



ST.PHILOMENA'S COLLEGE (AUTONOMOUS), MYSURU

(AFFILIATED TO UNIVERSITY OF MYSORE)

REACCREDITED BY NAAC WITH A GRADE

**Three-year six semesters Choice Based Credit System (CBCS) with
Learning Outcome Based Curriculum framework (LOCF)**

**and Continuous Assessment & Grading Pattern (CAGP) Undergraduate
Programme under Autonomous Structure**

Programme- B.Sc.

The academic year 2018-19 onwards

DEPARTMENT OF COMPUTER SCIENCE

VISION AND MISSION OF THE COLLEGE

VISION:

The college is guided by the visionary zeal of providing value- based education to everyone irrespective of religion, caste, creed or sex by which the character is formed, intellect is explained and one can stand on his/her feet.

MISSION:

To transform young men and women who come to learn not from books, but also from life and to share the experience of working and playing together, this inculcates life skills to become good citizens with integrity and discipline.

Programme Educational Objective (PEO)

PEO-1	Graduates will be able to master and display competency and leadership to become successful professionals, employees and entrepreneurs or pursue higher education and research.
PEO-2.	Graduates will be able to demonstrate the commitment towards professional ethics, gender sensitivity, preservation of environment and sustainable development.
PEO-3	Graduates will continue to learn and advance their careers through activities such as participation in professional organizations, attainment of professional certification and seeking higher education.

Programme Outcomes (PO): BSc. Programme

PO-1	Disciplinary Knowledge: The BSc. graduates will acquire the knowledge with facts and figures related to pure and applied sciences. Understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
PO-2	Cognitive and Communicative skills: Students learn two languages along with three major subjects. At the end of the programme, the students would have developed reading, writing, speaking, interpretive and composition skills. They would be able to communicate with others using appropriate media; confidently share one's views and express themselves
PO-3	Research Related Skills: The BSc. students will acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.
PO-4	Ethics: The BSc. students will be imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.
PO-5	Problem Solving: The BSc. graduates will develop the ability to analyze and solve Course-related problems and also the ability to evaluate situations and react responsibly to communicate, cooperate and lead a team among peers and others.
PO-6	Critical Thinking: The qualities of a science student – observation, precision, analytical mind, logical thinking, clarity of thought and expression, systematic approach, qualitative and quantitative decision making are enhanced.

PO-7	Social Interaction: The BSc. graduates shall appreciate the role of science in society; and its personal, social and global importance.
PO-8	Analytical Skills: The graduates will master the skills of observations and drawing logical inferences from the scientific experiments. Analyzed the given scientific data critically and systematically and the ability to draw the objective conclusions.
PO-9	Environment and Sustainability: Graduates will be able to understand the issues of environment and work towards sustainable development.
PO-10	Employability: After completing the programme, graduates will have the competency to be employed or to be an entrepreneur.
PO-11	Leadership Quality: In the graduation programme students are inculcated moral and ethical values, managerial skills, adoptability, problem solving, taking initiative, decision making, risk taking to make them confident leaders.

Programme Specific Outcomes (PSO)- BSc. Programme

PSO-No	After the completion of BSc. programme by studying PMC/CME students will be able to	Cognitive level
PSO-1	Develop critical thinking and skills for problem solving leading to scientific attitudes and initiate research. They will be able to develop experimental and data analysis skills through a wide range of experiments in the practical laboratory	apply
PSO-1	Integrate modern techniques (Maxima, Scilab, etc.) with the knowledge of Mathematics for solving problems in the relevant areas. They will be able to apply the acquired principles and knowledge of mathematical sciences to execute work to manage projects in multidisciplinary areas.	Evaluate
PSO-2	Identify, Analyze the computing requirements of a problem and Solve them using computing principles. They will be able to Design and Evaluate a computer based system, components and process to meet the specific needs of applications in Computer knowledge.	Analyse
PSO-3	To understand and analyse the principles and working of different electronic systems. Thereby they will be able to offer real time and efficient solutions problems that are directly or indirectly related to Electronics and will contribute towards the development of society.	Apply

Mapping of Mission of the College with PEO			
Mission	PEO-1	PEO-2	PEO-3
Mision -1	✓	✓	✓

Mapping of PEOs with Programme Outcome(PO)											
PEO-No.	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
PEO-1		✓	✓		✓					✓	
PEO-2	✓			✓					✓		
PEO-3						✓	✓	✓			

ST. PHILOMENA'S COLLEGE (AUTONOMOUS),
Subject- COMPUTER SCIENCE

Preamble:

The syllabus for BSC is framed in such a way to give an exposure to the students to Fundamentals Computer Science and Current technology. The students study the fundamentals of programming, operating system, computer architecture, for the basic foundation. Further, they study Computer Networks, database management with visual programming using C#. In the fifth semester, they study Java and advanced Java which enhances their programming and application development skills.

As the current market trend of employment and Research is based on data collection and analysis they study Data Warehousing and Data Mining.

The discipline-specific papers have a wide range of choice for students from web designing, Internet technology, network security, cryptography, Mobile technology, Biometrics and Database testing.

Apart from Computer science, students study two skill enhancement papers offered by other streams.

Subject- COMPUTER SCIENCE [DSC]**Scheme of Instruction and Examination under the CSCS Scheme**

Semester	DISCIPLINE SPECIFIC CORE	Course code	Teaching hours/week			Examination Scheme			
			Theory per week in	Practical per week in	Credits	Duration in hrs	Theory/ Practical Max.Marks	TA Max Marks	Total Marks
I	Paper-I Computer Concepts & C Programming	MA280	03	-	3	03	50	20	100
	Practical Paper-I C Programming Practicals	MA282	-	03	1.5	03	20	10	
II	Paper-II Data Structure Applications With C	MB280	03	-	3	03	50	20	100
	Practical Paper-II Data Structures Practicals	MB282	-	03	1.5	03	20	10	
III	Paper-III RDBMS and Visual Programming	MC280	03	-	3	03	50	20	100
	Practical Paper-III RDBMS & Visual	MC282	-	03	1.5	03	20	10	
IV	Paper-IV Computer Networks & Data Communication	MD280	03	-	3	03	50	20	100
	Practical Paper-IV Computer Networking Practicals	MD282	-	03	1.5	03	20	10	
V	Paper-V CPU Architecture & Microprocessor	ME280	03	-	3	03	70	30	300
	Practical Paper-V Microprocessor	ME284	-	03	1.5	03	35	15	
	Paper-VI Data Warehousing and Data Mining	ME282	03	-	3	03	70	30	
	PRACTICAL-VI Data Warehousing Data Mining	ME286	-	03	1.5	03	35	15	
VI	Paper-VII Operating System and System Software	MF280	03	-	3	03	70	30	300
	PRACTICAL-VII Linux and Shell Programming	MF284	-	03	1.5	03	35	15	
	Paper-VIII Java and Adv Java	MF282	03	-	3	03	70	30	
	Practical-VIII JAVA	MF286	-	03	1.5	03	35	15	
	DSE 1 III SEM	-		02	02	02	30	20	50
	DSE 1 VI SEM	-		02	02	02	30	20	50
	Total	-			40				1100

DISCIPLINE SPECIFIC ELECTIVE [DSE]

Sl No	Discipline Specific Elective	COURSE CODE	Semester
1	Internet Technology	M28Y03	II to VI
2	Computer Security	M28Y04	
3	Computer Graphics	M28Y05	
4	Software Engineering	M28Y06	
5	Web Designing	M28Y07	
6	Data Analysis using Adv Excel DSE	M28Y08	
7	Access and Crystal Reports	M28Y09	
8	Biometrics	M28Y10	
9	Python Programming	M28Y02	
10	Software Testing	M28Y11	
11	Content management	M28Y12	
12	Mobile Technologies (5G, GPRS etc)	M28Y01	
13	Database Testing	M28Y13	
14	Network Security	M28Y14	
15	Cryptography	M28Y15	

SEMESTER -1
PAPER 1: COMPUTER CONCEPTS & C PROGRAMMING (DSC)
18CSA280
THEORY: 50 (EXAM) + 20 (IA)
Teaching Hours: 16 Weeks 3Hrs/ week =48 hrs

Course Objectives

- 1 To describe the computer and its general features and data processing
- 2 To define concepts, input and output units computers
- 3 To know the terms of motherboard, CPU, RAM, ROM, BIOS, CMOS and can express with their own words.
- 4 To Identify and explains computers hardware
- 5 Distinguishes different computer types

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1	Understand basic concepts and terminology of information technology.	understanding
CO2	Have a basic understanding of personal computers and their operations.	Understanding
CO3	Be able to identify issues related to information security.	Remember
CO4	Recognize computer types and basic concepts	analyze
CO5	Critically analyse different types of Components of motherboard, CPU, RAM, ROM, BIOS, CMOS and can express with their own words.	Analyze
CO6	Simplify of expression using K-Map	Apply

Unit 1 Computer Fundamentals

16Hrs

- 1.1 Introduction, Classification Computers (Based on all Criteria), Functional units, Evolutional of Computer Languages Assembler, Compiler, Interpreter
- 1.2 **Number Systems and Boolean Algebra**
Introduction to number systems- Numeric and Non-numeric representation

of data - Decimal, Binary (Addition, subtraction, multiplication, division, 1's and 2's Complement methods), Octal and hexadecimal number systems. Conversion from one number system to another number system. Excess-3-code and grey code. Conversion between grey and binary codes

1.3 Boolean Algebra- Laws, De-Morgan's Theorem, Simplification of Expressions using K Map (Upto 4 Variables),

1.4 Logic Gates- AND, OR, NOT, and Universal Gates. Combinational Logic Circuit- Half and Full Adder, Half and Full Subtractors.

Unit 2 Introduction to C language

16 Hrs

2.1 Introduction to C language History, Features and Applications of 'C'. Programming preliminaries – Character set, definitions and declarations of identifiers, Variables, Constants, Keywords, Data types with examples

2.2 Operators and expressions – Various operators and expressions, Operator precedence with example programs.

2.3 Input-output statements – various types of standard input output statements, standard mathematical functions, with example programs.

2.4 Control structures – Decisions making- Different forms of if statements, switch statements, unconditional branching statements (with example programs), Looping statements with example programs

2.5 Arrays– Definitions and need of arrays, 1-D and 2-D arrays with example programs

Unit 3 STRING HANDLING

16 hrs

3.1 STRING HANDLING – Declarations, Initialization, reading and writing of strings, operations and string functions with example programs.

3.2 FUNCTIONS – Definitions and need of functions. Library functions, user-defined functions in detail, function declaration and prototypes call by value and call by reference, functions and arrays, recursion, storage classes with example program

3.3 STRUCTURES AND UNIONS – Definition and use of structures. Declaring, Initializing and Accessing Structure member, Arrays of Structures, Nested Structures, uses of structures, Introduction to Union

TextBooks

1. Digital Fundamentals, Floyd UBSPublication.

2. Digital Logic- Thomas Bartee.

3. Problem Solving with C, M.T. Somashekara, PHI Learning, New Delhi, 2009

4. Programming in C – E Balaguruswamy, Tata McGraw Hill Publications.

5. Computer Concepts and C- P BKotur.

SEMESTER -1
C Programming Practicals (18CSA282)
PRACTICAL-I: 20 (EXAM) + 10 (IA)
Practical Hours: 16 Weeks 3Hours/Week=48 Hours

COURSE OBJECTIVES :

- 1** The course aims to provide hands-on experience to problem-solving through C programming.
- 2** It aims to train the student to the basic concepts of the C-programming language.
- 3** This course is designed to give the students various techniques to solve the problems using C Language.

Course Learning Outcomes

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	To understand syntax of C program	understanding
CO2.	To understand data type, control statements and loops	Understanding
CO3.	To understand concepts of array, structures, union etc.	Remember
CO4.	To create user defined functions	Create
CO5.	Able to debug the code	Analyze
CO6.	Able to handle possible errors during program	Apply

Part A

- 1** Program to pick out the biggest and smallest number among three given numbers.
- 2** Program to find the sum of even and odd numbers separately in the given list.
- 3** Program to find the largest and smallest of N numbers
- 4** Program to find the roots of the quadratic equation using nested if.
- 5** Given two numbers, program to perform arithmetic operations using the switch statement
- 6** Program to generate Fibonacci series up to N numbers using do-while loop

- 7 Program to find the reverse of the given number. Also, sum and count the number of digits and check whether the given number is palindrome or not using while – do loop.
 - 8 Program to generate prime numbers using for loop.
 - 9 Program to search an element using a linear search technique
 - 10 Program to check whether the given number is factorial of a number or not.
- Part B
- 11 Program to insert a sub-string in to a given string.
 - 12 Program to add and subtract two M x N matrices
 - 13 Program to multiply two M x N matrices
 - 14 Program to find trace and norm of a square matrix and print its principle diagonal elements
 - 15 Program to exchange principal and secondary diagonal elements of a square matrix
 - 16 Program to find the factorial of a number using recursion
 - 17 Program to swap two number using functions
 - 18 Program to read and write the information of an employee using the structure
 - 19 Program to create simple marks card assuming appropriate conditions.
 - 20 Program to read and write the information of an employee using a file

SEMESTER- 2
PAPER 2: DATA STRUCTURE APPLICATIONS WITH C - DSC
THEORY: 50(EXAM) + 20 (IA)
Teaching Hours :16 Weeks 3hrs/week 48hrs

COURSE OBJECTIVES :

- 1 To impart the basic concepts of data structures and algorithms
- 2 It aims to train the student to the basic concepts stacks, queues, lists, trees and graphs
- 3 It aims to train the student to the basic concepts of searching and sorting techniques
- 4 This course is designed to give the students various techniques to solve the problems using C Language.

Course Learning Outcome:

CO No.	completion of the course the student will be able to	Cognitive level
CO1.	To understand syntax of C program	understanding
CO2.	To understand data type, control statements and loops	Understanding
CO3.	To understand concepts of array, structures, union etc.	Remember
CO4.	To create user defined functions	Create
CO5.	Able to debug the code	Analyze
CO6.	Able to handle possible errors during program execution	Apply

Unit 1 Pointers

16 Hrs

- 1.1 Pointers – Introduction, declaring and initializing a pointer, accessing a variable through its pointer. Pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures with example programs.
- 1.2 File Handling: - Introduction defining and opening a file, closing a file, input/output operations on files, error handling during input/output operations, random access to files with examples
- 1.3 Dynamic memory allocation – MALLOC, calloc, realloc, FREE with examples, Pre-processing directives, macro with arguments.
Introduction to Problem Solving Techniques Steps in problem-solving
- 1.4 Algorithm and flow charts

Unit 2 Linear Data Structure

16 Hrs

- 2.1 Linear Data Structure and their sequential storage representation Concept and terminology for non-primitive Data structures
- 2.2 Arrays-Storage structures for arrays, Various operations on Arrays-Traversal, Insertion, Deletion, Sorting and Searching
- 2.3 Stacks, Definitions and Concepts, Operations on stacks, Applications of stacks- Recursion, Infix to postfix, Evaluating postfix expressions
- 2.4 **Queues-Linear and circular Queue.** **16 Hrs**
- 2.5 Pointers and Linked Allocation, Linked linear lists, Operations on Linear lists using singly linked storage structures-Insertion and Deletion operations circularly linked linear lists- memory representation, Doubly linked linear lists- memory representation
- 3.0 Nonlinear DataStructures
- 3.1 Trees - Introduction as a non-linear data structure, Concepts of a node, Terminal node, Depth, General Tree, Definition for Binary Tree, Left Skewed Tree, Right Skewed Tree,
- 3.2 Memory representation using Arrays and Linked List,
- 3.3 Tree Traversal Algorithms- Pre-order, In-order, Post-order and Implementation of Tree Traversal Algorithm
- 3.4 Graphs – Introduction, Definition, Terminology, Representation, Traversal

Text Books:

1. An Introduction to Data Structures with Applications 2nd edition - J.P.Trembly and Sorenson, McGraw Hill 2001
- 2.Dromey-How to solve it by computer, PHI.
3. Data Structures using C- PadmaReddy
4. Data structures using C & C++ by YedidyahLangsun, Moshe J Augenstein, Tenenbaum, Second Edition, Prentice Hall of India Ltd
- 5.Problem Solving with Data Structure, Schaum OutlineSeries

SEMESTER- 2
Data Structures Practicals
PRACTICAL: 20 (EXAM) + 10 (IA)
Practical Hours: 16Weeks 3Hours/Week=42 Hours

COURSE OBJECTIVES

1. To impart the basic concepts of data structures and algorithms
2. It aims to train the student to the basic concepts stacks, queues, lists, trees and
3. It aims to train the student to the basic concepts of searching and sorting techniques
4. solve the problems using C Language.

Course Learning Outcomes:

COs No.	On completion of the course the student will be able to	Cognitive level
CO1.	To design and analyze simple algorithms.	Analyze
CO2.	To Discuss recursion and tree traversal algorithms	Analyze
CO3.	To understand searching and sorting techniques	Understanding
CO4.	To implement basic data structures such as array , stacks, queues , linked list and trees.	Create
CO5.	Implement various array operations	Create
CO6.	Deveop basic algorithms for sorting and searching.	Create

- 1 Program to find lower triangular and upper triangular matrices for the given matrix
- 2 Write an interactive program to insert an element at the given position and delete an element at the specified position in the given array.
- 3 Program to search an element identify the number of occurrences with locations in a linear array
- 4 Program to sort the given M x N matrix row-wise and column-wise using bubble sorting technique
- 5 Write an interactive program to search an element in the given linear array using a linear and binary searching technique
- 6 Write a program to merge two sorted arrays.

Part – B

- 7 Write an interactive program to implement the following operations on stack using arrays
a. PUSH b. POP
- 8 Program to implement the Tower of Hanoi problem.
- 9 Write an interactive program to perform insertion and deletion operations in Linear Queue using arrays
- 10 Write an interactive program to perform insertion and deletion operations in Circular Queue using arrays
- 11 Write an interactive program to insert a node in a linked list at the front, delete a node from the rear and display
- 12 Write an interactive program to implement preorder, post order and in-order traversal of a binary tree using a linked list.

SEMESTER- 3

Paper-III

RDBMS and Visual Programming (DSC)

Theory : 50 (exam) + 20 (IA) practical's: 20 (exam) + 10 (IA)-

COURSE OBJECTIVES :

1. Discuss the architecture and functioning of database management systems as well as associated tools and techniques, principles of data modeling using entity relationship.
2. Describe a good database design and normalization techniques to normalize a database
3. To develop the application based on C# programming language

Course Learning Outcomes:

COs No.	On completion of the course the student will be able to	Cognitive level
CO1.	Have good understanding of database systems concepts and to be in a position to use and design databases for different applications.	Understanding
CO2.	Understand the use of structured query language and its syntax, transactions, database recovery and techniques for query optimization.	Understanding
CO3.	Develop console applications in C#	Create
CO4.	Develop windows applications in C#	Apply

Unit 1

16Hrs

- 1.1 **DBMS:** Problem with File-based systems:- Introduction to Database and Database Management systems, objectives of database management, Overview of DBMS, Database administrator, Database Designers, End users.
- 1.2 Data Models, Schemas and instance
Three-Schema Architecture and Data independence, DBMS languages, E-R diagram with some case-study(Strong entity and weak entity)Different types of keys(Primary key, Secondary key, Candidate key, Foreign key and Alternate key
- 1.3 **RDBMS:** Introduction to RDBMS, Structure of Relational Database, Relational Algebra, Extended Relational Algebra Operations, Modification of the Database, Tuple Relational Calculus
- 1.4 **Relational Databases**
Introduction to SQL, data types and table definition-constraints, primary key, Unique, check and Referential Integrity.
DDL – Create, Alter, Truncate, View and Drop
command SQL Operator (Arithmetic, Comparison, Logical operator)
DML - Insert, Select, Select with different clauses(Simple, Nested Queries), Update and Delete Command.DCL – Grant Privilege command, Revoke privilege command, Transaction control Language- commit, Savepoint, Rollback command.SQL function, SET operator (Union, Unionall , Intersect, Difference)JOIN(Equi-join, Non-Equi-Join

Unit 2

16 Hrs

- 2.1 Introduction to C#,
Understanding C# environment, Overview of C
- 2.2 Literals, variables, and Data types, operators and expressions, Decision making and Branching, Decision making and looping,
- 2.3 Methods in C#,
- 2.4 Handling Arrays,
- 2.5 Manipulating Strings
- 2.6 Structures and Enumerations
- 2.7 **Classes and objects**
- 2.8 Inheritance and polymorphism,
- 2.9 Interface: multiple inheritances
Managing errors and exception

Unit 3.0 Windows Forms:

16hrs

- 3.1 Control class, Standard controls and components (check box, radio button, combo box, ListBox, Checked List Box, Label, Listview, picture box, textbox, rich text box, panel, flow layout panel and table layout panel, tool strip, menu strip(Refer Wrox programmer to programmer only the mentioned standard controls))

3.2 ADO.Net overview, Using database connection, commands (Refer Wrox programmer to programmer page no. 846-860)

3.3 Fast Data Access: Data Reader, Data Set class (Refer Wrox programmer to programmer page no. 863-870)

Text Books:

- 1 ANALYSIS AND INFORMATION SYSTEMS : Raja Raman
Chapter:1,2,3,4,5,6,7,10,11,12,14,15
- 2 Programmer in C# A Primer by Balagurusamy
- 3 Programmer to Programmer Professional C# By E and Wrox2008

Reference Books :

- 1 Database system concepts 4th edition by Korth\ Sudarshan, Silberschatz.
- 2 Database system: Navathe
- 3 Database Management Systems: Alexis Leon & Mathewson
- 4 SQL: IvanBayross

PRACTICAL-III

RDBMS and Visual Programming Practicals

Practical: 20 (exam) + 10 (IA)

Practical Hours: 16Weeks x 3Hours/Week=48 Hours/ Semester

COURSE OBJECTIVES:

1. Discuss SQL commands
2. Demonstrate SQL queries according to different domain
3. Create the application based on C# programming language

Course Learning Outcomes:

COs No.	On completion of the course the student will be able learn to	Cognitive level
CO1.	Write SQL queries depending on requirement.	Create
CO2.	Understand the use of structured query language and its syntax, transactions, database recovery and techniques for query optimization.	Understanding
CO3.	Develop console and windows applications in C#	Create

Part A:

1. Create a table 'STUDENT' to store the details of the marks of a student.

Field	Type	Width	constraint
Student_ID	Numeric	5	Unique
Name	Text	20	
Class	Numeric	2	
English	Numeric	3	
Hindi	Numeric	3	
Maths	Numeric	3	
Science	Numeric	3	
Social_Science	Numeric	3	

Create a table 'Transaction' to have the following fields.

Field	Type	Width	constraint
Trans_No	Numeric	5	Unique
Item_No	Numeric	5	
Item_Name	Text	25	
Trans_Date	Date		
Quantity	Numeric	5	

After creating the tables, do the following:

- a. Set field properties of each field.
- b. Modify fields in the table.
- c. Modify the table 'STUDENT' to include the following fields:
- d. Apply necessary validation rules for each field.
- e. Rename the field 'Total' by 'Aggregate'.
- f. Delete field 'Result'.
- g. Add records

Field	Type	Width	constraint
Total	Numeric	4	
Average	Numeric	5	2 decimal places
Result	Text	10	

2. For the tables created in the above problem, do the following
 - a. Apply filters to list students with marks greater than 60.
 - b. Apply filters to get transactions for a date.
 - c. Sort students by name.
 - d. Sort transactions by date.
 - e. Create queries to list students with Aggregate <300 and Aggregate >= 250.
 - f. Total transaction quantity for a given date.
3. Using the tables created in problem number 1 do the following:
 - a. Create forms to view data.
 - b. Add, Delete and Save records through the forms created.
 - c. Change the structure of the above forms in design view
4. Using the tables created in problem number 1, and/ or related queries, generate the following reports:
 - a. List of students with marks >60 in English.
 - b. List of students whose Average is >80.
 - c. List of Items for a given Transaction date.
 - d. Day-wise transactions for each month under the month's heading showing total transaction at the end.
5. Create a table "EMPLOYEE" to store the details with the following fields

(at least 10 records)

Field	Type	Width	Constraints
Employee id	Number	5	Primary key Validate for not accepting more than 2 decimal places
Name	String	20	
Address	Text	50	
Basic salary	Number	6	
Net salary	Number	6	

6. Using the above table Generate the following query with reports
 - a) By Employee No
 - b) By salary-wise

c) List the employees, whose basic salary is > 10000

Part B:

1. Application using class and objects
2. Console application to perform string handling functions.
3. Console application to create a user-defined exception
4. Console application to achieve multiple inheritances using an interface.
5. Console application to check the priority of thread using multithreading
6. Design a window application to find the factorial of a number and check the number is a prime number
7. Design a calculator using windows application
8. Design a window application to insert, delete, update and search operation of a student information
9. Design a window application to calculate the NET SALARY of an Employee
10. Design a window application to change the size of the font using menu strip and tool strip
11. Design a window application to use a frame control to navigate to web pages
design a window application to Display Content in a Multi tabbed User Interface

SEMESTER- 4

Paper-IV

COMPUTER NETWORKS AND DATA COMMUNICATION (DSC)

THEORY: 50(EXAM) + 20 (IA)

Teaching Hours 16 Weeks 3Hrs/ week =48 hrs

COURSE OBJECTIVES :

1. To discuss the fundamental concepts of computer networking and provide the knowledge of different protocols at different layers of models.
2. To explain how the data is transferred between the computers over the network.
3. To discuss various network topologies and transmission media

Course Learning Outcomes:

COs No.	completion of the course the student will be able to	Cognitive leve
CO1.	Master the terminology and concepts of the OSI reference model and the TCP/IP reference model.	Understanding
CO2.	Master the concepts of protocols, network interfaces etc	Apply
CO3.	Demonstrate knowledge of network tools.	Create

CO4.	Appreciate contemporary issues in networking technologies	Analyse
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Unit 1 Data Communication

16 Hours

- 1.1 Introduction, Characteristics – Delivery, accuracy, Timeliness and jitter, Components – Message, sender, receiver, transmission medium and Protocol Line Configuration – Point to point and multi-point
Topology – Mesh, Star, Tree, Bus, Ring, and fly
Transmission Model – Simplex, half-duplex, Full Duplex
Types of Networks – LAN, WAN, MAN, and Intranet
- 1.2 **Network& internetworking devices** – Repeater, bridges, types of bridges, Routers, Gateways.
- 1.3 **Transmission Media** – An Introduction, Guided Media: - Twisted pair cable – Unshielded and shield twisted pair cable, co-axial cable, optical fibre cable
Unguided Media:- Radio waves – propagation (Ground, sky and line of sight) microwaves satellite communication, cellular telephony with their application
- 1.4 **Multiplexing:-** FDM, TDM and applications

2.0 The OSI model

16 Hrs

- 2.1 Layered architecture, Functions of the layers – Physical layer, Data link layer, Network layer, Transport layer, Session layer, Presentation layer, Application layer
- 2.2 **Electronic mail-** simple mail transfer protocol (SMTP), simple network management protocol (SNMP), hypertext transfer protocol (HTTP).
- 2.3 **TCP/IP** – TCP/IP protocol suite layer internetwork protocol other protocols in the **network layer** – ARP, RARP, ICMP& IGMP **Transport layer-** user datagram protocol (UDP) and transmission control protocol (TCP) **Application layer-** Domain name system (DNS)(797) file transfer protocol

Unit 3 Data and Signals: Analog and digital-Analog and digital data, Analog and digital

16 Hrs

- 3.1 Signals.
- 3.2 **Periodic Analog signals** –sine wave, phase, wavelength, time and frequency domains, composite signals and bandwidth
- 3.3 **Digital Signals** – Bitrate, bit length, the transmission of digital signals
- 3.4 **Error Detection and Correction** – Introduction, Block coding, linear block-codes, cyclic codes, checksum
- 3.5 **Digital Transmission:-** Analog to digital conversion – Pulse Code Modulation (PCM), delta modulation(DM) Digital to Analog conversion – Amplitude shift key (ASK), frequency shift key, phase shift key (PSK)

Text Book:

- 1 Communication networks: II edition. : Albert Leon Gaitia, Indrawidjaja

2 Computer Networks: Tanenbaum IV Edition

3 Introduction to Data Communications and Networking by BEHROUZ FOROUZAN

SEMESTER- 4
Paper-IV
COMPUTER NETWORKS AND DATA COMMUNICATION (DSC)
LAB
PRACTICAL: 20 (EXAM) + 10 (IA)
Practical Hours: 16Weeks x 3Hours/Week=42 Hours/ Semester.

COURSE OBJECTIVES :

- 1 To discuss the fundamental concepts of javascript.
- 2 TO explain CSS Concept.
- 3 To discuss various HTML tags

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	Design a dynamic website	Create
CO2.	Design a static website	Apply
CO3.	Demonstrate network programs using C .	Create
CO4.	Use various HTML Tags	Create

PRACTICAL PROGRAMS	Duration
1. Write a C program to sort 'n' Frame Buffers in ascending order. 2. Write a C program to find Minimum Spanning Tree for a Graph. 3. Write a C program to Encode and Decode the number 688 using RSA Algorithm choose $p = 47$, $q = 71$, and $e = 79$. 4. Write a C program to implement Leaky Bucket Algorithm with bucket size 50 and rate of discharge 30. Simulate for 5 packets. 5. Write a C program to create a Server and Client process where Client makes a request for a file and Server sends the information to Client. Assume file	42 hrs

contains only one line.

6. Create a Website to add two web pages using HTML.

7. Create an Email Account.

8. Create a Topology with three Nodes 1, 2, and 3 connected to a Hub. Set TCP connection from 1 to 3 and UDP connection from 2 to 3.

9. Demonstrate FTP and Telnet protocols with 4 Nodes, 2 Hubs and 1 Router.

10. Create a Topology with two Nodes connected to a Hub with Point-to-Point link and vary the Bandwidths and observe the Throughput and Drop packets.

11. Write a C program to sort 'n' Frame Buffers in ascending order.

12. Write a C program to find Minimum Spanning Tree for a Graph.

13. Write a C program to Encode and Decode the number 688 using RSA Algorithm choose $p = 47$, $q = 71$, and $e = 79$.

14. Write a C program to implement Leaky Bucket Algorithm with bucket size 50 discharge 30. Simulate for 5 packets.

15. Write a C program to create a Server and Client process where Client makes a request for a file and Server sends the information to Client. Assume file contains only one line.

16. Create a Topology with three Nodes 1, 2, and 3 connected to a Hub. Set TCP connection from 1 to 3 and UDP connection from 2 to 3.

17. Demonstrate FTP and Telnet protocols with 4 Nodes, 2 Hubs and 1 Router.

18. Create a Topology with two Nodes connected to a Hub with Point-to-Point link and vary the Bandwidths and observe the Throughput and Drop packets.

19. Create a topology with two Routers of 2500 series routers. Set the IP Address for the Ethernet and Serial Interfaces. Enable the RIP Protocol to both the Routers. Demonstrate the connectivity between 2 Routers with 'ping' command

Books

Sl. No	Title of the book	Authors
1	Communication networks : II edition	Albert Leon Gaitia, Indrawidjaja
2	Computer Networks	Tanenbaum IV Edition
3	Introduction to Data Communications and Networking	BEHROUZ FOROUZAN
4	HTML	Black Book
5	Professional JavaScript for Webdevelopers	Nicholas C Zakas

SEMESTER- 5

Paper-V: CPU ARCHITECTURE & MICROPROCESSOR (DSC)

THEORY: 50 (EXAM) + 20 (IA) PRACTICALS: 20 (EXAM) + 10 (IA)

Number of Instruction Hours: 16 Weeks 3 Hrs / Week = 48 Hrs

COURSE OBJECTIVES :

- 1 To discuss the CPU Architecture
- 2 To describe the microprocessor 8085 architecture.
- 3 To Learn about interfacing and various applications of microprocessor.
- 4 To Create 8085 assembly language programs

Course Learning Outcomes:

COs No.	On completion of the course the student will be able to	Cognitive level
CO1.	Explain CPU architecture	Understanding
CO2.	Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors	Understanding
CO3.	Develop 8085 assembly language programs	Create

Unit 1	COMPUTER ARCHITECTURE	16 hrs
1.1	CPU Architecture, Addressing modes – Direct, Indirect, Immediate, Relative, Indexed.	
1.2	Addressing Format: Zero Address, One Address, One-and-half Address, Two Address, Three Address.	
1.3	I/O Transfers – Program controlled, Interrupt controlled, DMA (Direct Memory Access)	
Unit 2	MICROPROCESSOR	
2.1	Introduction to Microprocessor, Assembly Language	
2.2	8085 Microprocessor Architecture, Pin diagram, Introduction to 8085 instructions set	
2.2	Assembly language programming.	
Unit 3	PROGRAMMING AND INTERFACING	16 hrs
3.1	Programming Technology of 8085 with additional instructions, counters and time delays	
3.2	Stacks and Subroutines, Interfacing Peripherals (I/Os) and applications. Interrupts, Interfacing data converters, Keyboard interfacing.	
3.3	Interrupts, Interfacing data converters, Keyboard interfacing.	

3.4	Introduction to 8086, advantages over 8085, additional features of 8086, modified addressing schemes	
	Text Books: Unit 1: Digital logic and Computer design, M Mario Pvt. Ltd., NewDelhi	
	Unit 2 & Unit 3: Microprocessor Architecture, Programming and Application with 8085 by .Ramesh S. Gaonkar – – Penram International Publishing (India)	
	Reference:	
	Title of the book	Authors
1	Computer Organization by V. Carl Hamacher, Zvonko	
2	The Intel Microprocessor Systems by Barry B Brey	
3	Micro Computers and Microprocessor by John Uffenbeck	
4	Digital fundamentals by Thomas L Floyd	

SEMESTER- 5

Paper-V: CPU ARCHITECTURE & MICROPROCESSOR (DSC)

PRACTICALS: 20 (EXAM) + 10 (IA)

Number of Instruction Hours: 16 Weeks x 3 Hrs / Week = 42 Hrs /Semester
(PRACTICALS).

COURSE OBJECTIVES:

- 1** To discuss different types of instruction formats
- 2** To explain different types of addressing modes
- 3** To developing assembly language programs using different instruction formats
- 4** To develop assembly language programs using different addressing
- 5** Creating 8085 assembly language programs Using advanced concepts

Course Learning Outcomes:

COs No.	On completion of the course the student will be able to	Cognitive level
CO1.	Implement instruction formats to generate assembly language programs	apply
CO2.	Implement addressing modes to generate assembly language programs	Create
CO3.	Write 8085 assembly language programs	Create

PRACTICAL PROGRAMS	Duration
<ol style="list-style-type: none">1. Program to swap two data using a. Register Mode. b. Direct Mode. c. Indirect Mode.2. Addition of two 8 bits numbers.3. Subtraction of two 8 bits numbers.4. Multiplication of two 8 bits numbers.5. Division of two 8 bits numbers.6. Program to check whether the given number is odd or even.7. Program to check whether the given number is positive or negative.8. Program to find 1's and 2's complement of a given number.9. Addition of two 16 bits numbers a. Using DAD b. With out using DAD.10. Subtraction of two 16 bits numbers.11. Addition of two 24 bits numbers.12. Find the largest of N numbers.13. Find the smallest of N numbers.14. Program to generate Fibonacci series of length N using delay.15. Program to sort N numbers in ascending order using delay. 16. Program to sort N numbers in descending order using delay.17. Program to display Decimal Up /Down Counter using delay	42 hrs

Text Books

Sl. No	Title of the book	Authors
1	Digital logic and Computer design	M. Morris Mono
2	Microprocessor Architecture, Programming and Application with 8085	Ramesh S. Gaonkar
3	Computer Organization	V. Carl Hamacher, Zvonko
4	The Intel Microprocessor Systems	Barry B Brey
5	Micro Computers and Microprocessor	John Uffenbeck
6	Digital fundamentals	Thomas L Floyd

SEMESTER- 5**Paper-VI Data Warehousing and Data Mining****THEORY: 50 (EXAM) + 20 (IA) PRACTICALS: 20 (EXAM) + 10 (IA)****Number of Instruction Hours: 16 Weeks 3 Hrs / Week = 48 Hrs****COURSE OBJECTIVES:**

- 1 To introduce various methods and theory for development of data warehouses and data analysis using data mining.
- 2 To describe Data quality and methods and techniques for preprocessing of data. Modeling and design of data warehouses.
- 3 To develop Algorithms for classification, clustering and association rule analysis. Practical use of software for data analysis.

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	Understand the functionality of the various data	Apply
CO2.	Understand Mining and data warehousing component .	Understanding
CO3.	Discuss the strengths and limitations of various data mining and data warehousing models	Apply
CO4.	Explain the analyzing techniques of various data	
CO5	Describe different methodologies used in data mining and data ware housing.	Create
CO6.	Compare different approaches of data ware housing and data mining with various technologies.	Analyze

Units	Course Content/ Syllabus	Durat ion 20 Hours
Unit -1	Introduction	
1.1	What is Data Warehouse? A Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Data cube technology, Data Mining, Data mining functionalities, Data cleaning, Data integration and transformation, DataReduction.	
1.2	Data Mining Primitives, Languages, and System Architectures: Data Mining primitives, Presentation and Visualization of discovered patterns, Data Mining query language.	
Unit -2	Mining Association Rules:	18hrs
2.1	Single-dimensional Boolean association rules from transactionaldatabases.	
2.2	Classification and Prediction: Issues regarding classification and prediction, Classification by Decision tree induction, Bayesian Classification, Classification by Back propagation,Prediction	
Unit 3	Cluster Analysis:	10 hrs
3.1	What is a cluster analysis? Types of data in cluster analysis: A categorization of Major Clustering methods, Partitioning methods, Hierarchical methods; Model-Based Clustering Methods: Statistical approach.	
3.2	Applications and Trends in Data Mining: Data Mining applications, Data Mining system products and research prototypes, Additional themes	

3.3 Data Mining, Data Mining and Intelligent query answering.
Trends in Data Mining

Text Books

Sl. No	Title of the book	Authors
1	Data Mining Concepts and Techniques	Jiawei Micheline Kamber, Morgan Kaufmann Publishers
2	Building the Data Warehouse'	W.H. Inmon , Wiley
3	Mastering Data Mining	dreamtech Michael J.A. Berry & Gordon S. Linoff
4	Data Warehousing	Sam Anahory & DennisMurray

Reference Books

Sl. No	Title of the book	Authors
1	Mastering Data Mining	Michael J.A. Berry & Gordon S. Linoff
2	Data Warehousing	Sam Anahory & DennisMurray

SEMESTER- 5
Paper-VI Data Ware housing and Data Mining
PRACTICALS: 20 (EXAM) + 10 (IA)

Number of Instruction Hours: 16 Weeks x 3 Hrs / Week = 48 Hrs /Semester (Theory

COURSE OBJECTIVES :

- 1 To Introduce various methods and theory for development of data warehouses and data analysis using data mining.
- 2 To describe Data quality and methods and techniques for preprocessing of data. Modeling and design of data warehouses.
- 3 To develop Algorithms for classification, clustering and association rule analysis. Practical use of software for data analysis.

Course Learning Outcomes:

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	Understand the functionality of the various data	Apply
CO2.	Understand Mining and data warehousing component .	Understanding
CO3.	Discuss the strengths and limitations of various data mining and data warehousing models	Apply
CO4.	Explain the analyzing techniques of various data	
CO5	Describe different methodologies used in data mining and data ware housing.	Create
CO6.	Compare different approaches of data ware housing and data mining with various technologies.	Analyze

Units

Course Content/ Syllabus

1. Write a C program to find Euclidean distance in Data mining
2. Write a C program to demonstrate Manhattan distance in data mining
3. Write a C program to demonstrate Chebyshev distance method in data mining
4. Write a C program to demonstrate preprocessing method-Binning
5. Write a C program to demonstrate to support confidence

Text Books

Sl. No	Title of the book	Authors
1	Data Mining Concepts and Techniques	Jiawei Micheline Kamber, Morgan Kauf MannPublishers.
2	Building the Data Warehouse'	W.H. Inmon , Wiley dreamtech
3	Mastering Data Mining	Michael J.A. Berry & Gordon S.
4	Data Warehousing	Sam Anahory & DennisMurray

Reference Books

Sl. No	Title of the book	Authors
1	Mastering Data Mining	Michael J.A. Berry & Gordon S. Linoff
2	Data Warehousing	Sam Anahory & DennisMurray

SEMESTER- 6

Paper-VII

OPERATING SYSTEM AND SYSTEM SOFTWARE (DSC)
THEORY: 50 (EXAM) + 20 (IA) PRACTICALS: 20 (EXAM) + 10 (IA)

Number of Instruction Hours: 16 Weeks 3 Hrs / Week = 48 Hrs

COURSE OBJECTIVES:

- 1 To discuss different types of operating systems.
- 2 To discuss different functions, objectives and services provided by the operating system.
- 3 To describe process states , memory management CPU Scheduling and deadlock concept.
- 4 To explain various algorithms required for management, scheduling, allocation and communication used in operating system
- 5 To discuss the significance of system software.
- 6 To explain Assemblers, loaders, linkers and compilers.

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	Write different types, functions, objectives and services of operating systems	Understanding
CO2.	Apply various concept related with Deadlock to solve problems related with Resources allocation, after checking system in Safe state or not	Apply
CO3.	Appreciate the role of operating system as System software	Analyse
CO4.	Compare the various algorithms and comment about performance of various algorithms used for CPU scheduling,	Evaluate

Unit 1	Fundamentals of Operating System:	16 hrs
1.1	An introduction, History, Types of the operating system, multi-user, single-user, batch systems, multi-tasking, multiprogramming, real-time systems	
1.2	Operating System functions/services, System Calls, System Programs. Memory Management – Swapping, Single Contiguous Technique	
1.3	Partitioned allocation, Paging, Segmentation with paging, Demand paging.	
Unit 2		16 hrs
2.1	Process Management – Process concept, Process state, Process control back.	
2.2	CPU Scheduling CPU - I/O burst cycle, CPU schedulers, Scheduling queues, Scheduling criteria.	
2.3	Process synchronization – Spooling, Semaphores.	
2.4	Deadlocks – Characterization, Methods for handling deadlocks, Deadlock Prevention -Mutual exclusion, hold and wait, no pre-emption, Deadlock avoidance – Safe state, Banker’s algorithm. Deadlock detection, single and several instances of resources type.	
Unit 3	System Software – Introduction	16 hrs
3.1	Assembler – Functions, Pass 1 and Pass 2 (without designing; only purposes).	
3.2	Loaders – General loading scheme, Types of loading scheme, compile-and-go (without designing), absolute loaders (with designing), direct-linking loaders (without designing).	
3.3	Compilers – Functions, Phases and compilers, lexical analysis, interpretation, syntax analysis, Optimization, storage assignment, code generation, assembly and output, Lexical and syntax analysis (in detail).	
	Text Books:	
1	Silbers chatz and Galvin – Operating System Concepts, John Wiley and sons Publication. (Chapters: 1.1, 1.2, 1.3, 1.4, 1.8, 3.2, 3.3 3.4, 4.1, 4.2.1, 5.1, 5.2, 5.3, 6.4, 7.2, 7.3, 7.4,7.5, 7.6, 8.3, 8.4, 8.5, 8.7, 9.2, 13.2, 13.3, 13.4)	
2	Unit 3 John J Donovan – System Programming, Tata McGraw- Hill (Chapters: 3.2.1, 5.1, 5.1.1, 5.1.3, 5.1.6, 5.2, 8.1, 8.1.6, 8.2.1, 8.2.2)	
	References	
1	Operating System and System Programming by Dhamdhere, Tata McGraw-Hill Publishing	
2	Operating System by Tannenbaum	
3	Operating System by Godbole, Tata McGraw-HillPublication.	

PRACTICAL-VII
LINUX AND SHELL PROGRAMMING Practicals
Practical Hours: 14 Weeks x 3Hours/Week=42 Hours/ Semester

COURSE OBJECTIVES

- 1 To discuss different types of operating systems.
- 2 To discuss different functions, objectives and services provided by the operating system.
- 3 To describe process states , memory management CPU Scheduling and deadlock concept.
- 4 To explain various algorithms required for management, scheduling, allocation and communication used in operating system
- 5 To discuss the significance of system software.
- 6 To explain Assemblers, loaders, linkers and compilers.

COs No.	On completion of the course the student will be able to	Cognitive level
CO1.	Write different types, functions, objectives and services of operating systems	Understanding
CO2.	Apply various concept related with Deadlock to solve problems related with Resources allocation, after checking system in Safe state or not	Apply
CO3.	Appreciate the role of operating system as System software	Analyse
CO4.	Compare the various algorithms and comment about performance of various algorithms used for CPU scheduling,	Evaluate

List of Experiments to be conducted in the lab: Linux Commands, Shell Programing

- 1 Write a shell script to exchange the contents of two variables.
- 2 Write a shell script, which accepts three subject marks scored by a student and declare the result
- 3 Write a shell script to print integer numbers from 1 to 20.
- 4 Write a shell script to perform an arithmetic operation on two number depending on +, -, * and /.

- 5 Write an interactive shell script to display a menu and perform the following task
 - i. Renaming a file
 - ii. Deleting a file
 - iii. Copying a file
 - iv. Exit
- 6 Write a shell script which counts the number of lines in a file.
- 7 Write a shell script to accept three command-line arguments and display each one of them
- 8 Write a c program to
 - a. Display the PID of parent and PID of a child.
 - b. Copy the contents of one file into the other using command line arguments.
- 9 Write a c program to write a simple editor which serves the following purposes:

Cursor movement in all directions.

Insert a new line and a character.

Deletion of line and a character.
- 10 Assume a file with the following information

FirstName	MiddleName	Age
Shashank	Nayak	02
Prem	Singh	44
Shiva	Kumar	21
Guru	Raj	50
Augustin	Minalkar	35
Krishna	Kumar	30
- 11 Write a shell script
 - i. To Sort the first name in alphabetical order.
 - ii. Sort the age in terms of ascending order.
 - iii. Sort the age in terms of descending order.
 - iv. Sort the middle
- 12 Write a Shell script to display
 - i. The version of the shell.
 - ii. The user information.
 - iii. Login date and time.
 - iv. List of processes running on the system
 - v. User home directory

Reference:

- 1 UNIX Shell Programmes - Interactive Workbook by Christopher Vickey.
- 2 A user guide to UNIX system by Dr. Rebecca Thomas Jean Yates.

UNIT 1	Introduction to Java:	12Hours
1.1	Introduction to Java, Java and Java applications; Java Development Kit (JDK); Java is interpreted, Byte Code, JVM; Object-oriented programming; Simple Java programs	
1.2	Data types and other tokens: Boolean variables, int, long, char, operators, arrays, white spaces, literals, assigning values	
1.3	Creating and destroying objects; Access specifiers.	
1.4	Operators and Expressions: Arithmetic Operators, Bitwise operators, Relational operators, The Assignment Operator, The? Operator;	
Unit 2	Classes, Inheritance, Exceptions, Applets	12Hrs
2.1	Classes in Java; Declaring a class; Class name; Super classes; Constructors; Creating instances of the class; Inner classes	
2.2	Inheritance: Simple, multiple, and multilevel inheritance; Overriding, overloading.	
2.3	Exception handling Exception handling in Java.	
2.4	The Applet Class: Two types of Applets; Applet basics; Applet Architecture; An Applet skeleton; Simple Applet display methods	
Unit 3	Multi-Threaded Programming:	12Hrs
3.1	What are the threads? The lifecycle of a thread.	
3.2	Event Handling: Two event handling mechanisms; The delegation event model; Event classes; Sources of events; Event listener interfaces; Using the delegation event model;	
3.2	Adapter classes; Inner classes	
Unit 4	J2EE and Database Access	12Hrs
4.1	Overview of J2EE and J2SE.The Concept of JDBC;	
4.2	JDBC Driver Types; JDBC Packages; A Brief Overview of the JDBC process; Database Connection; Java Database connectivity – 2 tier, 3 tier architecture	
4.3	Servlets: Background; The Life Cycle of a Servlet; Development; A simple Servlet; Introduction of cookies;	
4.4	File and IO streams	
	Text Books	
1	Complete Reference Java By Patrick Norton	
2	Java 2 Complete – BPB Publications	

3 Java Workshop – StevenHolzner

1 Unleashed Reference:

Thinking in Java by Bruce Eckel

SEMESTER- 6

Paper-VIII

JAVA AND ADV JAVA (DSC)

THEORY: 50 (EXAM) + 20 (IA) PRACTICALS: 20 (EXAM) + 10 (IA)

Number of Instruction Hours: 16 Weeks 3 Hrs / Week = 48 Hrs

COURSE OBJECTIVES

- 1 Discuss basic concepts& techniques of java.
- 2 Describe the advanced concepts in java
- 3 Generate an application based upon the concepts of java & advance java.

Course Learning Outcomes:

COs No.	On completion of the course the student will be able to	Cognitive level
CO1.	Apply fundamentals of programming such as variables, conditional and iterative execution, methods	Apply
CO2.	Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.	Understanding
CO3.	Implement advanced java programming	Apply
CO4.	Use the Java SDK environment to create, debug and run simple Java programs.	Create

SEMESTER- 6

Paper-VIII
JAVA AND ADV JAVA(DSC)
PRACTICALS: 20 (EXAM) + 10 (IA)
JAVA Practicals
Practicals -IX

Practical Hours: 14 Weeks x 3Hours/Week=42 Hours/ Semester

COURSE OBJECTIVES:

- 1 Discuss basic concepts& techniques of java.
- 2 Describe the advanced concepts in java
- 3 Generate an application based upon the concepts of java & advance java.

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	Write basic programs in JAVA	Understand
CO2.	Generate programs using object-oriented concepts in JAVA	Create
CO3.	Implement advanced java programming	Apply
CO4.	Use the Java SDK environment to create, debug and run simple Java programs.	Create

	Course Content / Syllabus	Duration
1	Write a Java program to demonstrate Printing in Java	42 hrs
2	Write a Java Program to perform basic arithmetic operations	
3	Write a Java program to demonstrate Classes and objects	
4	Write a Java program to demonstrate constructor –default	
5	.Write a Java program to demonstrate Function overloading.	
6	Write a Java program to demonstrate constructor overloading	
7	Write a Java program to illustrate One-dimensional array	
8	Write a Java program to demonstrate a two-dimensional array	
9	Write a Java program to get the current date and time using the calendar	
10	Write a java program to generate a random number using math class	
11	Write a Java program to find the quadric equation by accepting input from the keyboard	
12	Write a Java program to demonstrate Single Inheritance.	

- 13 Write a Java program to demonstrate Multiple Inheritance.
- 14 Write a Java program to demonstrate Multilevel Inheritance.
- 15 Write a Java program to demonstrate Hybrid Inheritance.
- 16 Write an applet program for freehand drawing
- 17 Write an Applet program to Read a line of characters from the console using Input Stream
- 18 Write an Applet program to develop a simple calculator.
- 19 Write a Java program to find the IP address of your system.
- 20 Write a java applet to print hello world in different colours
Write a Java program to Illustrate threads.
- 22 Write a Java program to Exception Handling.
- 23 Write a java program to illustrate packages
- 24 Write a Java program to demonstrate JDBC
- 25 Write a Java program to demonstrate Serve lets
- 26 Write a Java program to demonstrate RMI

Text Books

Sl. No	Title of the book	Authors
1	Complete Reference Java	PatrickNorton
2	Java 2 Complete	BPBPublications.
3	Java Workshop	StevenHolzner

Reference Books

Sl. No	Title of the book	Authors
1	Thinking in Java	Bruce Ecnel

DSE

TITLE: INTERNET TECHNOLOGY

Discipline-specific elective (DSE-1)

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Course Objectives:

1.The course aims to acquaint students with the basics of internet technologies...

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	Review the current topics in Web & Internet technologies	Remember
CO2	Describe the basic concepts for network implementation.	understand
CO3.	Learn the basic working scheme of the Internet and the World Wide Web.	understand
CO4.	Understand the fundamental tools and Comprehend the technologies for Hypertext Mark-up Language (HTML technologies for web design.	understand
CO5	Comprehend the technologies for Hypertext Mark-up Language (HTML).	Ananysis
CO6	Specify design rules in constructing web pages and sites.	apply
CO7	Figure out the various security hazards on the Internet and the need for security measures	analyse

Unit 1	Internet overview	11Hrs
1.1	definition, internet evolution, advantages and disadvantages of internet Internet reference model-OSI model, TCP/IP reference model	
1.2.	Domain name system -DNS architecture, working of DNS, types of nameservers	
1.3	Internet services -communication services, information retrieval services, web services	
1.4	Internet protocols	
Unit 2	Email –	11hrs
2.1	email protocols, email working, email operations, email security, email hacking, email spamming and junk mails, Email providers	
2.1	Website designing -web development process, web designing tools, website hosting	
2.3	www- architecture, evolution	
Unit 3	Proxy server	11hrs
3.1	Web browsers, search engine components, Internet relay chat	
3.2	Internet relay chat	
3.3	video conferencing -modes of video conferencing	
3.4	Internet security –threats, email phishing, digital signature Markup Languages, Scripting Languages, Style Sheets	
	Text Books:	
1	Fundamentals of information technology by Alexis Leon	
1	Reference Books: Advanced internet technology by Deven Shah	

TITLE: COMPUTER SECURITY

Discipline-specific elective (DSE-2)

II SEMESTER

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Unit 1	Computer Security Overview:	10 hrs
1.1	Why Security? What to Secure? Benefits of Computer Security Awareness, Potential Losses due to Security Attacks, Basic Computer Security Checklist	
1.2	Computer Security – Elements: Different Elements in Computer Security, Computer Security –Terminologies, Computer Security – Layers	
Unit 2	Computer Security – Antivirus:	11Hrs
2.1	Antivirus, Basic Functions of Antivirus Engines, Free Antivirus Software, Avast Antivirus, AVG Antivirus, Panda Antivirus 2016, Commercial Antivirus	
2.2	Computer Security – Malware: Characteristics of a Virus, Detecting a Computer Error from a Virus Infection	
Unit 3	Computer Security –Encryption	11hrs
3.1	What is Encryption? Tools Used to Encrypt Documents	
3.2	Computer Security – Data Backup: Why is Backup Needed? Backup Devices, Types of Backups Based on Location	
3.3	Computer Security – Disaster Recovery: Disaster recovery definition, Preventive steps to be taken for Disaster Recovery, Computer Security, Devices that Help us with Network Security, Intrusion Detection Systems, intrusion detection tool – Snort, Virtual Private Network	

TITLE: Computer Graphics
II SEMESTER
Discipline-Specific Elective (DSE-3)

Class Duration: 16 Weeks with 2Hours per week = 32Hrs
MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

UNIT 1 **10hrs**

- 1.1** Raster Graphics Algorithm for 2D primitives
Introduction-output Technology-Raster and Vector display system,
Software Portability and graphic standards;
- 1.2** Conceptual Framework of Interactive graphics
- 1.3** Scan converting-Lines, circles, Filling, Thick primitives, Line
Style, pen style, Clipping in Raster World, Clipping Lines,
Generating characters

Unit 2 2D Graphics **12Hrs**

- 2.1** 2D Transformations, Homogenous coordinates, Matrix
representation of 2D Transformation, computation of
2DTransformation.
- 2.2 3D Graphics**
Matrix representation of 3D Transformation, computation of
3DTransformation., Transformations as the change in coordinate
systems

Unit 3 Multimedia **10 Hrs**

- 3.1** Introduction, Multimedia data streams
- 3.2** sound and audio file formats, images and graphics file formats and
optical storage media

Text Books:

- 1** Foley J.D Van Dam A. Fundamentals of interactive computer
graphics, Addison Wasley
- 2** Multimedia computing, communication and application by
Rolfsteinmetz, Redson Education

1 Reference Books:

Hearn.D Baker P.M COMPUTER GRAPHICS(PHI)

SOFTWARE ENGINEERING

DSE-4

II SEMESTER

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Course Objectives of software engineering:

1. To study and apply the c engineering to the design, development, and maintenance software.

Course Learning Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	strong foundation in science, mathematics, and engineering, and can apply this fundamental knowledge to software engineering	understanding
CO2	apply software engineering practice over the entire system lifecycle.	apply
CO3.	know classical and evolving software engineering methods, can select and tailor appropriate methods for projects and can apply	understand
CO4.	apply basic software quality assurance practices to ensure that software designs, development, and maintenance meet or exceed applicable standards.	apply
CO5	prepare and publish the necessary documents required throughout the project lifecycle. Graduates can effectively contribute to project discussions, presentations, and reviews.	create

Unit 1	Software engineering:	12 Hours
1.1	Software overview, Definitions, software evolution, the need for software engineering, characteristics of a good software S	
1.2	software development paradigm -waterfall model, iterative model, spiral model	
1.3	Software development life cycle -requirement gathering, feasibility study, system analysis, software design, coding, testing, integration, implementation, operations and maintenance	
Unit 2		8 Hours
2.1	Software project management-project planning Software project management-project planning, project estimation, project scheduling, project management tools	
2.2	Software requirements -Requirement engineering process, software requirement characteristics, User interface requirements	
Unit 3	Software design	13 hrs
3.1	software design process, Modularization, coupling and cohesion	
3.2	Software analysis and design tools -data flow diagram, structure charts, ER model, data dictionary	
3.3	Software design strategies -structured design, function-oriented design, object-oriented design,	
3.4	software design approaches –top-down design bottom-up design Software testing –software verification, validation, testing approaches, testing levels, quality control and assurance	
3.5	Software maintenance overview	
	Text Books:	
	1. Software Engineering-IAN Somerville	
	2. Software Engineering by Pankaj jalote	
	Reference Books: 1. software engineering by Rajib Mall	
St. Philomena's College (Autonomous) Mysore. B.Sc., Computer Science. CBCS Syllabus- 2018 19 onwards		

DSE-5
Web Designing
II SEMESTER

Class Duration: 16 Weeks with 2Hours per week = 32Hrs
MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Unit-1	HTML	10 Hours
1.1	Introduction to the internet, www, web browser, URL web page, website,	
1.2	introduction to web designing, categories of websites, HTML, basic html document, basic tags, text formatting tags, marquee, comments, hyperlinks, images, tables, frames, forms, <div> tag, tag	
Unit 2	CSS	12Hrs
2.1	Introduction, advantages of CSS, syntax, CSS selectors, colors, fonts, adding CSS to html document, inline, internal and external CSS, property-value forms, background property, float property, borders, margins, padding, Box model.	
Unit 3	JavaScript	10Hrs
3.1	Introduction, script, scripting languages, history, features, advantages,	
3.2	keywords, statements, variables, data types, operators, control structures, JavaScript loops, functions, window object,	
3.3	methods of the window object, form validation using Javascript,	

Discipline specific elective (DSE-6)
Data Analysis with Excel
Class Duration: 16 Weeks with 2Hours per week = 32Hrs
Marks- Theory=30 Internal Assessment=20=50

Unit 1	Data Analysis	12 hours
1.1	Introduction: Data Analysis, Types of Data analysis - Data Mining, Business Intelligence, Statistical Analysis, Predictive Analysis, text Analysis. Data Analysis with excel overview	
1.2	Basics – Windows concept, windows border, title bar, maximize button, minimize button, restore button, close button, dialogue box, a name box, formula bar, worksheets, status bar, task pane	
Unit 2	Data Entry and Charts	10Hrs
2.1	Entering Data: Moving around workbook using a mouse, keyboard, To use the scrollbars, scrolling	
2.2	Data Entry: Enter text and numbers, to enter information, cancel an entry, editing the entry, entering dates, selecting cells with mouse and keyboard	
2.3	Charts: Change in charts group, chart recommendations, fine-tune charts quickly, select/deselect chart elements, format styles and colour	
Unit 3	Formulae and Functions	10Hrs
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	.	
3.1	Formulae: Formulae, Typing formulae, entering formulae by pointing, errors in formulae, fill handle ad formulae, Bodmas with formulae	
3.2	Functions: basic functions, sum functions, Average function, Max function, Min Function.	
3.3	Function Library: Insert Function, Function box, Type a function, cell references, Absolute and Relative references	

Discipline-specific elective (DSE-7)

TITLE: Access and Crystal Reports

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Unit 1		10hrs
1.1	MS Access Overview: Introduction, Data definition, Data Manipulation, Data control	
1.2	Objects: Tables, query, form, report, macro, module	
1.3	Create a database: Creating Database, data types, create a table, adding data, create query data, query criteria, update query.	
Unit 2		11hrs
2.1	Forms and report: Create a form, modify a form, control and properties, and create a report, Built-in functions	
2.2	Relating data in Access: normalization, one-to-one relationship, one-to-many relationship, many-to-many relationship, creating a relationship, wildcards	
Unit 3		11hrs
3.1	Crystal report Overview: Benefits of crystal reports,	
3.2	The Four Editions Standard, professional, developer and advanced editions	
3.3	Viewing report: formatting a report, supplying crystals with data, viewing a report with crystal report	
3.4	GUI Navigation: Menu bar, toolbar, format bar, data tab, formula button. Design Environment: Design canvas, structure mode, page mode, data explorer sidebar	
3.5	Queries: creating queries, editing query, query filter and filter condition, field object controls and modification, delete a section, inserting objects, charts	

Text Books:

1. Microsoft Access Introduction Quick Reference Guide by BeezixInc
2. How To Learn Microsoft Access by Andrei Besedin
3. Crystal Reports XI: The Complete Reference by George Peck
4. Crystal Reports XI for Dummies by Allen.G.Taylor

TITLE: Biometrics

Discipline specific elective (DSE-8)

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Course Objectives:

- 1.To** define biometrics, list the two main phases of a biometric system, define data capture, describe stability, and list biometric system attributes.
2. Describe the formation of fingerprints, identify the characteristics of fingerprints, explain the role of the FBI in the development of fingerprint recognition, define minutiae points, and understand the different acquisition technologies.
- 3.** Understand the structure and identify the various components of the eye, explain how image processing is used in segmentation, define iris normalization, and list various metrics that determine image quality

Course Outcomes:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability,	create
CO2	identify, formulate, and solve engineering problems	apply
CO3.	An understanding of professional and ethical responsibility	understand

Unit 1

10 hrs

- 1.1 BIOMETRICS** – Overview: What is Biometrics? What is a Biometric System? Evolution of Biometrics, Why Biometrics is Required? Basic Components of a Biometric System, General Working of a Biometric System, Biometrics Terminology, Application Areas of biometrics.
- 1.2 BIOMETRIC MODALITIES:** Types of Biometric Modalities
- 1.3 PHYSIOLOGICAL MODALITIES:** Fingerprint Recognition System, Facial Recognition System, Iris Recognition System, Hand Geometry

Unit 2 **11hrs**

- 2.1** BEHAVIORAL MODALITIES: Gait Recognition, Signature Recognition System, Keystroke Recognition System VOICE RECOGNITION: Voice Recognition System, Difference between Voice and Speech Recognition
- 2.2** MULTIMODAL BIOMETRIC SYSTEMS: Why Multimodal Biometrics is Required? Working of Multimodal Biometric System, Design Issues with Multimodal Biometric Systems
- 2.3** BIOMETRIC MODALITY SELECTION: Criteria for Effective Biometric System, Comparison of Various Biometric Modalities
- 2.4** BIOMETRIC SYSTEM PERFORMANCE: Performance Measurements

Unit 3 **11hrs**

- 3.1** **PATTERN RECOGNITION AND BIOMETRICS:** Pattern Recognition in Biometrics, Components of Pattern Recognition, Popular Algorithms in Pattern Recognition
- 3.2** **SIGNAL PROCESSING AND BIOMETRICS:** What is a Signal? Signal Processing in Biometrics, Digital Signal Processing Systems (DSPs), DSP in Biometrics
- 3.3** **BIOMETRICS AND IMAGE PROCESSING:** Requirement of Image Processing in Biometrics
- 3.4** **BIOMETRIC SYSTEM SECURITY:** Biometric System Vulnerability, Risks with Biometric System Security, Biometric System Security, Criteria for Generating Biometric Templates

Text Books:

- 1. Biometrics: Concepts and Applications by G.R Sinha and Sandeep B. Patil
- 2. Guide to Biometrics by Ruud M. Bolle, Sharath Pankanti, Nalini. Ratha, Andrew W. Senior, Jonathan H. Connell, Springer 2009
- 3. Introduction to Biometrics by Anil k. Jain, Aruna. Ross, Karthik Nandakumar
- 4. Hand book of Biometrics by Anil K. Jain, Patrick Flynn, Aruna. Ross

TITLE: Python Programming
Discipline specific elective (DSE-9)
Class Duration: 16 Weeks with 2Hours per week = 32Hrs
MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Course objectives: This course will enable students to

- Learn Syntax and Semantics and create Functions in Python and Use python interactively
- Handle Strings and Files in Python.
- Understand Lists, Dictionaries in Python.

Course outcomes: The students should be able to:

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries

Unit 1 10hrs

- 1.1 History of Python, Python Features Understanding Python variables, Python basic Operators, Understandingpython blocks
- 1.2 **Python Data Types:** using Numeric data types: int, float, complex
Using string data type and string operations Defining list and list slicing Use of Tuple data type
- 1.3 **Python Program Flow Control:** Conditional blocks using if, else and elif, Simple for loops in python For loop using ranges, string, list and dictionaries, Use of while loops in python
Loop manipulation using a pass, continue, break and else Programming using Python conditional and loops block.

Unit 2 11hrs

- 2.1 Python Functions, Modules And Packages: Organizing python codes using functions Organizing python projects into modules Importing own module as well as external modules UnderstandingPackages.
- 2.2 Powerful Lamda function in python, Programming using functions, modules and external packages
- 2.3 Python String, List And Dictionary Manipulations: Building blocks of python programs Understanding string in build methods List manipulation using in build methods Dictionary manipulation

Unit 3 11hrs

- 3.1 **Python File Operation:** Reading config files in python Writing log files in python Understanding read functions, read(), readline() and readlines() Understanding write functions, write() and writelines() Manipulating file pointer using seek Programming using file operations
- 3.2 **Exceptions Handling:** Standard Exceptions, Assertions in Python, What is Exception? Handling an Exception, The except Clause with No Exceptions, The except Clause with Multiple Exceptions, The try-finally Clause, Argument of an Exception, Raising an Exception, User-Defined Exceptions

Text Books:

1. Python Programming: An Introduction to Computer Science by John Zelle
2. Python Essential Reference by David M. Beazley
3. Learn Python the Hard Way by Zed A. Shaw

TITLE: Software Testing
Discipline-specific elective (DSE-10)
Class Duration: 16 Weeks with 2Hours per week = 32Hrs
MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Course Objectives:

To study the fundamentals and principles of software testing

Course Learning Outcome:

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	understand the significance of testing	understan
CO2	Apply testing	apply
CO3.	Report review results	analyse

UNIT 1 INTRODUCTION TO SOFTWARE TESTING

10hrs

- 1.1** What is testing? Who does testing? Testing as an Engineering Activity. Role of Process in Software Quality. Testing as a Process. Software Testing Principles. The Tester.s Role in a Software Development Organization. QA, QC and testing

1.2 TYPES AND METHOD OF TESTING

Manual testing, automation testing, what to automate? When to automate? how to automate? Black box testing, white box testing, grey box testing. Comparison of testing methods

Unit 2 LEVELS OF TESTING

11hrs

- 2.1** The Need for Levels of Testing. Unit Test. Unit Test Planning. Designing Unit Tests. The Test Harness. Running the Unit tests and Recording results. Integration tests. Designing Integration Tests. Integration Test Planning .scenario testing . defect bash elimination -System Testing. types of system testing
- 2.2** Acceptance testing .performance testing – Regression Testing. internationalization testing. ad-hoc testing – Alpha. Beta Tests .testing OO systems. usability and accessibility testing.

Unit 3 TEST MANAGEMENT

11hrs

- 3.1** People and organizational issues in testing .organization structures for testing teams. testing services - Test Planning. Test Plan

Components. Test Plan Attachments. Locating Test Items .test management. test process - Reporting Test Results. Introducing the test specialist. Skills needed by a test specialist

3.2 **REPORTING**

Project, progress and productivity metrics. Status Meetings. Reports and Control Issues. Criteria for Test Completion. Types of reviews. Developing a review program. Components of Review Plans

3.3 Reporting Review Results. Evaluating software quality

TITLE: Content Management System

Discipline specific elective (DSE-11)

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Unit 1

- | | | |
|------------|---|--------------|
| 1.1 | Introduction to CMS, online information management, advantages of CMS, | 10hrs |
| 1.2 | Online information updating vs. CMS, logging in, dashboard, page list/search filter, common icons-light bulb, delete, edit this item, adding a new page, content editor | |

Unit 2

- | | | |
|------------|---|--------------|
| 2.1 | Paste, headings-heading styles, inserting a new image, uploading a new image, linkedlist,externallinks,linktoadocument,search engines/optimization,search optimization details -file name, custom title, keywords, meta description | 11hrs |
| 2.2 | | |

Unit 3

- | | | |
|------------|--|--------------|
| 3.1 | Menus, add new menu item- name, caption, parent sub-menu, link, and modules, createanewmodule-moduletype,name,position,theme,configuremodule | 11hrs |
| 3.2 | settings-module title, details tab and light bulb, assign a module to a page | |
- Text Books:

1. Content Management Bible 2nd edition, Bob Bioko.

2. Enterprise Content and Search Management for Building Digital Platforms, Wiley

TITLE: Mobile Technologies
Discipline specific elective(DSE-12)

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Unit 1		11Hours
1.1	GSM: Introduction Architecture, Applications, Advantages and disadvantages	
1.2	GPRS: GPRS – overview, GPRS – applications, GPRS – architecture, GPRS – protocol stack, GPRS – the quality of service, GPRS – mobile station classes, GPRS	
1.3	GPRS – data routing, GPRS – access modes & access point names, GPRS – network processes, GPRS – billing techniques, GPRS – mobile phones	
Unit 2		11Hours
2.1	CDMA: CDMA – introduction, CDMA – channels, CDMA – multiple access methods, CDMA – FDMA technology, CDMA – tdma technology,	
2.2	CDMA – technology, CDMA – network, CDMA – techniques, CDMA – spread spectrum	
2.3	CDMA – fading, CDMA –near-far problem, CDMA –power control, CDMA – power control, CDMA –handoff, CDMA – interferences.	
Unit 3 FTTH		10 Hrs
3.1	Introduction, Architecture, Applications, Advantages and disadvantages	
3.2	5G:Introduction,Architecture,Applications,Advantages and disadvantages	
	Text Books:	
	1.Basic of code division multiple access by Raghuveer Rao and SohailDianath	
	2. GPRS and 3G wireless Application by ChristofferAndersson	
	3. Wireless communication and networks. Second edition by William Stallings	
	Links	
	1. https://www.insys-icom.com/icom/en/knowledge-base/cellular/gprs-basics	
	2. https://www.tutorialspoint.com/gprs/gprs_pdf_version.htm	
	3. https://www.tutorialspoint.com/cdma/index.htm	

	Who is responsible? What should be tested in the Database?	
	Knowledge required for the Database Tester	
1.2	Database Testing Phases	
1.3	Database Testing Methodologies. Structural Database Testing. Functional Database Testing	
Unit 2	Basic SQL (Structured Query Language)	11hrs
2.1	SQL Basics: Select, Insert, Update and Delete. Using the select Statement to Test data. Using the insert Statement to generate Test data	
2.2	Testing for application accuracy using the Update and Delete Statements. Testing for basic data integrity using constraints.	
Unit 3	Testing with SQL	10 hrs
3.1	Joining Tables, Using SQL Queries for DataVerification. Testing	
3.2	Database Objects: Views, Indexe Stored procedures Triggers, User –Defined functions	

BSC SEMESTER TITLE: NETWORK SECURITY

Discipline specific elective ((DSE -14)

Class Duration: 16 Weeks with 2Hours per week = 32Hrs

MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Couse Objectives of network security:

- This **security** has four **objectives**: confidentiality, integrity, availability, and non-repudiation (NR).
- Securing information is equivalent to ensuring that computers keep your secrets, hold valid information, are ready to work when you are, and keep records of your transactions.

CO No.	On completion of the course the student will be able to	Cognitive level
CO1.	will develop the ability to: Identify computer and network security threats,	
CO2	To classify the threats and develop a security model to prevent, detect and recover from the attacks.	

∴

12 hrs

- ## Unit 2 Security in Transport Layer:

10hrs

- Unit 3 Network Layer Security:

10hrs

- Text Books:

1. Network Security Paperback – 2016 by Dr. Syed Jalal Ahmad (Author)

Reference Books:

1. Network Security: The Complete Reference 1st Edition (English, softcover, Roberta Bragg)

TITLE: CRYPTOGRAPHY
Discipline specific elective ((DSE-15)
Class Duration: 16 Weeks with 2Hours per week = 32Hrs
MARKS THEORY 30 + INTERNAL ASSESSMENT 20 = 50

Unit 1	Cryptography	10hrs
1.1	Origin, history-hieroglyph, mono-alphabetic substitution cypher, the caesar shift cypher, Steganography, evolution	
1.2	Cryptography: Characteristics of modern cryptography, the context of cryptography, cryptography, cryptanalysis	
Unit 2		11 hrs
2.1	Security services of cryptography- confidentiality, data integrity, authentication, non-repudiation, c	
2.2	cryptography primitives- encryption, hash functions, message authentication codes and digital signatures	
Unit 3		11hrs
3.1	Cryptosystems: Introduction, components of the cryptosystem, types of cryptosystems	
3.2	symmetric key cryptosystem, the challenge of the symmetric key cryptosystem	
3.3	asymmetric key cryptosystem, challenges of a public-key cryptosystem	

Text Books:

1. Cryptography and Network Security: Principles and Practice, William Stallings
2. Cryptography and Network Security, Behrouz A Forouzan
3. Fundamentals of Cryptography: Volume II Basic Applications, Oded Goldreich
