Theme	Description	Lectures
MySQL	• Characteristics of MySQL • Types of MySQL commands • Queries and sub queries • Creating a new database • Creating tables • Insert • Retrieve • Update • Delete Data	8

Code : SBITC 502

System Analysis and Design

Credits: 4 **Maximum Marks:** 100

Description: This course will let student aware of the Design of the system and to know about the system analysis.

Purpose: This course aims to introduce student to the basic principle of system analysis and design and to give them experience of developing a Database for the software system.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.

Suggested Readings

1. Analysis and Design of Information Systems, James, Mcgraw-Hill College.
2. K.M. Hussain and Donna Hussain, Information Systems Analysis, Design and Implementation. Tata McGraw-Hill, 1995.
3. Bible of System Analysis and Design.
4. Horitz-Kowlitz by NCC Publication.
5. Systems Analysis and Design Methods,Jeffrey Whitten, Lonnie Bentley.
6. http://www.ebooooks.com/products/Systems-Analysis-and-Design-Methods.html

UNIT – I

Theme	Description	Lectures
Fundamentals of IS	• **Definition of system:** • Information systems (IS) and procedure • System analysis and analyst • Components of IS • Types of IS-TPS, MIS, DSS, EIS • System development life cycle • General overview of phases in system development	8

UNIT – II

Theme	Description	Lectures
System Analysis	• Preliminary Investigation • Project Evaluation feasibility Study • System Analysis • Requirement Determination • Questionnaire, Observation Interview • Analyzing Document/Procedure • Process Modeling • Data Flow Diagram • Context Diagram • Level n-Diagram • Decomposition	8

UNIT – III

Theme	Description	Lectures
Logic Modeling & Design	• **Logic Modeling:** • Structures English • Decision Table • Decision Trees • **Logical Design:** • Forms, Reports, Screen • Guideline for designing interfaces and dialogues.	8

UNIT – IV

Theme	Description	Lectures
ER Diagram	• Conceptual Data Modeling • ER Diagram • Construct • Key	8

UNIT – V

Theme	Description	Lectures
Implementation	• Transforming ER Diagram into relational table • Implementation and maintenance • Coding, Testing • Installation • Documenting and maintaining IS	8

Code : SBITE 503

Transaction Processing System

Credits: 4 **Maximum Marks:** 100

Description: This course will let student understand the basics of Transaction processing system.

Purpose: To get familiar with basic operations of transactions. Student will learn to recognize and describe a transaction.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.

Recommended Study habit:

- ✓ Try to implement the concept mentioned here.
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Jim Gray [1997] Transaction Processing: Concepts and Techniques (Margan Kaufmann Series in Data Management System), 15BN13: 9781558601901, Morgan Kaufmann Publishers, USA.
2. EV. Krishnamurthy, EV. Murthy 120021, VK Transaction Processing Systems, Prentice Hall Advances in Computer Science Series, Indial.
3. Philip A Bernstein and Eric Newcomer (2009) Principles of Transaction Processing the Morgan Kaufmann Series in Data Management Systems.

UNIT – I

Theme	Description	Lectures
Introduction	• **Transaction Processing:** Definition • Principles of Transaction Processing Systems • Characteristics of a Transaction Processing Systems • Rapid Response • Reliability • Inflexibility • Controlled Processing	8

UNIT – II

Theme	Description	Lectures
Processing of Transaction	• Batch Transaction Processing [BTP] • Real Time Processing [RTP] • Transaction Processing Monitor-transaction initiation, field checking • Manual Transaction Systems	8

UNIT – III

Theme	Description	Lectures

Operational Transaction	• **Online Transaction Processing (OLTP]:** Data Base Transactions • Commercial Transactions • Electronic Banking • E-commerce and e-trading • Merit and demerits of OLTP	8

UNIT – IV

Theme	Description	Lectures
Applications	• **Applications of BTP:** Components of TPS • Cheque clearance, generation of bills, credit card transactions • Applications of RTP • Reservation systems, point of sale, library loans	8

UNIT – V

Theme	Description	Lectures
Storage for TPC	• **Storing and Retrieving data base files:** hierarchical • Network and relational structure; design for a TPS • **Data warehousing:** files and TPS • Backup procedures • Issues related to transaction processing systems	8

Code : SBITE 504

Cyber Security

Credits: 4 **Maximum Marks:** 100

Description: This course provides the foundation for understanding the key issues associated with protecting information assets. The purpose of the course is to provide the student with an overview of the field of information security and assurance.

Purpose: Understand the broad set of technical, social & political aspects of Cyber Security.Appreciate the vulnerabilities and threats posed by criminals, terrorist and nation states to national infrastructure.Understand the importance of ethical hacking tool.

Recommended Study habit:

- ✓ Try to implement the concept mentioned here.
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Donaldson, S., Siegel, S., Williams, C.K., Aslam, A., "Enterprise Cyber security -How to Build a Successful Cyber defense Program against Advanced Threats", Apress, 1st Edition, 2015.
2. Nina Godbole, Sumit Belapure, "Cyber Security", Willey, 2011.
3. Roger Grimes, " Hacking the Hacker" , Wiley, ist Edition, 2017.
4. Cyber Law By Bare Act, Govt of India, It Act 2000.

UNIT – I

Theme	Description	Lectures
Introduction	• Introduction to Cyber Security • Importance and challenges in Cyber Security • Cyberspace • Cyber threats • Cyber warfare • CIA Triad • Cyber Terrorism • Cyber Security of Critical Infrastructure • Cyber security • Organizational Implications.	8

UNIT – II

Theme	Description	Lectures
Hackers And Cyber Crimes	• Types of Hackers • Hackers and Crackers • Cyber-Attacks and Vulnerabilities • Malware threats • Sniffing • Gaining Access • Escalating Privileges • Executing Applications • Hiding Files • Covering Tracks • Worms • Trojans • Viruses • Backdoors	8

UNIT – III

Theme	Description	Lectures
Ethical Hacking and Social Engineering	• Ethical Hacking Concepts and Scopes • Threats and Attack Vectors • Information Assurance • Threat Modeling • Enterprise Information Security Architecture • Vulnerability Assessment and Penetration Testing • Types of Social Engineering • Insider Attack • Preventing Insider Threats • Social Engineering Targets and Defence Strategies	8

UNIT – IV

Theme	Description	Lectures
Cyber Forensics And Auditing	• Introduction to Cyber Forensics • Computer Equipment and associated storage media • Role of forensics Investigator • Forensics Investigation Process • Collecting Network based Evidence • Writing Computer Forensics Reports • Auditing • Plan an audit against a set of audit criteria • Information Security Management System Management • Introduction to ISO 27001:2013.	8

UNIT – V

Theme	Description	Lectures
Cyber Ethics And Laws	• Introduction to Cyber Laws • E-Commerce and E-Governance • Certifying Authority and Controller • Offences under IT Act • Computer Offences and its penalty under IT Act 2000 • Intellectual Property Rights in Cyberspace	8

Code : SBITE 505

Mobile Application Development

Credits: 4 **Maximum Marks: 100**

Description: This course will let student understand the principles of mobile application development.

Purpose:

- ✓ Understand system requirements for mobile applications.
- ✓ Generate suitable design using specific mobile development frameworks.
- ✓ Generate mobile application design.
- ✓ Implement the design using specific mobile development frameworks.
- ✓ Deploy the mobile applications.

Prerequisite:

- ✓ Knowledge of Basic Programming concepts.

Recommended Study habit:

- ✓ Always try to write down simple flow the programs before typing it for execution.
- ✓ Try to implement the concept mentioned here.
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Jeff McWherter and Scott Gowell, "Professional Mobile Application Development", Wrox, 2012
2. Charlie Collins, Michael Galpin and Matthias Kappler, "Android in Practice", DreamTech, 2012
3. "The complete Reference-12ME", Tata McGraw-Hell Edition.
4. Joseph Annuzzi Jr, Lauren Darcey and Shane Conder "Introduction to Android Application Development", Addison Wesley, 4 edition.

UNIT – I

Theme	Description	Lectures / Tutorial
Introduction Mobile Application	• Introduction to Mobile Application Programming • Different Platforms • Architecture and working of Android • J2ME and Windows8 operating system • Comparison of Android, J2ME and Windows8	8

UNIT – II

Theme	Description	Lectures / Tutorial
Introduction to J2ME	• Overview of J2ME • J2ME Architecture and Development Environment • MIDlet Programming • J2ME Software Development Kits • Multiple MIDlets in a MIDlet Suite • J2ME Wireless Toolkit, Hello World J2ME Style	8

UNIT – III

Theme	Description	Lectures / Tutorial
High-Level Display Screens	• Screen Class • Alert Class • Form Class • Item Class • List Class • Text Box Class • Ticker Class **Low-Level Display Canvas:** • The Canvas • User Interactions, Graphics **Record Management System:** • Record Storage • Writing and Reading Records • Record Enumeration • Sorting Records • Searching Records, Record Listener	8

UNIT – IV

Theme	Description	Lectures / Tutorial
Introduction to Android	• Overview of Android • Android Development Environment • Android development Framework-Android-SDK • Emulators-What is an Emulator / Android AVD? • Creating & setting up custom Android emulator • Android Project Framework • My First Android Application	8

UNIT – V

Theme	Description	Lectures / Tutorial
Toast, Menu, Dialog. List and Adapters	• What is Menu? • Custom vs. System Menus • Creating and Using Handset menu Button (Hardware) • What is Dialog? How to create an Alter Dialog? List & Adapters • Database: Introducing SQLite • Working with cursors Inserts, updates and deletes	8

Code :SBITE 506

Emerging Technologies and Innovations

Credits: 4 **Maximum Marks: 100**

Description: This course will provide knowledge about Emerging trends in Computing.

Purpose: Student will familiar with new Trends in Computing.

Prerequisite:

- ✓ Elementary awareness about computer.

Recommended Study habit:

- ✓ Always try to write down simple flow the programs before typing it for execution.
- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

1. Ravi kalakota, Andrew Winston, "Frontiers of Electronic Commerce" Addison Wesley.
2. Bajaj and Nag. "E-Commerce the cutting edge of Business", TMH
3. P.Loshin, John Vacca, "Electronic Commerce" Firewall Media, New Delhi

UNIT – I

Theme	Description	Lectures
Wireless and Mobile Technologies	• Introduction to Wireless technologies • Types of technologies • Cellular and Personal Communication Systems • 3G wireless • Light System • GSM,GPRS, EDGE,CDMA,COMA-2000 • WLL • Wireless networking • Types of Antenna • Access System Satellite Communication	8

UNIT – II

Theme	Description	Lectures
Introduction to Network Security	• Network security overview • Network Security • Data and Message Security • Challenge Response System • Encrypted Documents and Electronic Mail • Types of Security • Application Software Security Wireless Networks	8

UNIT – III

Theme	Description	Lectures
Introduction to Hacking	• Principles and Cyberspace law • Cyber Crime and Cyber Criminals • Types of Hacking • System Hacking Techniques	8

UNIT – IV

Theme	Description	Lectures
Apps Development	• Concept of Apps development • Types of Apps • Application • Introduction to A.I	8

UNIT – V

Theme	Description	Lectures
E-Commerce	• Types of Electronic Payment Systems • Digital Token-Based Electronic Payment systems • Smart Cards and Electronic payment Systems • Credit Card Based Electronic Payment Systems • Risk and Electronic payment Systems • Designing Electronic payment Systems • Electronic Data Interchange • EDI Applications in Business • EDI: legal, Security and Privacy Issue • EDI and Electronic Commerce	8

Code :SBITP 507

Web Technology Lab Manual

Credits: 4 **Maximum Marks: 100**

Aim: This course contains task list intended to explore the programming principles and takes the student step by step through a number of fundamental concepts including basic language constructs, web technologies.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer
- ✓ Elementary knowledge of arithmetic.
- ✓ Elementary Knowledge of programming.

HTML & CSS

Task List

Task	Description
HC_01	Create a simple HTMI page with title, heading, and paragraph, formatting tags, hyperlinks, list items and image elements.
HC_02	Create a simple HTML page having image elements with the use of map.
HC_03	Create a simple HTML page having a complex table.
HC_04	Create a simple HTML Form covering major form elements.
HC_05	Create a simple HTMI page having multiple Frames.
HC_06	Embed Video in a HTML page.
HC_07	Create a simple HTML page that uses Inline CSS.
HC_08	Create a simple HTML page that uses Document level CSS.
HC_09	Create a simple HTML page that uses External level CSS.
HC_10	Create a HTML page that uses all CSS properties.

Java Script

Task List

Task	Description
JS_01	Write a simple JavaScript to print text on to the HTML document.
JS_02	Write a simple script in head portion of HTML document.
JS_03	Write a simple script in body portion of the HTML document.
JS_04	Write an external script and link it to the HTML document.
JS_05	Write a script using arithmetic operators in use.
JS_06	Write a script conditional operators.
JS_07	Write a Script that includes logical operators.
JS_08	Write a script that includes assignment operators.
JS_09	Write a script to demonstrate all kind of conditional structures.
JS_10	Write a script to demonstrate all kinds of looping structures.
JS_11	Write a script to show an alert box for any purpose.
JS_12	Write a script to use prompt and confirm function

PHP

Task List

Task	Description
PHP_ 01	Write a PHP script to get the PHP version and configuration information.
PHP_02	Write a PHP script to display any multi-line string.
PHP_03	Write a PHP script to place a variable to a title and as hyperlink of the Web page.
PHP_04	Create a simple HTML form and accept the user name and display the name through PHP echo statement.
PHP_05	Write a PHP script to get IP address of a client.
PHP_06	Write a PHP script for Browser detection.
PH_ 07	Write a PHP script to get the current filename.
PHP_08	Write a PHP script to redirect a user to http://www.daw.ac.in .
PHP_09	Write a PHP script to show string in a table.
PHP_10	Create a PHP script using a for loop to add up all the integers between 0 and 30 and display the total.
PHP_11	Scolor-array white green red, blue, "black"); Write a PHP script which will display the following string “The memory of that scene for me is like a photo frame forever frozen at that moment the red carpet, the green lawn, the white flowers, the blue sky. Our param pujya Gurudev and param vandaniya Mataji -Dr. Pranav Pandya” And the word "red" "green" "white" and "blue" will come from Scolor.
PHP_12	Create a function to calculate the factorial of a number (non-negative integer) The function accept the number as a argument.
PHP_13	Write a PHP script to calculate the difference between your birth date and current date. Sample dates:1981-11-04 and 2014-09-15 Expected Result 32 years 10 months, 22 days.
PHP_14	Write a PHP script to deal with cookies.
PHP_15	Write a PHP script to handle session.

MySQL

Task List

Task	Description
MSQ_01	Use MySQL console to use database.
MSQ_02	Create a database in MySQL.
MSQ_03	Create a table in selected database.
MSQ_04	Insert new records in MySQL table.
MSQ_05	Retrieve records from the database.
MSQ_06	Update the records in a table.
MSQ_07	Delete a specific record in a table.
MSQC_08	Delete the table from the database.
MSQ_09	Delete the database.
MSQ_10	Write a PHP script to establish a connection to the database and retrieve the data.

SEMESTER VI

SEMESTER VI											
S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
		THEORY	L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	SBITC 601	Entrepreneurial Development	3	1	0	4	70	30	-	-	100
		Discipline Specific Electives (one)									
2.	SBITE 602	Basic Of Multimedia And animation	3	1	0	4	70	30	-	-	100
	SBITE 603	Virtualization And Cloud Computing	3	1	0	4					
	SBITE 604	Green Computing	3	1	0	4					
		PRACTICALS									
4.	SBITP 605	Project	0	8	-	8	-	-	100	100	200
5.	LMUC 601	Life Management	2	0	0	2	-	-	35	15	50
Total Contact hours Per Week:20		Total credit:				18	Total mark				450

Code :SBITC 601

Entrepreneurial Development

Credit Hrs: 4 **Maximum Marks:** 100

Description: Study of this subject provides an understanding of the scope of an entrepreneur, key areas of development financial assistance by the institutions, methods of taxation and tax benefits, etc.

Purpose: To gain knowledge about setting-up and managing a business.

Suggested Readings

1. C.B.Gupta-Entrepreneurship Development in India-Sultan Chand.
2. Jayashree Suresh Entrepreneurial Development- Margham Publications.
3. P. saravanavel- Entrepreneurial development- Ess pee kay pub House.
4. Dr.S.S Xhanka- Entrepreneurial Development-S.Chand.

UNIT – I

Theme	Description	Lectures
Introduction of Entrepreneurship	• Meaning of Entrepreneur • Entrepreneur and Enterprise • Entrepreneur and manager • Entrepreneur and Intrapreneur • Qualities (Traits) of True Entrepreneur • Characteristics of Entrepreneur • Types of Entrepreneurs • Functions of an Entrepreneur • Roles of Entrepreneurs in the Economic Development	8

UNIT – II

Theme	**Description**	**Lectures**
Establishing an Enterprise	• Project Identification • Selection of the Product • Project Formulation • A Assessment of Project Feasibility • Preparation of Project Report • Selection of Site (Location)	8

UNIT – III

Theme	Description	Lectures
Selection of Types of Organization	• Sole Proprietorship • Partnership joint stock Company • Factors Influencing the Choice of Organization • Sources of Project Finance • Sources of Long Term Finance • Sources of Short Term Finance	8

UNIT – IV

Theme	Description	Lectures
Incentives and Subsidies	• Meaning of Incentives and Subsidies • Need and Problems • Incentives for Development of Backward Area • Incentives for SSI Small Scale Industries)Units in Backward Areas • Incentives for SSI Units	8

UNIT – V

Theme	Description	Lectures
Women Entrepreneurs	• Concept • Functions and Role • Problems of Women Entrepreneurs • Suggestions for Development of Women Entrepreneurs • Rural Entrepreneurship • Need • Problems-How to Develop Rural Entrepreneurship	8

Code :SBITE 602

Basics of Multimedia and Animation

Credit: 4 **Maximum Marks:** 100

Description: This course gives a Basics knowledge of Multimedia and Animation.

Purpose: This course is designed to give a comprehensive guide to explore and understand the concepts of Multimedia and Animation and too familiarize students with the designing concepts.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer
- ✓ Elementary knowledge of Internet and Web.
- ✓ Elementary knowledge of Networking Hardware and software.

Recommended Study habit:

- ✓ Correlate the learned things with real life examples.
- ✓ Try to implement the concept mentioned here
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

- ✓ "Multimedia: Making It Work" – Tay Vaughan (Eight Edition)
- ✓ Ralf Steinmetz & Klara Nahrstedt "Multimedia Computing, Communication & Application" Pearson Education.

UNIT – I

Theme	Description	Lectures
Introduction of Multimedia	• Multimedia Definition, • Use of multimedia, • Delivering Multimedia, • Text: about Fonts and Faces, • using text in multimedia, • computers and text, • font editing and design tools, • hypermedia and hypertext.	8

UNIT – II

Theme	Description	Lectures
Images and Sound	**Images**: plan approach, • organize tools, • configure computer workspace, • making still images, • color, image, file formats. **Sound:** the power of sound, • Digital audio, • Midi Audio vs Digital audio, • multimedia system sounds, • audio file formats, • Vaughan's Law of multimedia minimums, • Adding Sound to multimedia projects.	8

UNIT – III

Theme	Description	Lectures
Animation	• Power of motion, • Principles of animation, • Animation by computer, • Making animation that work. **Video** : using video- working with video and displays – digital video containers – obtaining video clips, s • hooting and editing video	8

UNIT – IV

Theme	Description	Lectures
Making multimedia	• Stage of multimedia project – the Intangible needs, • The hardware needs, • The software needs, • An authoring systems needs. • Multimedia production Team.	8

UNIT – V

Theme	Description	Lectures
Planning and costing	• Planning and costing: the process of making multimedia, • Scheduling, • Estimating, • RFPs and Bid Proposals. • Designing and Producing, • Content and Talent: acquiring content, • Ownership of content created for project- acquiring talent	8

Code :SBITE 603

Virtualization and Cloud Computing

Credit : 4 **Maximum Marks:** 100

Description: This course will give introduction of cloud computing to the students to further explore virtualization and cloud technologies.

Purpose: Let the students know about the important of cloud framework used in the various company, including the techniques for building, deploying, and maintaining machine images and applications.

Prerequisite:

- ✓ Familiarity with Java, Python or C# .

Recommended Study habit:

- ✓ Read about origin of the technology.
- ✓ Find out what was the problem to which this technology is a solution.

Suggested Readings

1. Cloud Computing for Dummies by Judith Hurwitz, R. Bloor, M.Kanfman, F.Halper (Wiley India Edition).
2. Enterprise Cloud Computing by Gautam Shroff,Cambridge.
3. Cloud Security by Ronald Krutz and Russell Dean Vines, Wiley India.
4. Google Apps by Scott Granneman, Pearson.
5. Cloud Security & Privacy by Tim Malhar, S.Kumaraswammy, S.Latif (SPD,O'REILLY).
6. Cloud Computing A Practical Approach, Antohy T Velte, et.al McGraw Hill.
7. Cloud Computing Bible by Barrie Sosinsky, Wiley India.

UNIT – I

Theme	Description	Lectures

Introduction to Cloud Computing	• Introduction
	  ○ History & Evolution of Cloud Computing: Hardware evolution, Internet software evolution, Virtualization.
	  ○ Definitions, Characteristics of Cloud Computing
	  ○ Components of Cloud, Cloud Architecture
	  ○ NIST Model
	  ○ Advantages & Disadvantages of Cloud Computing
		8

UNIT – II

Theme	**Description**	**Lectures**
Types of Cloud Services	• Cloud services: laaS, PaaS, SaaS, DaaS, NaaS, Xaas • Cloud Deployment Models ○ Public, Private, Community, Hybrid • Cloud computing platforms: Infrastructure as service: Amazon EC2, Platform as Service Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing.	8

UNIT – III

Theme	Description	Lectures
Virtualization	• Basics of Virtualization • Virtualization Types-Desktop Virtualization-Network Virtualization Server and Machine Virtualization-Storage Virtualization-System level or Operating Virtualization-Application Virtualization • Types of hardware Virtualization: Full Virtualization, Partial Virtualization, Para Virtualization • Virtualization Advantages • Virtual Machine Basics-Taxonomy of Virtual machines Process Virtual Machines • System Virtual Machines • Hypervisors	8

UNIT – IV

Theme	Description	Lectures
Developing Cloud Services	• Web-Based Application • Pros and Cons of Cloud Service Development • Types of Cloud Service Development-Software as a Service-Platform as a Service • Web Services-On-Demand Computing-Discovering Cloud Services • Development Services and Tools-Windows Azure, Amazon Ec2 Google App Engine, IBM Clouds	8

UNIT – V

Theme	Description	Lectures
Software as a Service(SaaS)	• Introduction to SaaS • Software Utility Application Architecture • Characteristics of SaaS • Software Utility Applications • Software Application Services Framework • Web Services • Web 2.0 • Web OS • Case studies on SaaS	8

Code : SBITE 604

Green Computing

Credit : 2 **Maximum Marks: 50**

Description: This course empowers students to reduce the energy use, waste, and other environmental impacts of IT systems while reducing life cycle costs, thereby improving competitive advantage.

Purpose: Students will learn how to measure minimize power usage, procure, sustainable hardware, design green data centers, recycle computer equipment, configure computers to minimize power, use virtualization to reduce the number of servers, and other green technologies.

Prerequisite:

- ✓ Students is expected to know basic operational knowledge of using computer.
- ✓ Awareness of Environmental factors those affects technology.

Recommended Study habit:

- ✓ Get more & more information on green technologies.
- ✓ Visit the places (industries or institutes) those have implemented green technologies.
- ✓ Further, evaluate the usability of learned concept and think about its applicability.

Suggested Readings

- ✓ "Green Π-Reduce Your Information System's Environmental Impact While Adding to the Botton Line". Toby J. Velete, Anthony T Velete, Robert Elsenpeter, First Edition, McGraw-Hill.
- ✓ "Foundation of Green IT Marty Poniatowski, Prentice Hall.
- ✓ "Green Project Management, Richard Maltzman and David Shirley, CRC Press a Taylor and Francis Company.

UNIT – I

Theme	Description	Lectures
Introduction	• Introduction • Importance of Green Computing • Challenges in achieving green operations of Computing Units ○ Governance and Regulatory issues • Business process reengineering for sustainability	8

UNIT – II

Theme	**Description**	**Lectures**
Low Power Computing	• Sustainable computing, mobile power computing Power and thermal aware computing • Computing at Household, automobiles • Smart Grid	8

UNIT – III

Theme	Description	Lectures
Middleware Support for Green Computing	• Power states, Voltage & frequency scaling • Advanced Computer and Power Interface for Linux & Windows • Compiler optimization • Virtualization • Server Consolidation	8

UNIT – IV

Theme	Description	Lectures

Tools for Monitoring & Cost reduction techniques	• Sensor networks
	• Cooling equipment and their behavior
	• Going paperless
	• Recycling
	• Embedded computing
	  ○ Optimization for Battery consumption
	  ○ Safe & sustainable Cyber subsystems
		8

UNIT – V

Theme	Description	Lectures
Green data Center Designing	• Introduction to Green Data center • Reasons to adopt green data center • Power flow: Energy drains & gains • Environmental Impact of buildings • Concerns of Data Center ○ Cooling, Space constraints, power density, availability,technology changes, Energy Cost	8

Code :SBITP 605

Project

Maximum Marks: 200

Credit: 8

PROJECT PROPOSAL (SYNOPSIS) FORMAT

Project proposal should be prepared in consultation with the guide. It should clearly state the objectives and environment of the proposed project to be undertaken. Ensure to include the following items while submitting your project synopsis. Project synopsis may contain 15-20 pages and sequence of contents strictly should be in the following order:

1. Cover and Title page
2. Synopsis Approval Performa duly filled and signed by the student
3. Index
4. Acknowledgement
5. Introduction and objective of the project
6. Number of Modules, Detail of Modules
7. H /W and S/ W Requirement
8. Tools and Platform used
9. Data Structure, Table and Structure
10. Analysis
11. Feasibility Study (Technical, Economical & Operational)
12. DFD (0 Level, 1- Level and 2 – Level)
13. ER Diagram
14. Types of Reports
15. Scope of Application/Project
16. Bibliography/ References

B.Sc. (IT) PROJECT REPORT FORMAT

The Project should be prepared in consultation with the guide and may contain 100-120 pages (include coding). Project Report should strictly follow the point's g given below:

1) Cover and Title Page
2) Abstract
3) Acknowledgement
4) Declaration Certificate
5) Index
6) Introduction to Problem/Project
7) System Analysis
    a. Identification of Need
    b. Preliminary Investigation
    c. Scope of the work
8) Feasibility Study
    a. Technical Feasibility
    b. Economic
    c. Operational Feasibility
9) Analysis (Feasibility Study, DFD 0 Level, 1- Level and 2 Level ER Diagram, and Data Structure, Table structure etc.)
10) S/W Engineering.
11) S/ W & H / W Requirement Specification
12) Tools and Platform used
13) System Design- Screen Shots
14) Coding
15) Validation Checks
16) Testing (Testing techniques and Testing strategies)
17) Implementation
18) Quality Checks
19) Maintenance
20) System Security measures
21) Various types of Reports/ Modules
22) Future Scope of the project
23) Bibliography/ References (in IEEE format)
24) Soft Copy in CD / DVD (Documentation, Installation manual, Application Setup)

FORMAT OF COVERPAGE

Project Title

Submitted in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science

Year-20—to 20—

Guided By

XYZ

Department of Computer Science

Dev Sanskriti Vishwavidyalaya, Sankara, Kumahari

Submitted By

ABC

Department of Computer Science

Dev Sanskriti Vishwavidyalaya, Sankara, Kumahari

Certificate of Originality

I hereby declare that the Project entitled **"Title of the Project"** submitted to the Department of Computer Science, DSVV Sankara, C.G. in partial fulfillment for the award of the Degree of BACHELOR O F COMPUTER SCIENCE (INFORMATION TECHNOLOGY) in session 20-- - 20-- is an authentic record of my own work carried out under the guidance of Dr./Ms./ Mr. **"External and Internal Guide Name** " and that the Project flaps not previously formed the basis for the award of any other degree.

Place: Signature of the candidate.

Date: (Name of Student)

(Roll No.)

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

Signature of Guide

Name

Designation

Points to be considered while submission of project

- The student can directly start working on the project selected after due permission/approval of project synopsis from Project Guideline *HOD CS/*MSC Project Coordinator.
- The cover page must be hard bound in *Black Colour; with Gold Embossing.*
- The size of the report would depend on the project undertaken. However it must be 100 - 120 typed pages (Single space) on A4 size paper.
- Font: Times New Roman, Font size: 12 font sizes for the normal text, 14 font sizes for headings & 16 font sizes for page titles, Line & paragraph spacing: 1.5
- Margins: Top = 01, Bottom = 01, Left = 02, Right = 02, Gutter = 0.5
- All page numbers should be typed at the centre of page at the bottom.
- All the students are required to use the uniform font and format (except in heading and subheadings) throughout the text of the report. For example, if anybody uses "Times new Roman" of font size 12 in the text, then he/she will be using the same throughout the report.
- The project report must accompany a certificate authenticating the originality of the work done in the prescribed font 12 at, as indicated above.
- The student is required to submit 2 hard copies of the project report hardly bounding
    - University copy
    - Department copy
- BLACK color hard binding with golden engraved letters and one Soft copies on CD (full source code in working condition).
- Along with this, students will keep one copy of the project for their further reference in future and one copy to the organization where they have done their training (if required).
- There should not be any deviation from the Cover page as given format prescribed.
- Letter of Authentication should be submitted by students declaring that the Project Report is the original work of student and no reward had been attained for same project ever before. Students are advised not to *COPY* the project report from other students.
- Authorization from Organization / Institute/ University/ where such Project have been implemented should be added with certificate showing the student name, project name with future recommendations of organization if any.
- Certificate from the Project Guide certifying the project work done under his/ her guidance along with course, student name & project details complete in all respects.
- As per guidelines, no two groups can work on the same project.