FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF Information Technology

For those who joined in June 2019 onwards

PROGRAMME CODE :

PART – I – TAMIL / FRENCH / HINDI– 12 CREDITS

PART – I – TAMIL

Offered by The Research Centre of Tamil

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19TLC1	Language-Modern Literature பொதுத்தமிழ் - இக்கால இலக்கியம்	5	3	40	60	100
2.	II	19TLC2	Language - Bakthi Literature பொதுத்தமிழ் - பக்தி இலக்கியம்	5	3	40	60	100
3.	III	19TLC3	Language- Epic Literature பொதுத்தமிழ் - காப்பிய இலக்கியம்	5	3	40	60	100
4.	IV	19TLC4	Language-Sangam Literature பொதுத்தமிழ் - சங்க இலக்கியம;	5	3	40	60	100
			Total	20	12			

PART – I –FRENCH

Offered by The Department of French

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RLC1	PART 1 LANGUAGE FRENCH	5	3	40	60	100
2.	II	19RLC2	PART 1 LANGUAGE FRENCH	5	3	40	60	100
3.	III	19RLC3	PART 1 LANGUAGE FRENCH	5	3	40	60	100
4.	IV	19RLC4	PART 1 LANGUAGE FRENCH	5	3	40	60	100
			Total	20	12			

PART – I – HINDI

Offered by The Department of Hindi

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DLC1	PART 1 LANGUAGE HINDI	5	3	40	60	100
2.	II	19DLC2	PART 1 LANGUAGE HINDI	5	3	40	60	100
3.	III	19DLC3	PART 1 LANGUAGE HINDI	5	3	40	60	100
4.	IV	19DLC4	PART 1 LANGUAGE HINDI	5	3	40	60	100
			Total	20	12			

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19E1LB1	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19E1LI1	INTERMEDIATE COMMUNICATIVE ENGLISH	5	3	40	60	100
3.		19E1LA1	ADVANCED COMMUNICATIVE ENGLISH	5	3	40	60	100
4.	II	19E2LB2	ENGLISH COMMUNICATION SKILLS (BASIC)	5	3	40	60	100
5.		19E2LI2	ENGLISH FOR EMPOWERMENT (INTERMEDIATE)	5	3	40	60	100
6.		19E2LA2	ENGLISH FOR CREATIVE WRITING (ADVANCED)	5	3	40	60	100
7.	III	19ELC3	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	IV	19ELC4	ENGLISH FOR INTEGRATED DEVELOPMENT	5	3	40	60	100
			Total	**20**	**12**			

PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS

MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19I1CC1	FUNDAMENTALS OF COMPUTING	6	4	40	60	100
2.		19I1CC2	LAB IN PROGRAMMING IN C	6	3	40	60	100
3.	II	19I2CC3	DATA STRUCTURES USING C++	6	4	40	60	100
4.		19I2CC4	LAB IN DATA STRUCTURES USING C++	6	3	40	60	100
5.	III	19I3CC5	DATABASE MANAGEMENT SYSTEMS	6	4	40	60	100
6.		19I3CC6	LAB IN RDBMS	6	3			
7.	IV	19I4CC7	PROGRAMMING IN JAVA	6	4	40	60	100
8.		19I4CC8	LAB IN PROGRAMMING IN JAVA	6	3	40	60	100
9.	V	I5CC9	.NET PROGRAMMING	5	5	40	60	100
10.		I5CC10	LAB IN.NET PROGRAMMING	6	3	40	60	100
11.		I5CC11	SOFTWARE ENGINEERING	5	3	40	60	100

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
12.		I5CC12	DATA COMMUNICATION AND NETWORKING	5	5	40	60	100
13.	VI	I6CC13	PYTHON PROGRAMMING	5	5	40	60	100
14.		I6CC14	LAB INPYTHON PROGRAMMING	6	3	40	60	100
15.		I6CC15	INFORMATION STORAGE AND MANAGEMENT	5	5	40	60	100
16.		I6CC16	PROJECT	-	3	40	60	100

ALLIEDCOURSES- 20 CREDITS

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19I1ACG1	DISCRETE MATHEMATICS	5	5	40	60	100
2.	II	19I2ACG2	OPERATIONS RESEARCH	5	5	40	60	100
3.	III	19I3AC3	DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE	5	5	40	60	100
4.	IV	19I4AC4	OPERATING SYSTEMS AND LINUX	5	5	40	60	100

ELECTIVES-15 CREDITS

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	V	I5ME1	DATA MINING	5	5	40	60	100
		I5ME2	SOFT COMPUTING	5	5	40	60	100
2.	VI	I6ME3	CLOUD COMPUTING	5	5	40	60	100
3.		I6ME4	MOBILE COMPUTING	5	5	40	60	100
4.	VI	I6ME5	NETWORK SECURITY	5	5	40	60	100
5.		I6ME6	COMPUTER GRAPHICS	5	5	40	60	100

PART – IV – 20 CREDITS

- **VALUE EDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **NON MAJOR ELECTIVE**
- **SKILL BASED COURSES**

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19G1VE1	Value Education (Including Meditation in Action Movement)	1	1	40	60	100
2.		19I1NME1	Image Editing Tool	2	2	40	60	100
3.	II	19G2VE2	Value Education	1	1	40	60	100
4.		19I2NME2	Image Editing Tool	2	2	40	60	100
5.	III	19I3EN1	Environmental Education	1	1	40	60	100
6.		19I3SB1	Automation Skills	2	2	40	60	100
7.	IV	19I3EN2	Environmental Education	1	1	40	60	100

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
8.		I4SB2	Analytical Skills	2	2	40	60	100
9.	V	I5SB3	Web Technology	2	2	40	60	100
10.		I5SB4	PHP	2	2	40	60	100
11.	VI	I6SB5	3D Animation Software	2	2	40	60	100
12.		I6SB6	Image Manipulation Tools	2	2	40	60	100

PART – V – 1CREDIT

OFF-CLASS PROGRAMME

ALL PART-V

Shift I

- Physical Education
- NSS
- NCC
- Women Empowerment Cell
- AICUF

Shift II

- Physical Education
- Rotaract
- Women Empowerment Cell
- AICUF
- Youth Red Cross / NSS

Kindly retain your respective Part V

OFF-CLASS PROGRAMME

ADD-ON COURSES

COURSE CODE	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
	COMPUTER APPLICATIONS	40	2	I&II	40	60	100

COURSE CODE	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
	(offered by The department of PGDCA for Shift I)						
	ONLINE SELF LEARNING COURSE- Foundation Course for Arts	40	3	I	50	-	50
	ONLINE SELF LEARNING COURSE- Foundation Course for Science	40	3	II	50	-	50
	ETHICAL STUDIES-Value Education	15	2	III-VI	50 each Semester	-	100
	HUMAN RIGHTS	15	2	V	-	-	100
	OUTREACH PROGRAMME- Reach Out to Society through Action**ROSA**	100	3	V & VI	-	-	100
	PROJECT	30	4	VI	40	60	100
	READING CULTURE	10/Semester	1	II-VI	-	-	-
	MOOC COURSES(Department Specific Courses/any other courses) * Students can opt	-	Minimum 2 Credits	-	-	-	

COURSE CODE	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
	other than the listed course from UGC-SWAYAM UGC / CEC						
	TOTAL		22 +				

EXTRA CREDIT COURSE

Course Code	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
19UGSLZ1	**SELF LEARNING COURSE for ADVANCED LEARNERS (offered for III UG)**	-			40	60	100

OFF CLASS PROGRAMMES
19UGVA Z1 - Crash Course
19UGVA CZ1 - Certificate Course

OLD SYLLABUS

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I1CC1	FUNDAMENTALS OF COMPUTING	Lecture	6	4

COURSE DESCRIPTION

This course content plays a vital role in building the basic concepts in computers and the fundamental knowledge in programming.

COURSE OBJECTIVES

To impart knowledge on basic concepts in Computer and to demonstrate the fundamental programming techniques in C.

UNITS

UNIT –I INTRODUCTION TO COMPUTER SYSTEM (17 HRS.)

Characteristics of Computers, History of Computers, Computer System. Hardware & Software: Components of Hardware, Software, Features of Software, Difference between Hardware & Software, types of software and open source software. Components of Computer and their Functions: **Input Unit, Output Unit (Self Study).** Storage Unit & CPU: Primary, Secondary and CPU. Blu-Ray Technology. Digital rights management (DRM).

INTRODUCTION TO C:

Overview of C: Introduction – Importance of C – Sample C Program – Basic Structure of C Program – Programming Style – Executing a C Program. Keywords and Identifiers – Constants –Variables - Data types – Declaration

of Variables- Assigning values to variables – Defining symbolic constants - Operators and Expressions

UNIT –II DECISION-MAKING STATEMENTS (17 HRS.)

Decision Making and Branching: Introduction – Decision making with IF statement- Simple IF statement- the IF-Else statement- Nesting of If-Else statement- The Else-if ladder- The switch statement- The ?: operator- **The Go to statement(Self Study).**

Decision Making and Looping: Introduction – The While statement- The Do statement – The For statement – Jumps in loops.

UNIT –III ARRAYS ,STRUCTURES & UNIONS (17 HRS.)

Arrays : Introduction – One Dimensional arrays – Two Dimensional Arrays- Initializing Two dimension Arrays – Multi Dimensional arrays

Structures & Unions : Introduction – Defining Structures- Declaring Structure Variables – Accessing Structure Members - Structure Initialization- **Unions (Self Study).**

UNIT –IV FUNCTIONS (17 HRS.)

User Defined Functions: Definitions of Functions – Return Values and their types – Function Calls –Function Declarations – Category of Functions – Nesting of Functions – Recursion- Passing Arrays to Functions –**Passing Strings to Functions (Self Study).**

UNIT –V POINTERS AND FILE MANAGEMENT (17 HRS.)

Pointers : Introduction – Accessing the Address of a Variable – Declaring pointer variable – Pointers and Arrays- Array of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – **Pointers and Structures(Self Study).**

File Management in C: Introduction – Defining and Opening a file – Closing file- Input Output operations on files – Error Handling during I/O operations – Random Access to files.

TEXT BOOKS:

1. Norton, Peter. Introduction to computers. McGraw-Hill Education, 2006.
2. Balagurusamy, E. Programming in ANSI C , 7e. Tata McGraw-Hill Education, 2018. (Chapters: 1, 2, 3, 5, 6, 7, 9, 10, 12)

REFERENCES:

1. Byron Gottfried, “Programming with C”, 2nd edition, (Indian Adapted Edition), TMH Publication.
2. Yashavant Kanetkar, “Let us C”, 16th Edition, BPB publication, 2017

WEB REFERENCES:

1. C Tutorial - Learn C Programming - W3schools.in

https://www.w3schools.in/c-tutorial.

2. C Tutorial

https://www.tutorialspoint.com/cprogramming/index.htm

NEW SYLLABUS

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2019 onwards

5%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I1CC1	FUNDAMENTALS OF COMPUTING	Lecture	6	4

COURSE DESCRIPTION

This course content plays a vital role in building the basic concepts in computers and the fundamental knowledge in programming.

COURSE OBJECTIVES

To impart knowledge on basic concepts in Computer and to demonstrate the fundamental programming techniques in C.

UNITS

UNIT –I INTRODUCTION TO COMPUTER SYSTEM (17 HRS.)

Characteristics of Computers, History of Computers, Computer System. Hardware & Software: Components of Hardware, Software, Features of Software, Difference between Hardware & Software, types of software and open source software. Components of Computer and their Functions: **Input Unit, Output Unit (Self Study).** Storage Unit & CPU: Primary, Secondary and CPU. Blu-Ray Technology. Digital rights management (DRM).

INTRODUCTION TO C:

Overview of C: Introduction – Importance of C – Sample C Program – Basic Structure of C Program – Programming Style – Executing a C Program. Keywords and Identifiers – Constants –Variables - Data types – Declaration of Variables- Assigning values to variables – Defining symbolic constants - Operators and Expressions

UNIT –II DECISION-MAKING STATEMENTS (17 HRS.)

Decision Making and Branching: Introduction – Decision making with IF statement- Simple IF statement- the IF-Else statement- Nesting of If-Else statement- The Else-if ladder- The switch statement- The ?: operator- **The Go to statement(Self Study).**

Decision Making and Looping: Introduction – The While statement- The Do statement – The For statement – Jumps in loops.

UNIT –III ARRAYS ,STRUCTURES & UNIONS (17 HRS.)

Arrays : Introduction – One Dimensional arrays – Two Dimensional Arrays- Initializing Two dimension Arrays – Multi Dimensional arrays

Structures & Unions : Introduction – Defining Structures- Declaring Structure Variables – Accessing Structure Members - Structure Initialization- **Unions (Self Study).**

UNIT –IV FUNCTIONS (17 HRS.)

User Defined Functions: Definitions of Functions – Return Values and their types – Function Calls –Function Declarations – Category of Functions – Nesting of Functions – Recursion- Passing Arrays to Functions –**Passing Strings to Functions (Self Study).**

UNIT –V POINTERS AND FILE MANAGEMENT (17 HRS.)

Pointers : Introduction – Accessing the Address of a Variable – Declaring pointer variable – Pointers and Arrays- Array of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – **Pointers and Structures(Self Study).**

File Management in C: Introduction – Defining and Opening a file – Closing file- Input Output operations on files – Error Handling during I/O operations – Random Access to files.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Real- time Applications using C

TEXT BOOKS:

3. Norton, Peter. Introduction to computers. McGraw-Hill Education, 2006.
4. Balagurusamy, E. Programming in ANSI C , 7e. Tata McGraw-Hill Education, 2018. (Chapters: 1, 2, 3, 5, 6, 7, 9, 10, 12)

REFERENCES:

3. Byron Gottfried, “Programming with C”, 2nd edition, (Indian Adapted Edition), TMH Publication.
4. Yashavant Kanetkar, “Let us C”, 16th Edition, BPB publication, 2017

WEB REFERENCES:

3. C Tutorial - Learn C Programming - W3schools.in

https://www.w3schools.in/c-tutorial.

4. C Tutorial

https://www.tutorialspoint.com/cprogramming/index.htm

OLD SYLLABUS

I B.Sc. Information Technology

SEMESTER –II

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I2CC3	DATA STRUCTURES USING C++	Lecture	6	4

COURSE DESCRIPTION

This course introduces the basic concepts of C++. It also aims at facilitate the students to know the Data Structure concepts.

COURSE OBJECTIVES

To impart Technical and Practical knowledge in Object oriented Programming with C++ & Data Structures.

UNITS

UNIT –I OBJECT ORIENTED CONCEPTS (17 HRS.)

Classes and Objects: Specifying a class Defining Member functions- A C++ Program with Class-Making an Outside function Inline – Nesting of Member Function - Memory allocation for objects- Static Data Members & Member Functions - Array of Objects - Friendly functions- Local Classes. Constructors and Destructors: Constructors- Parameterized Constructors- Multiple Constructors in Class- **copy constructors- Dynamic Constructors(Self Study)**- Destructors.

UNIT –II OPERATOR OVERLOADING & INHERITANCE (17 HRS.)

Defining operator overloading - Overloading unary operators-Overloading binary operators-using friend function -manipulation of strings using operators-rules for overloading operators- Extending Classes: Introduction-Defining derived classes-single inheritance- Multiple Inheritance-Multilevel Inheritance-**Hierarchical inheritance- Hybrid Inheritance(Self Study)**-

Virtual Base classes- Abstract Classes- Constructor in Derived Classes- Member Classes: Nesting of Classes.

UNIT –III POINTERS, VIRTUAL FUNCTIONS & POLYMORPHISM (17 HRS.)

Pointers: Pointers to Objects – This Pointers – Pointers to Derived Class - Virtual Functions- Pure virtual function - **Virtual Constructors and Destructors (Self Study)**. DATA STRUCTURES: Introduction to Data Structures – Types of Data Structures - Data Structures Operations.

UNIT –IV LINKED LIST, STACKS & QUEUES (17 HRS.)

Linked List –Basic Concepts – Linked List Implementation – Types of Linked List- Circular Linked List – Doubly Linked List – Stack – Stack Operations – Stack Implementation – Queue – Basic Concepts –Queue Operations –Queue Implementations - Circular queues –Priority Queue – **Double Ended Queues (Self Study).**

UNIT –V TREES, GRAPH, SEARCHING AND SORTING (17 HRS.)

Trees: Basic Concepts - Binary trees – Binary Tree Representation - Binary tree Traversal - Binary Search tree – Tree Variants – Graphs - Basic Concept – Graph Terminology – Graph Implementation- Shortest Path Algorithm – **Graph Traversal(Self Study)** - Sorting Techniques – Searching Techniques

TEXT BOOK:

1. Balagurusamy, E. Object Oriented Programming and Data Structures, Tata McGraw-Hill Education, 2015. Chapters 4,6, 7,8,9,10,12,13,14,15,16,17

REFERENCES:

1. Dewhurst, Stephen C., and Kathy T. Stark. Programming in C++. Prentice-Hall, Inc., 1989.
2. Lafore, Robert. Object-oriented programming in Turbo C++. Galgotia publications, 2001.
3. Allen, Weiss Mark. Data structures and algorithm analysis in C++. Pearson Education India, 2007.

WEB REFERNCES :

1. Data Structure and Algorithms Tutorial

https://www.tutorialspoint.com/data_structures_algorithms/index.htm

2. Introduction To Data Structure

https://www.w3schools.in/data-structures-tutorial/intro/

3. C++ Tutorial

https://www.tutorialspoint.com/cplusplus/index.htm

4. C++ Tutorials and Resources

https://www.w3schools.in/category/cplusplus-tutorial/

I B.Sc. Information Technology NEW SYLLABUS

SEMESTER –II

For those who joined in 2019 onwards 5%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I2CC3	DATA STRUCTURES USING C++	Lecture	6	4

COURSE DESCRIPTION

This course introduces the basic concepts of C++. It also aims at facilitate the students to know the Data Structure concepts.

COURSE OBJECTIVES

To impart Technical and Practical knowledge in Object oriented Programming with C++ & Data Structures.

UNITS

UNIT –I OBJECT ORIENTED CONCEPTS (17 HRS.)

Classes and Objects: Specifying a class Defining Member functions- A C++ Program with Class-Making an Outside function Inline – Nesting of Member Function - Memory allocation for objects- Static Data Members & Member Functions - Array of Objects - Friendly functions- Local Classes. Constructors and Destructors: Constructors- Parameterized Constructors- Multiple Constructors in Class- **copy constructors- Dynamic Constructors(Self Study)**- Destructors.

UNIT –II OPERATOR OVERLOADING & INHERITANCE (17 HRS.)

Defining operator overloading - Overloading unary operators-Overloading binary operators-using friend function -manipulation of strings using operators-rules for overloading operators- Extending Classes: Introduction-Defining derived classes-single inheritance- Multiple Inheritance-Multilevel Inheritance-**Hierarchical inheritance- Hybrid Inheritance(Self Study)**-

Virtual Base classes- Abstract Classes- Constructor in Derived Classes- Member Classes: Nesting of Classes.

UNIT –III POINTERS, VIRTUAL FUNCTIONS & POLYMORPHISM (17 HRS.)

Pointers: Pointers to Objects – This Pointers – Pointers to Derived Class - Virtual Functions- Pure virtual function - **Virtual Constructors and Destructors (Self Study)**. DATA STRUCTURES: Introduction to Data Structures – Types of Data Structures - Data Structures Operations.

UNIT –IV LINKED LIST, STACKS & QUEUES (17 HRS.)

Linked List –Basic Concepts – Linked List Implementation – Types of Linked List- Circular Linked List – Doubly Linked List – Stack – Stack Operations – Stack Implementation – Queue – Basic Concepts –Queue Operations –Queue Implementations - Circular queues –Priority Queue – **Double Ended Queues (Self Study).**

UNIT –V TREES, GRAPH, SEARCHING AND SORTING (17 HRS.)

Trees: Basic Concepts - Binary trees – Binary Tree Representation - Binary tree Traversal - Binary Search tree – Tree Variants – Graphs - Basic Concept – Graph Terminology – Graph Implementation- Shortest Path Algorithm – **Graph Traversal(Self Study)** - Sorting Techniques – Searching Techniques

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Real- time Applications using C++

TEXT BOOK:

2. Balagurusamy, E. Object Oriented Programming and Data Structures, Tata McGraw-Hill Education, 2015. Chapters 4,6, 7,8,9,10,12,13,14,15,16,17

REFERENCES:

4. Dewhurst, Stephen C., and Kathy T. Stark. Programming in C++. Prentice-Hall, Inc., 1989.

5. Lafore, Robert. Object-oriented programming in Turbo C++. Galgotia publications, 2001.

6. Allen, Weiss Mark. Data structures and algorithm analysis in C++. Pearson Education India, 2007.

WEB REFERNCES :

5. Data Structure and Algorithms Tutorial

https://www.tutorialspoint.com/data_structures_algorithms/index.htm

6. Introduction To Data Structure

https://www.w3schools.in/data-structures-tutorial/intro/

7. C++ Tutorial

https://www.tutorialspoint.com/cplusplus/index.htm

8. C++ Tutorials and Resources

https://www.w3schools.in/category/cplusplus-tutorial/

OLD SYLLABUS

II B.Sc. Information Technology

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I3CC5	DATA BASE MANAGEMENT SYSTEMS	Lecture	6	4

COURSE DESCRIPTION

This course introduces database design and creation using DBMS software. It also imparts various concepts in database management system.

COURSE OBJECTIVES

To facilitate the student to understand the various functionalities of DBMS software and perform many operations related to creating, manipulating and maintaining databases for Real-world applications.

UNITS

UNIT –I DATABASES (17 HRS.)

Purpose of database systems - View of data- Database languages – Relational Databases – Database Design - Data Storage and Querying – Transaction Management- Database Architecture - Data mining and Information Retrieval – Specialty Databases - Analysis — Database users and Administrators. Relational Model - Structure of relational databases – Database Schema – Keys – Schema Diagram – **Relational Operations (Self Study).**

UNIT –II SQL (17 HRS.)

Background – Data Definition - Basic structure of SQL Queries - Set operations - Aggregate functions - Null values -nested sub queries – Complex Queries - Views - Modifications of the database – Joins – Views - relations - Embedded SQL – Dynamic SQL – SQL Functions and **procedures(Self Study).**

UNIT –III DATABASE DESIGN (17 HRS.)

Normalization - Atomic Domains and First Normal Form –Decomposition - Functional Dependencies – Multi-valued Dependencies - Normal forms

UNIT –IV RELATIONAL QUERY LANGUAGES AND E-R MODEL (17 HRS.)

Algebra - The Tuple Relational Calculus - The Domain Relational Calculus - E-R Model - Constraints - E- R Diagram - **Extended E - R Features (Self Study) .**

UNIT –V PL/SQL (17 HRS.)

Introduction - The generic PL/SQL Block - The PL/SQL execution environment – PL/SQL - Control Structure. Introduction to cursors - Cursor FOR loops. Advantages of using Procedure or Function - Procedures versus Functions - Database triggers - **Deleting a trigger (Self Study).**

TEXT BOOK:

1. Silberschatz, Abraham, Henry F. Korth, and S. Sudarshan. " Database System Concepts.", 6th edition, McGraw Hill Education Private Limited (2016).chapters 1, 2, 3, 4, 5, 6, 7, 8
2. Bayross, Ivan. SQL, PL/SQL: The programming language of Oracle. BPB publications, 2010.chapters 15, 16, 18

REFERENCES:

1. Leon, Alexis, and Mathews Leon. Database management systems. Vikas Publishing House Pvt. Limited, 2010.
2. Elmasri, R., &Navathe, S. B. (2011).Database systems.Boston, MA: Pearson Education.

WEB REFERNCES :

1. Dbms Tutorial: Database Management System - Javatpoint

   https://www.javatpoint.com/dbms-tutorialIntroduction To Data Structure
2. Database Management System Tutorial - Tutorialspoint

https://www.tutorialspoint.com/dbms/index.htm

NEW SYLLABUS

II B.Sc. Information Technology

SEMESTER –III

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I3CC5	DATA BASE MANAGEMENT SYSTEMS	Lecture	6	4

COURSE DESCRIPTION

This course introduces database design and creation using DBMS software. It also imparts various concepts in database management system.

COURSE OBJECTIVES

To facilitate the student to understand the various functionalities of DBMS software and perform many operations related to creating, manipulating and maintaining databases for Real-world applications.

UNITS

UNIT –I DATABASES (17 HRS.)

Purpose of database systems - View of data- Database languages – Relational Databases – Database Design - Data Storage and Querying – Transaction Management- Database Architecture - Data mining and Information Retrieval – Specialty Databases - Analysis — Database users and Administrators. Relational Model - Structure of relational databases – Database Schema – Keys – Schema Diagram – **Relational Operations (Self Study).**

UNIT –II SQL (17 HRS.)

Background – Data Definition - Basic structure of SQL Queries - Set operations - Aggregate functions - Null values -nested sub queries – Complex Queries - Views - Modifications of the database – Joins – Views - relations - Embedded SQL – Dynamic SQL – SQL Functions and **procedures(Self Study).**

UNIT –III DATABASE DESIGN (17 HRS.)

Normalization - Atomic Domains and First Normal Form –Decomposition - Functional Dependencies – Multi-valued Dependencies - Normal forms

UNIT –IV RELATIONAL QUERY LANGUAGES AND E-R MODEL (17 HRS.)

Algebra - The Tuple Relational Calculus - The Domain Relational Calculus - E-R Model - Constraints - E- R Diagram - **Extended E - R Features (Self Study) .**

UNIT –V PL/SQL (17 HRS.)

Introduction - The generic PL/SQL Block - The PL/SQL execution environment – PL/SQL - Control Structure. Introduction to cursors - Cursor FOR loops. Advantages of using Procedure or Function - Procedures versus Functions - Database triggers - **Deleting a trigger (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Multidimensional databases - Mobile databases - Multimedia databases

TEXT BOOK:

3. Silberschatz, Abraham, Henry F. Korth, and S. Sudarshan. " Database System Concepts.", 6th edition, McGraw Hill Education Private Limited (2016).chapters 1, 2, 3, 4, 5, 6, 7, 8
4. Bayross, Ivan. SQL, PL/SQL: The programming language of Oracle. BPB publications, 2010.chapters 15, 16, 18

REFERENCES:

3. Leon, Alexis, and Mathews Leon. Database management systems. Vikas Publishing House Pvt. Limited, 2010.
4. Elmasri, R., &Navathe, S. B. (2011).Database systems.Boston, MA: Pearson Education.

WEB REFERNCES :

3. Dbms Tutorial: Database Management System - Javatpoint

https://www.javatpoint.com/dbms-tutorialIntroduction To Data Structure

4. Database Management System Tutorial - Tutorialspoint

https://www.tutorialspoint.com/dbms/index.htm

OLD SYLLABUS

II B.Sc. Information Technology

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I3AC3	DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE	Lecture	6	4

COURSE DESCRIPTION

The course content plays a vital role in making the students to understand the basic digital components.

COURSE OBJECTIVES

To make the student familiar with digital logic, data representation and functional design of arithmetic and logic unit that is capable of performing arithmetic operations and floating point operations.

UNITS

UNIT –I DIGITAL LOGIC CIRCUITS (17 HRS.)

Digital Computers- Logic Gates- Boolean algebra: Complement of a Function -K-Map Simplification: Product of Sum Simplification- Don't Care Condition. Combinational Circuits: Half Adder- Full Adder. Flip- Flops: SR Flip Flop- D Flip Flop - JK Flip Flop - T Flip Flop -**Edge Triggered Flip Flops (Self Study).**

UNIT –II DATA REPRESENTATION (17 HRS.)

Data Types: Number Systems- Octal and Hexadecimal Numbers- Decimal Representation- Alphanumeric Representation. Complements:1's Complement- 2's Complement- Subtraction of Unsigned Numbers. Fixed-Point Representation: Integer Representation-Arithmetic Addition- Arithmetic

Subtraction –Overflow- Decimal Fixed Point Representation. **Floating Point Representation - Other Binary Codes (Self Study)**- Error Detection Codes.

UNIT –III DIGITAL COMPONENTS (17 HRS.)

Integrated Circuits – Decoders - Encoders – Multiplexers - Registers - Shift Register - Binary Counters.Memory Unit: Random - Access Memory - Read Only Memory - **Types of ROMs (Self Study).**General Register Organization:Control Word - Examples of Micro operations - Stack Organization- Reverse Polish Notation - Evaluation of Arithmetic Expression

UNIT –IV CENTRAL PROCESSING UNIT (17 HRS.)

Instruction formats: Three Address Instruction - Two Address Instruction – One Address Instruction- Zero Address Instructions - RISC Instruction - Addressing Modes: Types. Data Transfer and Manipulation: Data Transfer Instruction - Data Manipulation Instructions - Arithmetic Instruction – Logical and Bit Manipulation Instructions - Shift Instruction – Program Control : Program Interrupts - Types of Interrupt- Reduced Instruction Set Computer: **CISC Characteristics- RISC Characteristics(Self Study).**

UNIT –V MEMORY ORGANIZATION (17 HRS.)

Memory Hierarchy - Main Memory: RAM and ROM Chips. Auxiliary Memory: **Magnetic Disks- Magnetic Tape(Self Study)** - Associative Memory. Cache Memory: Associative Mapping - Direct Mapping – Set Associative Mapping. Virtual Memory: Address Space and Memory Space.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent Development computer architecture.

TEXT BOOK:

1. Mano, M. Morris. Computer system architecture. Prentice-Hall of India, 2013.Chapter 1.1 - 1.6, 3.1 - 3.6, 2.1-2.7, 8.1- 8.8, 12.1-12.6

REFERENCES:

1. Dasgupta, Subrata. Computer Architecture: A Modern Synthesis. Volume 1, Foundations. John Wiley & Sons, 1989.
2. Hwang, Kai, and Faye A. Briggs. Computer architecture and parallel processing. McGraw-Hill, 1985.

WEB REFERNCES :

1. Binary Numbers Representation - Tutorialspoint

   https://www.tutorialspoint.com/.../digital_circuits_binary_numbers_representation.htm

2. Digital Electronics and Logic Design Tutorials - Geeksforgeeks

   https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials

NEW SYLLABUS

II B.Sc. Information Technology

SEMESTER –III

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I3AC3	DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE	Lecture	6	4

COURSE DESCRIPTION

The course content plays a vital role in making the students to understand the basic digital components.

COURSE OBJECTIVES

To make the student familiar with digital logic, data representation and functional design of arithmetic and logic unit that is capable of performing arithmetic operations and floating point operations.

UNITS

UNIT –I DIGITAL LOGIC CIRCUITS (17 HRS.)

Digital Computers- Logic Gates- Boolean algebra: Complement of a Function -K-Map Simplification: Product of Sum Simplification- Don't Care Condition. Combinational Circuits: Half Adder- Full Adder. Flip- Flops: SR Flip Flop- D Flip Flop - JK Flip Flop - T Flip Flop -**Edge Triggered Flip Flops (Self Study).**

UNIT –II DATA REPRESENTATION (17 HRS.)

Data Types: Number Systems- Octal and Hexadecimal Numbers- Decimal Representation- Alphanumeric Representation. Complements:1's Complement- 2's Complement- Subtraction of Unsigned Numbers. Fixed-Point Representation: Integer Representation-Arithmetic Addition- Arithmetic

Subtraction –Overflow- Decimal Fixed Point Representation. **Floating Point Representation - Other Binary Codes (Self Study)**- Error Detection Codes.

UNIT –III DIGITAL COMPONENTS (17 HRS.)

Integrated Circuits – Decoders - Encoders – Multiplexers - Registers - Shift Register - Binary Counters.Memory Unit: Random - Access Memory - Read Only Memory - **Types of ROMs (Self Study).**General Register Organization:Control Word - Examples of Micro operations - Stack Organization- Reverse Polish Notation - Evaluation of Arithmetic Expression

UNIT –IV CENTRAL PROCESSING UNIT (17 HRS.)

Instruction formats: Three Address Instruction - Two Address Instruction – One Address Instruction- Zero Address Instructions - RISC Instruction - Addressing Modes: Types. Data Transfer and Manipulation: Data Transfer Instruction - Data Manipulation Instructions - Arithmetic Instruction – Logical and Bit Manipulation Instructions - Shift Instruction – Program Control : Program Interrupts - Types of Interrupt- Reduced Instruction Set Computer: **CISC Characteristics- RISC Characteristics(Self Study).**

UNIT –V MEMORY ORGANIZATION (17 HRS.)

Memory Hierarchy - Main Memory: RAM and ROM Chips. Auxiliary Memory: **Magnetic Disks- Magnetic Tape(Self Study)** - Associative Memory. Cache Memory: Associative Mapping - Direct Mapping – Set Associative Mapping. Virtual Memory: Address Space and Memory Space.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Recent Development computer architecture.

TEXT BOOK:

2. Mano, M. Morris. Computer system architecture. Prentice-Hall of India, 2013.Chapter 1.1 - 1.6, 3.1 - 3.6, 2.1-2.7, 8.1- 8.8, 12.1-12.6

REFERENCES:

3. Dasgupta, Subrata. Computer Architecture: A Modern Synthesis. Volume 1, Foundations. John Wiley & Sons, 1989.
4. Hwang, Kai, and Faye A. Briggs. Computer architecture and parallel processing. McGraw-Hill, 1985.

WEB REFERNCES :

3. Binary Numbers Representation - Tutorialspoint

   https://www.tutorialspoint.com/.../digital_circuits_binary_numbers_representation.htm

4. Digital Electronics and Logic Design Tutorials - Geeksforgeeks

   https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials

OLD SYLLABUS

II B.Sc.

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4CC7	PROGRAMMING IN JAVA	Lecture	6	4

COURSE DESCRIPTION

This course enable the students to build object oriented java programs using the concept of abstraction, encapsulation, exception handling, packages, interfaces, threads and AWT controls. It also imparts the ability to develop projects in java with JDBC connectivity.

COURSE OBJECTIVES

To acquaint the students with various techniques of Java Programming and help them to create effective programs in this language.

UNITS

UNIT –I CLASSES & OBJECTS (17 HRS.)

Class fundamentals-Declaring objects-Assigning object reference variables-introducing methods-Constructors-this keyword-finalize() method-overloading methods-using object as parameters-Argument passing-returning object-Recursion- Nested &Inner Classes.

Inheritance & Polymorphism: Inheritance-using super-**Method overriding (Self Study).**

UNIT –II PACKAGES , INTERFACE & EXCEPTION HANDLING (17 HRS.)

Packages – Access Protection- Importing Packages-Interfaces.Exception :Exception Handling Function-Exception types-**Uncaught exception(Self Study)**-using try & catch.

UNIT –III MULTITHREADING PROGRAMMING (17 HRS.)

Life cycle of thread-Creating & Running Threads-Methods in thread classes.

java. lang PACKAGES: Type wrapper-The number class- the byte, short, integer and Long classes- the float and Double classes-The character class-The Boolean class- the process class- the runtime class- The system class – the object class- the math class- **the string class- string Buffer class (Self Study)**.

APPLET: The Life cycle of Applet- The Applet class- Development and Execution of as simple Applet- Syntax of Applet tag.

UNIT –IV ABSTRACT WINDOW TOOLKIT - I (17 HRS.)

Events-Listeners-Event Handling Methods-Labels-Button Control-Checkbox Control-radio button control-Choice control-List control-Scrollbars-Flow Layout- **Border Layout(Self Study).**

ABSTRACT WINDOW TOOLKIT - II: Windows & frames-Menus-Dialogs-Mouse Events and their Listener-Adapter Classes- Inner classes-Anonymous Inner classes.

SWING: JApplet class-Icons-JLabel Control-JTextfield Control-JButton Control-JCheckbox Control-JRadioButton Control-Menus-JSlider Control-JComboBoxConrol-JgtabbedPane Control-JScrollPane Control-**Tables (Self Study)**.

UNIT –V JAVA DATABASE CONNECTIVITY (17 HRS.)

Establishing a Connection-Creation of Data Tables-Entering Data into the tables _ Table Updating-Use of Prepared Statement- Obtaining Metadata-Using Transaction-Scrollable Result sets-**Stored Procedure (Self Study).**
SERVLETS: Servlet and Dynamic Webpages- Life cycle of a servlet- A simple servlet

TEXT BOOK:

1. Schildt, Herbert. "Java: the complete reference." (2017).Chapters: 6, 7, 8, 9, 10, 11
2. Muthu, C. "Programming with JAVA." Vijay Nicole Imprints, Chennai (2004).Chapters: 25, 8, 16, 9, 10, 11, 18, 19

REFERENCES:

1. Horstmann, Cay S., and Gary Cornell.Core Java: Advanced Features.Vol. 2.Pearson Education, 2013.
2. Naughton, Patrick, and Herbert Schildt. "The complete reference java 2." (2003).
3. Arnold, Ken, et al. The Java programming language.Vol. 2. Reading: Addison-wesley, 2000.

WEB REFERNCES :

1. Java Tutorial

https://www.tutorialspoint.com/java/

2. Java Tutorial For Beginners: Learn in 7 Days

https://www.guru99.com/java-tutorial.html

NEW SYLLABUS

5%

II B.Sc. Information Technology

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4CC7	PROGRAMMING IN JAVA	Lecture	6	4

COURSE DESCRIPTION

This course enable the students to build object oriented java programs using the concept of abstraction, encapsulation, exception handling, packages, interfaces, threads and AWT controls. It also imparts the ability to develop projects in java with JDBC connectivity.

COURSE OBJECTIVES

To acquaint the students with various techniques of Java Programming and help them to create effective programs in this language.

UNITS

UNIT –I CLASSES & OBJECTS (17 HRS.)

Class fundamentals-Declaring objects-Assigning object reference variables-introducing methods-Constructors-this keyword-finalize() method-overloading methods-using object as parameters-Argument passing-returning object-Recursion- Nested &Inner Classes.

Inheritance & Polymorphism: Inheritance-using super-**Method overriding (Self Study).**

UNIT –II PACKAGES , INTERFACE & EXCEPTION HANDLING (17 HRS.)

Packages – Access Protection- Importing Packages-Interfaces. Exception :Exception Handling Function-Exception types-**Uncaught exception(Self Study)**-using try & catch.

UNIT –III MULTITHREADING PROGRAMMING (17 HRS.)

Life cycle of thread-Creating & Running Threads-Methods in thread classes.

java. lang PACKAGES: Type wrapper-The number class- the byte, short, integer and Long classes- the float and Double classes-The character class-The Boolean class- the process class- the runtime class- The system class – the object class- the math class- **the string class- string Buffer class (Self Study)**.

APPLET: The Life cycle of Applet- The Applet class- Development and Execution of as simple Applet- Syntax of Applet tag.

UNIT –IV ABSTRACT WINDOW TOOLKIT - I (17 HRS.)

Events-Listeners-Event Handling Methods-Labels-Button Control-Checkbox Control-radio button control-Choice control-List control-Scrollbars-Flow Layout- **Border Layout(Self Study).**

ABSTRACT WINDOW TOOLKIT - II: Windows & frames-Menus-Dialogs-Mouse Events and their Listener-Adapter Classes- Inner classes-Anonymous Inner classes.

SWING: JApplet class-Icons-JLabel Control-JTextfield Control-JButton Control-JCheckbox Control-JRadioButton Control-Menus-JSlider Control-JComboBoxConrol-JgtabbedPane Control-JScrollPane Control-**Tables (Self Study)**.

UNIT –V JAVA DATABASE CONNECTIVITY (17 HRS.)

Establishing a Connection-Creation of Data Tables-Entering Data into the tables _ Table Updating-Use of Prepared Statement- Obtaining Metadata-Using Transaction-Scrollable Result sets-**Stored Procedure (Self Study).**
SERVLETS: Servlet and Dynamic Webpages- Life cycle of a servlet- A simple servlet

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Latest Trends in Java Technologies (Angular, React)

TEXT BOOK:

3. Schildt, Herbert. "Java: the complete reference." (2017).Chapters: 6, 7, 8, 9, 10, 11

4. Muthu, C. "Programming with JAVA." Vijay Nicole Imprints, Chennai (2004).Chapters: 25, 8, 16, 9, 10, 11, 18, 19

REFERENCES:

4. Horstmann, Cay S., and Gary Cornell. Core Java: Advanced Features. Vol. 2. Pearson Education, 2013.

5. Naughton, Patrick, and Herbert Schildt. "The complete reference java 2." (2003).

6. Arnold, Ken, et al. The Java programming language. Vol. 2. Reading: Addison-wesley, 2000.

WEB REFERNCES :

3. Java Tutorial

https://www.tutorialspoint.com/java/

4. Java Tutorial For Beginners: Learn in 7 Days

https://www.guru99.com/java-tutorial.html

OLD SYLLABUS

II B.Sc.

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4AC4	OPERATING SYSTEMS	Lecture	6	4

COURSE DESCRIPTION

This course content plays a vital role in making the students to understand the basic operating system concept.

COURSE OBJECTIVES

To introduce basic concepts and principles of operating systems, which include memory management, process management, file management.

UNITS

UNIT –I OPERATING SYSTEM OVERVIEW (17 HRS.)

Operating System Overview: Operating System Objectives and **Functions(Self Study)**, the Evolution of Operating System, Major Achievements.Processes: Process, Process states- Two state, Five State, Suspended Process.

UNIT –II CONCURRENCY (17 HRS.)

Concurrency: Principles of Concurrency, Mutual Exclusion – Hardware Support, Semaphores, Monitors, Message Passing. **Deadlock:Principles of Deadlock(Self Study)**, Deadlock Prevention, Deadlock Detection, Deadlock Avoidance.

UNIT –III MEMORY MANAGEMENT & SCHEDULING (17 HRS.)

Memory Management: Memory Management Requirements, Memory Partitioning, Paging, Segmentation.**Uni-processor Scheduling**: Types of Processors Scheduling, Scheduling Algorithm, Scheduling Criteria, FIFO,

Round Robin, Shortest Process Next, **Shortest Remaining Time (Self Study)**, Highest Response Ratio.

UNIT –IV I/O MANAGEMENT AND DISK SCHEDULING (17 HRS.)

I/O Management and Disk Scheduling: I/O devices, Organization of the I/O Function, I/O Buffering, Disk Scheduling.**File Management:** Overview, File Organization and Access, File Directories, **File Sharing (Self Study)**.

UNIT –V LINUX FILE STRUCTURE, SHELL & FILE MANAGEMENT OPERATIONS (17 HRS.)

The Shell: The Command Line, Command Line Editing, Filename Expansion: *, ?, [ ], Standard Input/output and Redirection, Pipes |,Redirecting and Piping the Standard Error: >&, 2>. Jobs: Background, Kills, and Interruptions.**Linux Files, Directories:** The File Structure, Listing, Displaying, and Printing Files: ls, cat, more, less, and lpr, Managing Directories: mkdir, rmdir, ls, cd, and pwd, File and **Directory Operations: fi nd, cp, mv, rm, and ln (Self Study).**

TEXT BOOK:

1. Stallings, William. Operating systems: internals and design principles. Boston: Prentice Hall, 7th edition, 2014. Chapters: 1.1-1.3, 2.1-2.2, 4.1-4.5, 5.1 - 5.4, 6.1 - 6.4, 8.1-8.2, 10.1 -10.5, 11.1 - 11.6
2. Petersen, Richard. Linux: the complete reference.McGraw-Hill Professional, 6th edition, 2000.Chapter 3, 6

REFERENCES:

1. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes.Operating systems.Pearson/Prentice Hall, 2008.
2. Madnick, Stuart E., and John J. Donovan. Operating Systems: Instructor's Manual to Accompany Operating Systems. Erg. Bd. McGraw-Hill, 2007.

WEB REFERNCES :

1. Operating System Tutorial - Tutorialspoint

https://www.tutorialspoint.com/operating_system/index.htm

2. Learn Operating System (os) Tutorial - Javatpoint

https://www.javatpoint.com/os-tutorial

3. Operating System Tutorial | Studytonight

https://www.studytonight.com/operating-system

NEW SYLLABUS

II B.Sc. Information Technology

SEMESTER – IV

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4AC4	OPERATING SYSTEMS AND LINUX	Lecture	6	4

COURSE DESCRIPTION

This course content plays a vital role in making the students to understand the basic operating system concept.

COURSE OBJECTIVES

To introduce basic concepts and principles of operating systems, which include memory management, process management, file management.

UNITS

UNIT –I OPERATING SYSTEM OVERVIEW (17 HRS.)

Operating System Overview: Operating System Objectives and **Functions(Self Study)**, the Evolution of Operating System, Major Achievements. Processes: Process, Process states- Two state, Five State, Suspended Process.

UNIT –II CONCURRENCY (17 HRS.)

Concurrency: Principles of Concurrency, Mutual Exclusion – Hardware Support, Semaphores, Monitors, Message Passing. **Deadlock:Principles of Deadlock(Self Study)**, Deadlock Prevention, Deadlock Detection, Deadlock Avoidance.

UNIT –III MEMORY MANAGEMENT & SCHEDULING (17 HRS.)

Memory Management: Memory Management Requirements, Memory Partitioning, Paging, Segmentation. **Uni-processor Scheduling**: Types of

Processors Scheduling, Scheduling Algorithm, Scheduling Criteria, FIFO, Round Robin, Shortest Process Next, **Shortest Remaining Time (Self Study)**, Highest Response Ratio.

UNIT –IV I/O MANAGEMENT AND DISK SCHEDULING (17 HRS.)

I/O Management and Disk Scheduling: I/O devices, Organization of the I/O Function, I/O Buffering, Disk Scheduling. **File Management:** Overview, File Organization and Access, File Directories, **File Sharing (Self Study)**.

UNIT –V LINUX FILE STRUCTURE, SHELL & FILE MANAGEMENT OPERATIONS (17 HRS.)

The Shell: The Command Line, Command Line Editing, Filename Expansion: *, ?, [ ], Standard Input/output and Redirection, Pipes |,Redirecting and Piping the Standard Error: >&, 2>. Jobs: Background, Kills, and Interruptions. **Linux Files, Directories:** The File Structure, Listing, Displaying, and Printing Files: ls, cat, more, less, and lpr, Managing Directories: mkdir, rmdir, ls, cd, and pwd, File and **Directory Operations: find, cp, mv, rm, and ln (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Recent advancements in Operating System (Ubuntu, MAC OS, Apple iOS, Android OS)

TEXT BOOK:

1. Stallings, William. Operating systems: internals and design principles. Boston: Prentice Hall, 7th edition, 2014. Chapters: 1.1-1.3, 2.1-2.2, 4.1-4.5, 5.1 - 5.4, 6.1 - 6.4, 8.1-8.2, 10.1 -10.5, 11.1 - 11.6
2. Petersen, Richard. Linux: the complete reference. McGraw-Hill Professional, 6th edition, 2000.Chapter 3, 6

REFERENCES:

3. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes. Operating systems. Pearson/Prentice Hall, 2008.

4. Madnick, Stuart E., and John J. Donovan. Operating Systems: Instructor's Manual to Accompany Operating Systems. Erg. Bd. McGraw-Hill, 2007.

WEB REFERNCES :

4. Operating System Tutorial - Tutorialspoint

https://www.tutorialspoint.com/operating_system/index.htm

5. Learn Operating System (os) Tutorial - Javatpoint

https://www.javatpoint.com/os-tutorial

6. Operating System Tutorial | Studytonight

https://www.studytonight.com/operating-system

OLD SYLLABUS

III B.Sc.

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5CC9	.NET PROGRAMMING	Lecture	5	5

COURSE DESCRIPTION

This course introduces .NET Framework and imparts various concepts in .NET framework.

COURSE OBJECTIVES

To facilitate the students to understand, the features of .NET framework and use the design of the language to develop robust software.

UNITS

UNIT –I INTRODUCTION (14HRS.)

The Origin of .Net Technology - Common Language -Runtime (CLR), Common Type System (CTS) - Common Language Specification(CLS) - Microsoft Intermediate Language (MSIL) – JustInTime Compilation – **FrameworkBase Classes (Self Study).**

UNIT –II C# (14 HRS.)

Introduction – Boxing – unboxing – Interfaces – Properties – indexes – Namespace - Method parameter modifiers- Out – ref-Params -**Decision Constructs anditeration constructs(Self Study).**

UNIT –III OOPS (14 HRS.)

Data Types(Self Study) – Identifiers – Variables – Constants – Literals - Array and Strings-OOPS concepts-Delegates and Events - Generic Classes-Generic methods – GenericInterface-Implicitly Typed Local Variable-

Anonymous Type - Implicitly Typed Local Variable-Anonymous Type - Object Initializers - LINQ-Introduction

UNIT –IV APPLICATION DEVELOPMENT ON DOT NET (14 HRS.)

Building Windows Applications - Accessing Data withADO.NET - Web applications with Web Forms -Web Services.

UNIT –V DOT NET ASSEMBLIES (14 HRS.)

Assemblies- **Versioning(Self Study)**- Attributes- Reflection- Viewing metadata –Type discovery – Reflecting on a type – Marshalling – Remoting – Using single call –Threads-Silver Light.

TEXT BOOK:

1. Andrew Troelsen, Pro C# 5.0 and the .NET 4.5 Framework, Sixth Edition , APress, 2012.

REFERENCES:

1. Bruce Barstow, Tony Martin, “Visual Basic. NET in 60 Minutes a Day Bible”, Willey Dreamtech India (P) Ltd., 1st Edition, 2003.
2. Visual Basic .Net Programming Black Book by STEVEN HOLZNER, Dreamtech Press
3. Dean Alan Hume, “Fast ASP.NET Websites”, Manning Publications Co, 2013.

WEB REFERNCES :

1. Asp and Asp.net Tutorials

https://www.w3schools.com/asp/default.ASP

2. Asp.net Tutorial

https://www.tutorialspoint.com/asp.net/index.htm

NEW SYLLABUS

III B.Sc. Information Technology

SEMESTER – V

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5CC9	.NET PROGRAMMING	Lecture	5	5

COURSE DESCRIPTION

This course introduces .NET Framework and imparts various concepts in .NET framework.

COURSE OBJECTIVES

To facilitate the students to understand, the features of .NET framework and use the design of the language to develop robust software.

UNITS

UNIT –I INTRODUCTION (14HRS.)

The Origin of .Net Technology - Common Language -Runtime (CLR), Common Type System (CTS) - Common Language Specification(CLS) –Garbage Collector – Memory Management– **Visual studio .NET (Self Study).**

UNIT –II C# (14 HRS.)

Building Blocks of C# - Type Conversion – Functions – Delegates - Error Handling – Exception Handling – Classes in c# - Access modifiers – Interface – Collections – Generics – **As Operator (Self Study).**

UNIT –III Window Programming and Data Access (14 HRS.)

Controls **– Common Controls (Self Study)** – Container controls – Menus and Toolbars – Deployment - File System – XML - Databases and ADO.NET - ADO.NET classes – Data Binding

UNIT –IV ASP.NET (14HRS.)

Features – **Life Cycle(Self Study)** - Server Controls – Control Structure –

Functions – HTML Events – ASP.NET web control events – Event driven Programming – Postback - Reading from databases – HTML Server control – Web Server controls – Validation Controls.

UNIT –V DOT NET ASSEMBLIES (14 HRS.)

State Management – **View State(Self Study)** - Control State – Hidden Field - Session – Cookies – Session Events – Web Services – XML – SOAP – Building ASP.NET Web Services.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

MVC Framework - WPF - AJAX

TEXT BOOK:

2. Anand Jain, "Programming With Dot Net", Vision Publications, 4th Edition 2019

REFERENCES:

4. Bruce Barstow, Tony Martin, “Visual Basic. NET in 60 Minutes a Day Bible”, Willey Dreamtech India (P) Ltd., 1st Edition, 2003.
5. Visual Basic .Net Programming Black Book by STEVEN HOLZNER, Dreamtech Press
6. Dean Alan Hume, “Fast ASP.NET Websites”, Manning Publications Co, 2013.

OPEN EDUCATIONAL RESOURCES:

3. Asp and Asp.net Tutorials

https://www.w3schools.com/asp/default.ASP

4. Asp.net Tutorial

https://www.tutorialspoint.com/asp.net/index.htm

OLD SYLLABUS

III B.Sc.

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME5	SOFTWARE ENGINEERING	Lecture	5	5

COURSE DESCRIPTION

This course introduces the basic steps involved in Software Development Life Cycle (SDLC).

COURSE OBJECTIVES

To facilitate the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.

UNITS

UNIT –I SOFTWARE ENGINEERING AND PLANNING (14HRS.)

Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project - Problem definition – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – **Other Planning Activities (Self Study).**

UNIT –II SOFTWARE COST ESTIMATION (14 HRS.)

Software Cost Estimation - **Software Cost Factors(Self Study)** – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT –III SOFTWARE REQUIREMENTS (14 HRS.)

The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT –IV SOFTWARE DESIGN AND IMPLEMENTATION (14 HRS.)

Software Design - Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines - Structured Coding Techniques - Single Entry, Single Exit constructs – **Coding Style – Documentation Guidelines (Self Study).**

UNIT –V VERIFICATION, VALIDATION AND MAINTENANCE (14 HRS.)

Verification and Validation Techniques - Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification - Software Maintenance - Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – **Source-Code Metrics – Other Maintenance Tools and Techniques (Self Study).**

TEXT BOOK:

1. Fairley, Richard. Software engineering concepts. McGraw-Hill, Inc., 1985.Chapters 1, 2, 3, 4, 5, 6, 8.1 - 8.7, 9.1 - 9.5

REFERENCES:

1. Pressman, Roger S. Software engineering: a practitioner's approach. Palgrave macmillan, 2005.
2. Humphrey, Watts S. A discipline for software engineering. Addison-Wesley Longman Publishing Co., Inc., 1995.

WEB REFERNCES :

1. Software Engineering Tutorial - Tutorialspoint

https://www.tutorialspoint.com/software_engineering/index.htm

2. Software Engineering Tutorial - Tutorialride.com

https://www.tutorialride.com/software-engineering/software-engineering-tutorial.htm

NEW SYLLABUS

III B.Sc. Information Technology

SEMESTER – V

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5CC11	SOFTWARE ENGINEERING	Lecture	5	3

COURSE DESCRIPTION

This course introduces the basic steps involved in Software Development Life Cycle (SDLC).

COURSE OBJECTIVES

To facilitate the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.

UNITS

UNIT –I SOFTWARE ENGINEERING AND PLANNING (14 HRS.)

Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project - Problem definition – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – **Other Planning Activities (Self Study).**

UNIT –II SOFTWARE COST ESTIMATION (14 HRS.)

Software Cost Estimation - **Software Cost Factors(Self Study)** – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT –III SOFTWARE REQUIREMENTS (14 HRS.)

The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT –IV SOFTWARE DESIGN AND IMPLEMENTATION (14 HRS.)

Software Design - Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines - Structured Coding Techniques - Single Entry, Single Exit constructs – **Coding Style – Documentation Guidelines (Self Study).**

UNIT –V VERIFICATION, VALIDATION AND MAINTENANCE (14 HRS.)

Verification and Validation Techniques - Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification - Software Maintenance - Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – **Source-Code Metrics – Other Maintenance Tools and Techniques (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Agile Model – Scrum - Extreme Programming

TEXT BOOK:

2. Fairley, Richard. Software engineering concepts. McGraw-Hill, Inc., 1985.Chapters 1, 2, 3, 4, 5, 6, 8.1 - 8.7, 9.1 - 9.5

REFERENCES:

3. Pressman, Roger S. Software engineering: a practitioner's approach. Palgrave macmillan, 2005.
4. Humphrey, Watts S. A discipline for software engineering. Addison-Wesley Longman Publishing Co., Inc., 1995.

WEB REFERNCES :

3. Software Engineering Tutorial - Tutorialspoint

https://www.tutorialspoint.com/software_engineering/index.htm

4. Software Engineering Tutorial - Tutorialride.com

https://www.tutorialride.com/software-engineering/software-engineering-tutorial.htm

OLD SYLLABUS

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SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5CC12	DATA COMMUNICATION & NETWORKING	Lecture	5	5

COURSE DESCRIPTION

This course is to provide information about various data communication techniques like switching and networking concepts which includes layers and their corresponding protocols.

COURSE OBJECTIVES

To impart knowledge on data communication technologies, protocol and their applications.

UNITS

UNIT –I INTRODUCTION (14HRS.)

Data communications-components-data representation-data flow. Networks-distributed Processing-Network criteria-Physical structures-Network Models-Categories of Networks-Interconnection of Networks; Internetwork.osi model: Layered Architecture-Peer-to-peer Processes-Encapsulation. Layers in the osi model: Physical layer-Data Link Layer-Network Layer-transport layer-Session Layer-Presentation layer-Application Layer-Summary of layers.TCP/IP Protocol Suite: Physical and Data link layer-Network layer-transport Layer-Application Layers. **Addressing: physical Addresses-Logical Addresses-Port Addresses-Specific Addresses (Self Study).**

UNIT –II SWITCHING (14 HRS.)

Transmission Media-Guided Media-Twisted pair cable-Coaxial Cable-Fiber-

optic cable unguided media: wireless-Radio waves-microwaves-Infrared.

Circuit Switched Networks-Three Phases-Efficiency-Delay-Circuit-Switched Technology in Telephone Networks-Datagram Networks-Routing Table-Efficiency- Delay-Datagram Networks in the Internet-Virtual-Circuit Networks-Addressing-Three Phases-Efficiency-Delay in Virtual-Circuit Networks- **Circuit-Switched Technology in WANs (Self Study).**

DATALINK CONTROL: Framing-Fixed Size Framing-Variable-Size framing. Flow and error control- Protocols: Point-to-point protocol-framing-Transition Phases-Multiplexing-Multilink PPP.

UNIT –III NETWORK LAYER: INTERNET PROTOCOL (14 HRS.)

INTERNETWORKING-need for Network Layer-internet As a Datagram Network-Internet as a Connectionless Network.IPv4-Dtagram-IPv6-Advantages-Packet format-Extension Headers. Transition from IPv4 To IPv6-Dual Stack-Tunneling-Header Translation. NETWORK LAYER:DELIVERY,FORWARDING AND ROUTING-Delivery-direct versus Indirect delivery-Forwarding- Forwarding Techniques- Forwarding Process-Routing Table. Unicast Routing Protocols-Optimization-Intra-and Inter domain Routing-**Distance Vector routing (Self Study).**

UNIT –IV TRANSPORT LAYER (14 HRS.)

PROCESS-TO-PROCESS DELIVERY-client/Server paradigm-Multiplexing and Demultiplexing-Connectionless versus Connection-oriented Service-Reliable versus unreliable-Three Protocols. User Datagram Protocol-Well-Known ports of UDP-User datagram-checksum-UDP operation-Use of UDP.TCP-TCP Services-TCP features-Segment-A TCP connection-.SCTP-SCTP Services-SCTP Features-**Packet format (Self Study).**

UNIT –V APPLICATION LAYER (14 HRS.)

Name space-Flat Name Space-Hierarchical space-domain Name space-Label-domain Name-Domain-distribution of Name space-Hierarchy of name Servers-Zone-Root Server-Primary and secondary servers-DNS in the Internet-generic domains-Country Domains-Inverse domain-DNS Messages-Header. REMOTE LOGGING,ELECTRONIC MAIL,AND FILE TRANSFER-

Remote Logging-Telnet-Electronic Mail-Architecture-User Agent-Message Transfer Agent-PoP and IMAP-Web-Based Mail-**File Transfer Protocol-Anonymous FTP (Self Study).**

TEXT BOOK:

1. Forouzan, A. Behrouz. Data communications & networking.Tata McGraw-Hill Education, 2007. Chapters: 1, 2, 3, 7, 8, 11, 19, 20,22, 23, 25, 26.

REFERENCES:

1. Tanenbaum, Andrew S. "Computer Networks Forth Edition." Vrije Universiteit (2003).
2. Madhulika Jain, Satish Jain, Jain, M. "Data Communication and Networking". BPB Publications, Updated Edition

WEB REFERNCES :

1. Computer Network Tutorial - Javatpoint

https://www.javatpoint.com/computer-network-tutorial

2. Computer Network Tutorials

https://www.geeksforgeeks.org/computer-network-tutorials/

NEW SYLLABUS

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III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5CC12	DATA COMMUNICATION & NETWORKING	Lecture	5	5

COURSE DESCRIPTION

This course is to provide information about various data communication techniques like switching and networking concepts which includes layers and their corresponding protocols.

COURSE OBJECTIVES

To impart knowledge on data communication technologies, protocol and their applications.

UNITS

UNIT –I INTRODUCTION (14 HRS.)

Data communications-components-data representation-data flow. Networks-distributed Processing-Network criteria-Physical structures-Network Models-Categories of Networks-Interconnection of Networks; Internetwork.osi model: Layered Architecture-Peer-to-peer Processes-Encapsulation. Layers in the osi model: Physical layer-Data Link Layer-Network Layer-transport layer-Session Layer-Presentation layer-Application Layer-Summary of layers.TCP/IP Protocol Suite: Physical and Data link layer-Network layer-transport Layer-Application Layers. **Addressing: physical Addresses-Logical Addresses-Port Addresses-Specific Addresses (Self Study).**

UNIT –II SWITCHING (14 HRS.)

Transmission Media-Guided Media-Twisted pair cable-Coaxial Cable-Fiber-

optic cable unguided media: wireless-Radio waves-microwaves-Infrared.

Circuit Switched Networks-Three Phases-Efficiency-Delay-Circuit-Switched Technology in Telephone Networks-Datagram Networks-Routing Table-Efficiency- Delay-Datagram Networks in the Internet-Virtual-Circuit Networks-Addressing-Three Phases-Efficiency-Delay in Virtual-Circuit Networks- **Circuit-Switched Technology in WANs (Self Study).**

DATALINK CONTROL: Framing-Fixed Size Framing-Variable-Size framing. Flow and error control- Protocols: Point-to-point protocol-framing-Transition Phases-Multiplexing-Multilink PPP.

UNIT –III NETWORK LAYER: INTERNET PROTOCOL (14 HRS.)

INTERNETWORKING-need for Network Layer-internet As a Datagram Network-Internet as a Connectionless Network.IPv4-Dtagram-IPv6-Advantages-Packet format-Extension Headers. Transition from IPv4 To IPv6-Dual Stack-Tunneling-Header Translation. NETWORK LAYER:DELIVERY,FORWARDING AND ROUTING-Delivery-direct versus Indirect delivery-Forwarding- Forwarding Techniques- Forwarding Process-Routing Table. Unicast Routing Protocols-Optimization-Intra-and Inter domain Routing-**Distance Vector routing (Self Study).**

UNIT –IV TRANSPORT LAYER (14 HRS.)

PROCESS-TO-PROCESS DELIVERY-client/Server paradigm-Multiplexing and Demultiplexing-Connectionless versus Connection-oriented Service-Reliable versus unreliable-Three Protocols. User Datagram Protocol-Well-Known ports of UDP-User datagram-checksum-UDP operation-Use of UDP.TCP-TCP Services-TCP features-Segment-A TCP connection-.SCTP-SCTP Services-SCTP Features-**Packet format (Self Study).**

UNIT –V APPLICATION LAYER (14 HRS.)

Name space-Flat Name Space-Hierarchical space-domain Name space-Label-domain Name-Domain-distribution of Name space-Hierarchy of name Servers-Zone-Root Server-Primary and secondary servers-DNS in the Internet-generic domains-Country Domains-Inverse domain-DNS Messages-Header. REMOTE LOGGING,ELECTRONIC MAIL,AND FILE TRANSFER-

Remote Logging-Telnet-Electronic Mail-Architecture-User Agent-Message Transfer Agent-PoP and IMAP-Web-Based Mail-**File Transfer Protocol-Anonymous FTP (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Routing Protocols for Ad Hoc Mobile Wireless Networks, Broadband Communications Networks

TEXT BOOK:

1. Forouzan, A. Behrouz. Data communications & networking. Tata McGraw-Hill Education, 2007. Chapters: 1, 2, 3, 7, 8, 11, 19, 20,22, 23, 25, 26.

REFERENCES:

3. Tanenbaum, Andrew S. "Computer Networks Forth Edition." Vrije Universiteit (2003).
4. Madhulika Jain, Satish Jain, Jain, M. "Data Communication and Networking". BPB Publications, Updated Edition

WEB REFERNCES :

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https://www.javatpoint.com/computer-network-tutorial

4. Computer Network Tutorials

https://www.geeksforgeeks.org/computer-network-tutorials/

OLD SYLLABUS

III B.Sc.

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	**I6CC15**	**INFORMATION STORAGE AND MANAGEMENT**	**Lecture**	**5**	**5**

COURSE DESCRIPTION

This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex IT environment.

COURSE OBJECTIVES

To impart the comprehensive understanding of all segments of Storage Technologies.

UNITS

UNIT –I STORAGE SYSTEM (14HRS.)

Introduction to Information Storage and Management: Information storage – Evolution of Storage Architecture – Data Center Infrastructure – Virtualization and Cloud Computing – Data Center Environment: Application – DBMS – Host – **Connectivity (Self Study).**

UNIT –II DATA PROTECTION (14 HRS.)

RAID: RAID Implementation methods – RAID Array Components – RAID Techniques – RAI levels.Intelligent Storage System: Components of an Intelligent Storage System – **Storage Provisioning (Self Study).**

UNIT –III STORAGE NETWORKING TECHNOLOGIES (14 HRS.)

Fibre Channel Storage area Networks: Fibre Channel: Overview - The SAN and Its Evolution – Components of FC SAN – Network Attached Storage: General Purpose Servers Vs NAS Devices – Benefits of NAS – **File System and Network File Sharing (Self Study)**– Components of NAS.

UNIT –IV BACKUP, ARCHIVE AND REPLICATION (14 HRS.)

Backup and Archive: Backup Purpose – Backup Considerations – Backup Granularity - Recovery Considerations – Backup Methods – Backup Architecture – Backup and Restore Operations – **Data Archive(Self Study)** – Archiving Solution Architecture

UNIT –V SECURING AND MANAGING STORAGE INFRASTRUCTURE

(14 HRS.)

Securing the Storage Infrastructure: Information Security Framework – Risk Triad- Storage Security Domains- Managing the Storage infrastructure: **Monitoring the Storage Infrastructure(Self Study).**

TEXT BOOK:

1. Somasundaram, Gnanasundaram, and Alok Shrivastava, eds. Information storage and management: storing, managing, and protecting digital information in classic, virtualized, and cloud environments. John Wiley & Sons, 2012.Chapters - 1.1 – 1.4, 2.1 – 2.4, 3.1-3.4, 4.1- 4.2, 5.1-5.3, 7.1-7.4, 10.1 – 10.7, 10.13, 10.14, 14.1 – 14.3, 15.1

REFERENCES:

1. Robert Spalding, “Storage Networks ” The Complete Reference, Tata McGraw Hill, 2003
2. Marc Fairley, “Building Storage Networks”, Tata McGraw Hill, 2001

WEB REFERNCES :

1. Management Information System Tutorial

https://www.tutorialspoint.com/management_information_system/index.htm

NEW SYLLABUS

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SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6CC15	INFORMATION STORAGE AND MANAGEMENT	Lecture	5	5

COURSE DESCRIPTION

This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex IT environment.

COURSE OBJECTIVES

To impart the comprehensive understanding of all segments of Storage Technologies.

UNITS

UNIT –I STORAGE SYSTEM (14 HRS.)

Introduction to Information Storage and Management: Information storage – Evolution of Storage Architecture – Data Center Infrastructure – Virtualization and Cloud Computing – Data Center Environment: Application – DBMS – Host – **Connectivity (Self Study).**

UNIT –II DATA PROTECTION (14 HRS.)

RAID: RAID Implementation methods – RAID Array Components – RAID Techniques – RAI levels. Intelligent Storage System: Components of an Intelligent Storage System – **Storage Provisioning (Self Study).**

UNIT –III STORAGE NETWORKING TECHNOLOGIES (14 HRS.)

Fibre Channel Storage area Networks: Fibre Channel: Overview - The SAN and Its Evolution – Components of FC SAN – Network Attached Storage: General Purpose Servers Vs NAS Devices – Benefits of NAS – **File System and Network File Sharing (Self Study)**– Components of NAS.

UNIT –IV BACKUP, ARCHIVE AND REPLICATION (14 HRS.)

Backup and Archive: Backup Purpose – Backup Considerations – Backup Granularity - Recovery Considerations – Backup Methods – Backup Architecture – Backup and Restore Operations – **Data Archive(Self Study)** – Archiving Solution Architecture

UNIT –V SECURING AND MANAGING STORAGE INFRASTRUCTURE

(14 HRS.)

Securing the Storage Infrastructure: Information Security Framework – Risk Triad- Storage Security Domains- Managing the Storage infrastructure: **Monitoring the Storage Infrastructure(Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Latest storage device (Cloud, SSD(solid-state drive), NVMe (Non-Volatile Memory Express).

TEXT BOOK:

1. Somasundaram, Gnanasundaram, and Alok Shrivastava, eds. Information storage and management: storing, managing, and protecting digital information in classic, virtualized, and cloud environments. John Wiley & Sons, 2012. Chapters - 1.1 – 1.4, 2.1 – 2.4, 3.1-3.4, 4.1- 4.2, 5.1-5.3, 7.1-7.4, 10.1 – 10.7, 10.13, 10.14, 14.1 – 14.3, 15.1

REFERENCES:

1. Robert Spalding, “Storage Networks ” The Complete Reference, Tata McGraw Hill, 2003

3. Marc Fairley, “Building Storage Networks”, Tata McGraw Hill, 2001

WEB REFERNCES :

2. Management Information System Tutorial

   https://www.tutorialspoint.com/management_information_system/index.htm

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III B.Sc.

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5ME1	DATA MINING CONCEPTS	Lecture / Practical	6	4

COURSE DESCRIPTION

This course introduces the basic concepts, principles, methods, implementation techniques, and applications of data mining.

COURSE OBJECTIVES

To facilitate the student to understand the concepts of data mining and to understand various techniques involved in data mining.

UNITS

UNIT –I DATA MINING AND APPLICATIONS (14HRS.)

Data mining concepts – Database & Data Warehouse - Data Mining functionalities - Technologies used - Data Mining Applications – **Major Issues in Data Mining(Self Study).**

UNIT –II DATA PREPROCESSING (14 HRS.)

Preprocessing the data – Data cleaning – Data Integration – Data Reduction – Data Transformation and **Data Discretization (Self Study).**

UNIT –III DATA MINING TECHNIQUES (14 HRS.)

Mining Frequent Patterns - Association Rule Mining – The Apriori Algorithm – FP Growth - Correlation Analysis.

UNIT –IV CLASSIFICATION (14 HRS.)

Classification – Decision Tree induction - Constructing decision tree – ID3

algorithm – Pruning – Bayesian Classification – Rule Based Classification.

UNIT –V CLUSTERING AND ADVANCED DATA MINING CONCEPTS

(14 HRS.)

Cluster Analysis – Clustering Methods – Partitioning Methods - Hierarchical Methods – Density Based Methods – Outlier Analysis – **Web Mining , Text Mining, Mining Multimedia Data and Mining data Streams (Self Study).**

TEXT BOOK:

1. Han, Jiawei, Jian Pei, and Micheline Kamber.Data mining: concepts and techniques.Elsevier, 2011.Chapters: 1, 13.3, 3, 6, 8.1- 8.4, 10.1 – 10.4.12.1, 13.1.3

REFERENCES:

1. Pujari, Arun K. Data mining techniques. Universities press, 2001.
2. Adriaans, Pieter, and Dolf Zantinge. "Data Mining. 1996." Addision-Wesley, Harlow.

WEB REFERNCES :

1. Data Mining Tutorial - Tutorialspoint

https://www.tutorialspoint.com/data_mining/index.htm

2. Data Mining Tutorial

https://www.tutorialride.com/data-mining/data-mining-tutorial.htm

NEW SYLLABUS

5%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5ME1	DATA MINING	Lecture	5	5

COURSE DESCRIPTION

This course introduces the basic concepts, principles, methods, implementation techniques, and applications of data mining.

COURSE OBJECTIVES

To facilitate the student to understand the concepts of data mining and to understand various techniques involved in data mining.

UNITS

UNIT –I DATA MINING AND APPLICATIONS (14 HRS.)

Data mining concepts – Database & Data Warehouse - Data Mining functionalities - Technologies used - Data Mining Applications – **Major Issues in Data Mining(Self Study).**

UNIT –II DATA PREPROCESSING (14 HRS.)

Preprocessing the data – Data cleaning – Data Integration – Data Reduction – Data Transformation and **Data Discretization (Self Study).**

UNIT –III DATA MINING TECHNIQUES (14 HRS.)

Mining Frequent Patterns - Association Rule Mining – The Apriori Algorithm – FP Growth - Correlation Analysis.

UNIT –IV CLASSIFICATION (14 HRS.)

Classification – Decision Tree induction - Constructing decision tree – ID3 algorithm – Pruning – Bayesian Classification – Rule Based Classification.

UNIT –V CLUSTERING AND ADVANCED DATA MINING CONCEPTS

(14 HRS.)

Cluster Analysis – Clustering Methods – Partitioning Methods - Hierarchical Methods – Density Based Methods – Outlier Analysis – **Web Mining , Text Mining, Mining Multimedia Data and Mining data Streams (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Artificial Neural Networks - Genetic algorithm

TEXT BOOK:

2. Han, Jiawei, Jian Pei, and Micheline Kamber. Data mining: concepts and techniques. Elsevier, 2011. Chapters: 1, 13.3, 3, 6, 8.1- 8.4, 10.1 – 10.4.12.1, 13.1.3

REFERENCES:

3. Pujari, Arun K. Data mining techniques. Universities press, 2001.
4. Adriaans, Pieter, and Dolf Zantinge. "Data Mining. 1996." Addision-Wesley, Harlow.

WEB REFERNCES :

3. Data Mining Tutorial - Tutorialspoint

https://www.tutorialspoint.com/data_mining/index.htm

4. Data Mining Tutorial

https://www.tutorialride.com/data-mining/data-mining-tutorial.htm

OLD SYLLABUS

III B.Sc.

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME3	CLOUD COMPUTING	Lecture	5	5

COURSE DESCRIPTION

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

COURSE OBJECTIVES

To impart the knowledge about the Computations done in cloud, its architecture and to build their own cloud.

UNITS

UNIT –I UNDERSTANDING CLOUD COMPUTING (14 HRS.)

Origin and Influence- Basic concepts and terminology-goals and benefits-Risks and challenges. FUNDAMENTAL CONCEPTS AND MODELS: **Roles and Boundaries-Cloud Characteristics-Cloud Delivery Models (Self Study).**

UNIT –II CLOUD ENABLING TECHNOLOGY (14 HRS.)

Broad band Network and Internet Architecture-Data center Technology-Virtualization Technology-Web Technology-Multitenant Technology-**Service Technology (Self Study)**.

UNIT –III FUNDAMENTAL CLOUD SECURITY (14 HRS.)

Basic terms and Concepts-Threat Agents-Cloud Security Threats.**Cloud Infrastructure Mechanism:** Virtual server-cloud storage devices-cloud usage monitor-Resource replication-**readymade Environment(Self Study).**

UNIT –IV SPECIALIZED CLOUD MECHANISMS (14 HRS.)

Automated Scaling Listener-Load balancer-SLA monitor-Pay-per-use monitor-Audit monitor. Fail over system-Hypervisor-Resource cluster-**Multi Device Broker-state management database (Self Study).**Cloud security mechanism:Encryption-Hashing-Digital signature-Public key Infrastructure.

UNIT –V CLOUD COMPUTING ARCHITECTURE (14 HRS.)

Identity and access management-single sign on-Cloud Based security groups-Hardened Virtual Server Images.Fundamental cloud architecture:Workload Distribution Architecture-Resource Pooling Architecture-**Cloud Bursting Architecture-Redundant Storage Architecture (Self Study).**

TEXT BOOK:

1. Erl, Thomas, Ricardo Puttini, and Zaigham Mahmood.Cloud computing: concepts, technology & architecture.Pearson Education, 2013.CHAPTER 3.1-3.4, 4.1-4.4, 5.1-5.6, 6.1-6.3, 7.2-7.6, 8.1-8.10,10.1-10.4, 10.5-10.8, 11.1, 11.2, 11.6, 11.8.

REFERENCES:

1. Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds. Cloud computing: Principles and paradigms. Vol. 87.John Wiley & Sons, 2010.
2. Rhoton, John. "Cloud Computing Explained: Implementation Handbook for Enterprises. 2009." Recursive Limited.
3. Linthicum, David S. Cloud computing and SOA convergence in your enterprise: a step-by-step guide. Pearson Education, 2009.

WEB REFERNCES :

1. Learn Cloud Computing Tutorial - Javatpoint

https://www.javatpoint.com/cloud-computing-tutorial

2. Cloud Computing Tutorial For Beginners

https://www.guru99.com/cloud-computing-for-beginners.html

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NEW SYLLABUS

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SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME3	CLOUD COMPUTING	Lecture	5	5

COURSE DESCRIPTION

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

COURSE OBJECTIVES

To impart the knowledge about the Computations done in cloud, its architecture and to build their own cloud.

UNITS

UNIT –I UNDERSTANDING CLOUD COMPUTING (14 HRS.)

Origin and Influence- Basic concepts and terminology-goals and benefits-Risks and challenges. FUNDAMENTAL CONCEPTS AND MODELS: **Roles and Boundaries-Cloud Characteristics-Cloud Delivery Models (Self Study).**

UNIT –II CLOUD ENABLING TECHNOLOGY (14 HRS.)

Broad band Network and Internet Architecture-Data center Technology-Virtualization Technology-Web Technology-Multitenant Technology-**Service Technology (Self Study)**.

UNIT –III FUNDAMENTAL CLOUD SECURITY (14 HRS.)

Basic terms and Concepts-Threat Agents-Cloud Security Threats.**Cloud Infrastructure Mechanism:** Virtual server-cloud storage devices-cloud usage monitor-Resource replication-**readymade Environment(Self Study).**

UNIT –IV SPECIALIZED CLOUD MECHANISMS (14 HRS.)

Automated Scaling Listener-Load balancer-SLA monitor-Pay-per-use monitor-Audit monitor. Fail over system-Hypervisor-Resource cluster-**Multi Device Broker-state management database (Self Study).**Cloud security mechanism:Encryption-Hashing-Digital signature-Public key Infrastructure.

UNIT –V CLOUD COMPUTING ARCHITECTURE (14 HRS.)

Identity and access management-single sign on-Cloud Based security groups-Hardened Virtual Server Images. Fundamental cloud architecture:Workload Distribution Architecture-Resource Pooling Architecture-**Cloud Bursting Architecture-Redundant Storage Architecture (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Emerging Cloud Computing Trends (Server less Computing, Omni-Cloud, Quantum Computing).

TEXT BOOK:

2. Erl, Thomas, Ricardo Puttini, and Zaigham Mahmood. Cloud computing: concepts, technology & architecture. Pearson Education, 2013. CHAPTER 3.1-3.4, 4.1-4.4, 5.1-5.6, 6.1-6.3, 7.2-7.6, 8.1-8.10,10.1-10.4, 10.5-10.8, 11.1, 11.2, 11.6, 11.8.

REFERENCES:

4. Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds. Cloud computing: Principles and paradigms. Vol. 87. John Wiley & Sons, 2010.
5. Rhoton, John. "Cloud Computing Explained: Implementation Handbook for Enterprises. 2009." Recursive Limited.
6. Linthicum, David S. Cloud computing and SOA convergence in your enterprise: a step-by-step guide. Pearson Education, 2009.

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3. Learn Cloud Computing Tutorial - Javatpoint

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4. Cloud Computing Tutorial For Beginners

https://www.guru99.com/cloud-computing-for-beginners.html

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SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME4	MOBILE COMPUTING	Lecture	5	5

COURSE DESCRIPTION

This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues.

COURSE OBJECTIVES

To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.

UNITS

UNIT –I INTRODUCTION (14HRS.)

Mobile Computing – Dialogue Control – Networks – Middleware & Gateways - MOBILE COMPUTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – **Three-tier architecture (Self Study).**

UNIT –II MOBILE COMPUTING THROUGH TELEPHONY (14 HRS.)

Evaluation of telephony – Multiple access procedures – Satellite Communication Systems. – EMERGING TECHNOLOGIES: Introduction – **Blue Tooth(Self Study)** – RFID – WiMAX – Mobile IP

UNIT –III GSM (14 HRS.)

Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – SMS: Mobile Computing over SMS – Short Message Service – **Value Added Service through SMS(Self Study).**

UNIT –IV GPRS (14 HRS.)

GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- **Limitations(Self Study).**

UNIT –V CDMAAND 3G (14 HRS.)

Spread spectrum technology – CDMA vs. GSM – **Wireless Data(Self Study)** – Third generation networks – Applications on 3G. SECURITY ISSUES IN MOBLIE COMUTING: Information Security – Security Techniques & Algorithms.

TEXT BOOK:

1. Talukdar, Asoke K. Mobile Computing, 2E.Tata McGraw-Hill Education, 2010.Chapter 1.1 - 1.6, 2.1, 2.2 - 2.5, 3.1 - 3.3, 4.1 - 4.5, 5.1 - 5.5, 5.7, 6.1 - 6.3, 7.1 - 7.7, 9.1, 9.2, 9.4 - 9.7, 20.1 - 20.3.

REFERENCES:

1. Stüber, Gordon L., and Gordon L. Stèuber.Principles of mobile communication.Vol. 2. Norwell, Mass, USA: Kluwer Academic, 1996.
2. Schiller, Jochen H. Mobile communications.Pearson education, 2003.

WEB REFERNCES :

1. Mobile Communication Tutorial - Javatpoint

https://www.javatpoint.com/mobile-communication-tutorial

NEW SYLLABUS

5%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME4	MOBILE COMPUTING	Lecture	5	5

COURSE DESCRIPTION

This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues.

COURSE OBJECTIVES

To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.

UNITS

UNIT –I INTRODUCTION (14 HRS.)

Mobile Computing – Dialogue Control – Networks – Middleware & Gateways - MOBILE COMPUTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – **Three-tier architecture (Self Study).**

UNIT –II MOBILE COMPUTING THROUGH TELEPHONY (14 HRS.)

Evaluation of telephony – Multiple access procedures – Satellite Communication Systems. – EMERGING TECHNOLOGIES: Introduction – **Blue Tooth(Self Study)** – RFID – WiMAX – Mobile IP

UNIT –III GSM (14 HRS.)

Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – SMS: Mobile Computing over SMS – Short Message Service – **Value Added Service through SMS(Self Study).**

UNIT –IV GPRS (14 HRS.)

GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- **Limitations(Self Study).**

UNIT –V CDMA AND 3G (14 HRS.)

Spread spectrum technology – CDMA vs. GSM – **Wireless Data(Self Study)** – Third generation networks – Applications on 3G. SECURITY ISSUES IN MOBLIE COMUTING: Information Security – Security Techniques & Algorithms.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Recent Trends in Mobile Computing (Business Intelligence (BI) Mobile Apps, IoT, Non-Removable Battery and Memory).

TEXT BOOK:

2. Talukdar, Asoke K. Mobile Computing, 2E. Tata McGraw-Hill Education, 2010. Chapter 1.1 - 1.6, 2.1, 2.2 - 2.5, 3.1 - 3.3, 4.1 - 4.5, 5.1 - 5.5, 5.7, 6.1 - 6.3, 7.1 - 7.7, 9.1, 9.2, 9.4 - 9.7, 20.1 - 20.3.

REFERENCES:

3. Stüber, Gordon L., and Gordon L. Stèuber. Principles of mobile communication. Vol. 2. Norwell, Mass, USA: Kluwer Academic, 1996.

4. Schiller, Jochen H. Mobile communications. Pearson education, 2003.

WEB REFERNCES :

2. Mobile Communication Tutorial - Javatpoint

https://www.javatpoint.com/mobile-communication-tutorial

OLD SYLLABUS

III B.Sc.

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I5ME2	NETWORK SECURITY	Lecture	5	5

COURSE DESCRIPTION

The course covers the basics of the science of encryption and network security technology. It also provides the knowledge about the various risks that networks are faced with in this day and age, focusing on the various vulnerabilities of systems.

COURSE OBJECTIVES

To provide a framework of knowledge related to mechanisms that makes Information secured over communication channels by adopting various types of cryptographic algorithms.

UNITS

UNIT –I INTRODUCTION (14HRS.)

Computer Security : Need for security – Security Approaches – Principles of Security – Types of Attacks. Cryptography: Concepts and Techniques :**Plain text(Self Study)** and Cipher text – Substitution techniques – Transposition techniques

UNIT –II TYPES OF CRYPTOGRAPHY (14 HRS.)

Encryption and Decryption- Symmetric and Asymmetric Key Cryptography

Symmetric key Algorithm and AES : Introduction – **Algorithm types(Self Study)** and modes – DES

UNIT –III ASYMMETRIC KEY ALGORITHMS(14 HRS.)

Introduction – History – **Overview(Self Study)** – RSA Algorithm – Digital Signature – Digital Certificates.

UNIT –IV INTERNET SECURITY PROTOCOLS (14 HRS.)

Basic concepts – Secure Socket Layer – Transport Layer Security – WAP Security – Security in GSM – **Security in 3G(Self Study)** – Link Security Vs Network Security.

UNIT –V FIREWALLS& IP SECURITY (14 HRS.)

Firewall: Introduction– **Types of Firewalls(Self Study)** - Firewall Configurations

IP security: Introduction – IPSec overview – Authentication Header – ESP – IP Sec Key Management .

TEXT BOOK:

1. Kahate, Atul. Cryptography and network security.Tata McGraw-Hill Education, 2013.

REFERENCES:

1. Stallings, William. Cryptography and network security, 4/E. Pearson Education India, 2006.
2. Stallings, William. Network Security Essentials: Applications and Standards, 4/e. Pearson Education India, 2003.

WEB REFERNCES :

1. Computer Network Security - Javatpoint

https://www.javatpoint.com/computer-network-security

III B.Sc. Information Technology

NEW SYLLABUS

SEMESTER – VI

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME5	NETWORK SECURITY	Lecture	5	5

COURSE DESCRIPTION

The course covers the basics of the science of encryption and network security technology. It also provides the knowledge about the various risks that networks are faced with in this day and age, focusing on the various vulnerabilities of systems.

COURSE OBJECTIVES

To provide a framework of knowledge related to mechanisms that makes Information secured over communication channels by adopting various types of cryptographic algorithms.

UNITS

UNIT –I INTRODUCTION (14 HRS.)

Computer Security : Need for security – Security Approaches – Principles of Security – Types of Attacks. Cryptography: Concepts and Techniques : **Plain text(Self Study)** and Cipher text – Substitution techniques – Transposition techniques

UNIT –II TYPES OF CRYPTOGRAPHY (14 HRS.)

Encryption and Decryption- Symmetric and Asymmetric Key Cryptography

Symmetric key Algorithm and AES : Introduction – **Algorithm types(Self Study)** and modes – DES

UNIT –III ASYMMETRIC KEY ALGORITHMS(14 HRS.)

Introduction – History – **Overview(Self Study)** – RSA Algorithm – Digital Signature – Digital Certificates.

UNIT –IV INTERNET SECURITY PROTOCOLS (14 HRS.)

Basic concepts – Secure Socket Layer – Transport Layer Security – WAP Security – Security in GSM – **Security in 3G(Self Study)** – Link Security Vs Network Security.

UNIT –V FIREWALLS & IP SECURITY (14 HRS.)

Firewall: Introduction– **Types of Firewalls(Self Study)** - Firewall Configurations

IP security: Introduction – IPSec overview – Authentication Header – ESP – IP Sec Key Management .

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Current trend in network security (Ransomware. Malware in the Mobile Device Space, IoT Botnets)

TEXT BOOK:

1. Kahate, Atul. Cryptography and network security. Tata McGraw-Hill Education, 2013.

REFERENCES:

3. Stallings, William. Cryptography and network security, 4/E. Pearson Education India, 2006.
4. Stallings, William. Network Security Essentials: Applications and Standards, 4/e. Pearson Education India, 2003.

WEB REFERNCES :

2. Computer Network Security - Javatpoint

https://www.javatpoint.com/computer-network-security

OLD SYLLABUS

III B.Sc.

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME6	COMPUTER GRAPHICS	Lecture / Practical	5	5

COURSE DESCRIPTION

This course is designed to facilitate to understand, design and implementation of pictorial data and will make the students to be a successful Graphics programmer.

COURSE OBJECTIVES

To impart the core concepts of computer graphics. Apply graphics techniques to design and create graphics patterns.

UNITS

UNIT –I INTRODUCTION (14 HRS.)

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – **Computer Art – Entertainment – Education and Training(Self Study)** – Visualization – Image Processing – Graphical User Interfaces Overview of Graphics Systems: Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices..

UNIT –II OUTPUT PRIMITIVES (14 HRS.)

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Filled Area primitives.

UNIT –III ATTRIBUTES OF OUTPUT PRIMITIVES (14 HRS.)

Line Attributes – Curve Attributes(Self Study) – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes–

Antialiasing

UNIT –IV TWO –DIMENSIONAL GEOMETRIC TRANSFORMATIONS (14 HRS.)

Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems

UNIT –V TWO –DIMENSIONAL VIEWING (14 HRS.)

The Viewing Pipeline(Self Study) – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – **Text Clipping– Exterior Clipping(Self Study).**

TEXT BOOK:

1. Hearn, Donald. Computer graphics, C version.Pearson Education India, 2012. Chapters: 1.1 – 1.8, 2.1-2.3, 2.5, 2.6, 3.1, 3.2, 3.5, 3.11, 4.1 – 4.8, 5.1 – 5.5, 6.1 – 6.11

REFERENCES:

1. Hughes, John F., et al. Computer graphics: principles and practice. Pearson Education, 2014.
2. McConnell, Jeffrey J. Computer graphics: theory into practice.Jones & Bartlett Learning, 2005.
3. Hill Jr, Francis S. Computer graphics using open gl. Pearson Education, 2008.
4. Newman, William M., and Robert F. Sproull.Principles of interactive computer graphics. McGraw-Hill, Inc., 1979.

WEB REFERNCES :

1. Computer Graphics Tutorial

https://www.tutorialspoint.com/computer_graphics/index.htm

2. Computer Graphics Tutorial - Javatpoint

https://www.javatpoint.com/computer-graphics-tutorial

III B.Sc. Information Technology

NEW SYLLABUS

SEMESTER – VI

5%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	I6ME6	COMPUTER GRAPHICS	Lecture	5	5

COURSE DESCRIPTION

This course is designed to facilitate to understand, design and implementation of pictorial data and will make the students to be a successful Graphics programmer.

COURSE OBJECTIVES

To impart the core concepts of computer graphics. Apply graphics techniques to design and create graphics patterns.

UNITS

UNIT –I INTRODUCTION (14 HRS.)

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – **Computer Art – Entertainment – Education and Training(Self Study)** – Visualization – Image Processing – Graphical User Interfaces Overview of Graphics Systems: Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices..

UNIT –II OUTPUT PRIMITIVES (14 HRS.)

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Filled Area primitives.

UNIT –III ATTRIBUTES OF OUTPUT PRIMITIVES (14 HRS.)

Line Attributes – Curve Attributes(Self Study) – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes–

Antialiasing

UNIT –IV TWO –DIMENSIONAL GEOMETRIC TRANSFORMATIONS (14 HRS.)

Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems

UNIT –V TWO –DIMENSIONAL VIEWING (14 HRS.)

The Viewing Pipeline(Self Study) – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – **Text Clipping– Exterior Clipping(Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) 5% **(5 HRS.)**

Current trends in Computer Graphics (Image-Based 3D Face Modeling, Holographic 3D Display System, Human Action Recognition Technology)

TEXT BOOK:

2. Hearn, Donald. Computer graphics, C version. Pearson Education India, 2012. Chapters: 1.1 – 1.8, 2.1-2.3, 2.5, 2.6, 3.1, 3.2, 3.5, 3.11, 4.1 – 4.8, 5.1 – 5.5, 6.1 – 6.11

REFERENCES:

5. Hughes, John F., et al. Computer graphics: principles and practice. Pearson Education, 2014.
6. McConnell, Jeffrey J. Computer graphics: theory into practice. Jones & Bartlett Learning, 2005.
7. Hill Jr, Francis S. Computer graphics using open gl. Pearson Education, 2008.
8. Newman, William M., and Robert F. Sproull. Principles of interactive computer graphics. McGraw-Hill, Inc., 1979.

WEB REFERNCES :

3. Computer Graphics Tutorial

https://www.tutorialspoint.com/computer_graphics/index.htm

4. Computer Graphics Tutorial - Javatpoint

https://www.javatpoint.com/computer-graphics-tutorial

Signature of the HOD
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