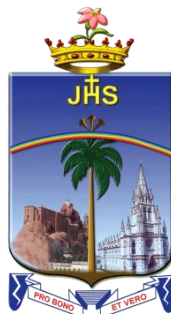**PGDCSA**

LOCF SYLLABUS – 2021

SCHOOLS OF EXCELLENCE

WITH CHOICE BASED CREDIT SYSTEM (CBCS)

DEPARTMENT OF INFORMATION TECHNOLOGY
SCHOOL OF COMPUTING SCIENCES
ST.JOSEPH'S COLLEGE (AUTONOMOUS)
Special Heritage Status Awarded by UGC,
Accredited at A^{++} Grade (IV Cycle) by NAAC
College with Potential for Excellence by UGC,
DBT-STAR & DST-FIST Sponsored College
Tiruchirappalli - 620 002, Tamil Nadu, India

PGDCSA

Programme outcomes (POs)

1. Graduates will be able to apply assimilated knowledge to evolve tangible solutions to emerging problems.

2. Graduates will be able to analyze and interpret data to create and design new knowledge.

3. Graduates will be able to engage in innovative and socially relevant research and effectively communicate the findings.

4. Graduates will become ethically committed professionals and entrepreneurs upholding human values.

5. Graduates groomed with ethical values and social concern will be able to understand and appreciate cultural diversity, promote social harmony and ensure sustainable environment.

Programme Specific Outcomes (PSOs)

1. Acquire fundamental knowledge in problem solving, general computing and comprehensive knowledge in Computer Science.

2. Competence to identify, analyze, design, optimize and implement system solutions using contemporary computing techniques which propels towards employability.

3. Gain fundamental knowledge in computational methods and tools for solving real-time problems and implanting the quest for continual learning of novel and in-demand skills

4. Demonstrate the ability to act as a leader, or as a part of a team to create multi-functional Software Solutions.

5. Ability to showcase discrete practical experiences by implementing various strategies that utilizes a variety of software techniques that are ethical and would be beneficial to the society.

**LOCF – PGDCSA Course Pattern (2021-22)**
Sem.	**Code**	**Course**	**Hrs**	**Crs**
I	21DCA1CC01	Foundations of Computer Science	7	5
	21DCA1CC02	C Programming	6	5
	21DCA1CC03	Operating Systems	6	5
	21DCA1CC04	Software Engineering	6	5
	21DCA1CP01	Practical - I: C Programming	5	4
		Total for Semester I	*30*	*24*
II	21DCA2CC05	Web Design using PHP	7	5
	21DCA2CC06	Recent Trends in IT	6	5
	21DCA2CC07	Computer Networks	6	5
	21DCA2CC08	Management Information System	6	5
	21DCA2CP02	Practical - I: Web Design using PHP	5	4
		Total for Semester II	*30*	*24*
		Total for all Semesters	*60*	*48*

Semester	Course Code	Title of the Course	Hours	Credits
I	21DCA1CC01	**FOUNDATIONS OF COMPUTER SCIENCE**	6	5

Course Outcomes

CO No.	CO–Statements On successful completion of this course, students will be able to	Cognitive Levels (K –Levels)
CO-1	List the functionalities of various gates in a Digital Computer.	K1
CO-2	Explain the basic terminology in the digital logic used in computers	K2
CO-3	Contrast the database approach over the file based data storage system	K3
CO-4	Analyze the concepts of Normalization	K4
CO-5	Explain Database System Architecture	K5

Unit-I: Digital Logic & Number Systems   **(18 Hours)**

Digital Logic - The Basic Gates-NOT, OR, AND - Universal Logic Gates- NOR, NAND AND-OR-Invert Gates- Boolean Algebra - NOR Gates - NAND Gates - Boolean Laws and Theorem-NUMBER SYSTEMS AND CODES: Binary Number System -Binary-to-decimal Conversion - Decimal-to-binary Conversion -Octal Numbers -Hexadecimal Numbers.

Unit-II: Data Processing & Arithmetic   **(18 Hours)**

Multiplexers-De-multiplexers- Decoders: 1 of 16 encoders-BCD to decimal decoders-Seven segment decoders – Encoders - Ex-OR gates - Binary Addition- Subtraction. Unsigned Binary Numbers-2's Complement Representation. The Adder- Subtracter. Binary Multiplication and Division.

Unit-III:Introduction to DBS   **(18-Hours)**

INTRODUCTION TO DBS: Basic Concepts and Definitions - Data Dictionary – Database

System - DBA –File oriented versus Database System -Database Languages.

Unit-IV: Database System Architecture   **(18-Hours)**

DATABASE SYSTEM ARCHITECTURE: Schemas, Sub-schemas and Instances - Three-

level Architecture - Data Independence - Mappings –DataModels - Types - ER Model.

Unit-V: Relational Query Languages & Normalization   **(18-Hours)**

RELATIONAL QUERY LANGUAGES: Introduction - Codd's Rules - Structured Query

Language(SQL**)** - NORMALIZATION: Introduction to Database Design - Functional

Dependency and Decomposition - Normalization - Normal Forms.

Books for Study
    1.Donald P. Leach and Albert Paul Malvino, *Digital Principles and Applications*, 7th Edition,
    Tata McGraw Hill, New Delhi, 2011.
    Unit-I   *Chapter 2(Sec 2.1 – 2.3), Chapter 5(Sec 5.1-5.5)*
    Unit-II   *Chapter 4 (Sec. 4.1 – 4.7), Chapter 6(Sec. 6.1 – 6.11)*
2. 1. S K Singh, "Database Systems Concepts, Design and Applications",Pearson Education,
New Delhi, 2009.
    Unit-III   *Chapter 1*
    Unit – IV *Chapter 2, Chapter 6*
    Unit – V   *Chapter 5(Sec 5.1,5.2,5.5), Chapter 10(10.1, 10.2, 10.3)*

Books for Reference
1. Thomas L. Floyd, *Digital Fundamentals*, 11th Edition, Pearson Education, Uttar Pradesh,
India, 2015.
2. P.S.Deshpande, *SQL & PL/SQL for Oracle 10g,*Dream Tech Press, New Delhi, 2017.
3. RamezElmasri, *Fundamentals of Database Systems*, Pearson, 7th Edition, New Delhi, 2017.

Semester	Course Code	Title of the Course									Hours	Credit
I	21DCA1CC02	FOUNDATIONS OF COMPUTER SCIENCE									6	5
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO-1	2	2	2	3	3	2	2	3	1	2	2.2	
CO-2	3	1	3	3	2	3	2	2	2	3	2.4	
CO-3	2	2	2	2	2	2	3	2	3	2	2.2	
CO-4	3	2	2	3	2	2	2	3	2	3	2.4	
CO-5	2	2	3	2	3	1	2	3	1	2	2.1	

	Mean Overall Score	2.26
	Result	High

Semester	Course Code	Title of the Course	Hours	Credits
I	**21DCA1CC02**	**C PROGRAMMING**	**7**	**5**

CO–Statements

CO No.	On successful completion of this course, students will be able to	Cognitive Levels (K –Levels)
CO-1	Relate the basic terminology of algorithm and flowchart used in programming	**K1**
CO-2	Explain the concepts of Structure and Union	**K2**
CO-3	Develop programs with various concepts like decision structures, loops and functions for simple problems	**K3**
CO-4	Make use of arrays and pointers in data structures	**K4**
CO-5	Explain the processing of sequential and random-access file	**K5**

Course Outcomes

Unit-I: Computer Basics   (21-Hours)

AN OVERVIEW OF C-BASIC**:** Structure of C programs - Programming style - Executing Programs. C FUNDAMENTALS: Constants – Variables - Data types – Operators – Expression -Managing Input and Output operators

Unit-II: Control Statements and Arrays   (21-Hours)

CONDITION STATEMENT**:** Branching - IF, IF-ELSE, ELSE-IF, Switch statement, The GOTO Statement. LOOPING: The WHILE - DO statement, The DO statement, The FOR statement, jump in loops. ARRAY**:** One dimensional array - Multi dimensional array

Unit-III:String and Functions   (21-Hours)

STRING**:** Handling of character strings - Declaring and initializing string variables, reading and writing strings - putting strings together - comparison of string. FUNCTION:String handling functions - Return values - Calling a function - Category of functions - Nesting of functions –Recursion

Unit-IV: Structures, Union and Pointers   (21-Hours)

STRUCTURES AND UNION: Definition – Initialization - Array of structures - Arrays within structures - Structures within structures - Structure and functions - Unions. POINTER:Understanding pointers - Accessing the address of the variable - Declaring and Initializing pointers- Accessing a variable through it a pointer - Pointer expression.

Unit-V: File Management (21-Hours)

FILE MANAGEMENT IN C: Defining and opening a file - Closing a file - I/O operational files - Error handling during I/O operations - Random access I/O files.

Book for Study

1. Balagurusamy. E, "Programming in ANSI C", Sixth Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2012.
Unit I - *Chapter 1, Chapter 2, Chapter 3*
Unit II - *Chapter 5, Chapter 6, Chapter 7*
Unit III - *Chapter 8, Chapter 9*
Unit IV - *Chapter 10, Chapter 11*
Unit V - *Chapter 12*

Books for Reference

1. Brian W. Kernighan / Dennis Ritchie, " The C Programming Language", Pearson, United Kingdom, 2nd Edition, 2015.
2. Thareja Reema, " Programming in C" , OUP India, 2nd Edition, 2016.
3. Herbert Schildt "C: The Complete Reference"Tata McGraw Hill Pvt.Ltd., Noida, India 4th Edition, 2017.

Semester	Course Code	Title of the Course								Hours	Credit
I	**21DCA1CC01**	**C PROGRAMMING**								**7**	**5**
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	2	2	3	2	3	3	3	2	3	3	2.6
CO-2	2	3	2	2	3	3	3	2	2	3	2.5
CO-3	1	2	3	2	3	3	2	3	2	2	2.3
CO-4	2	2	3	2	2	3	3	2	3	3	2.5
CO-5	2	2	3	3	2	2	3	2	3	3	2.5
									Mean Overall Score		2.48

	Result	High

Semester	Course Code	Title of the Course	Hours	Credits
I	21DCA1CC03	OPERATING SYSTEMS	6	5

Course Outcomes

CO. No.	CO- Statements	Cognitive Levels (K- Levels)
	On successful completion of this course, students will be able to	
CO-1	Show the basic concept of Computer System and Operating System Structure.	K1
CO-2	Understand the Knowledge of fundamental aspects of process and processor managements with deadlocks and CPU Scheduling .	K2
CO-3	Make use of the memory management and apply the virtual memory concepts in a real time situation.	K3
CO-4	Choose the correct mass storage devices according to the customer requirements for life long needs.	K4
CO-5	Explain the security on the operating system and protection mechanisms.	K5

Unit-I: Introduction & Computer System Structures   (18-Hours)

INTRODUCTION: Meaning - Early Systems – Multi programmed Batch Systems - Real-Time Systems. COMPUTER SYSTEM STRUCTURES: Computer-System Operation - Storage Hierarchy - General System Architecture.

Unit-II: Process Management   (18-Hours)

PROCESS MANAGEMENT: Processes - Process Concept - Operation on Processes - Inter-Process Communication. CPU SCHEDULING: Basic Concepts - Scheduling Algorithms - Real Time Scheduling.

.**Unit-III: Memory Management   `   (18-Hours)**

MEMORY MANAGEMENT: Background - Swapping - Paging - Segmentation with Paging. VIRTUAL MEMORY: Demand Paging - Page Replacement - Allocation of Frames – Thrashing

Unit-IV: File Management   (18-Hours)

FILE SYSTEM INTERFACE: File Concept - Access Methods – Directory Structures. MASS STORAGE STRUCTURE**:** Disk Structure - Disk Scheduling - Swap- Space Management - Stable-Storage Implementation.

Unit-V: Protection (18-Hours)

PROTECTION**:** Goals of Protection - Access Matrix - Capability Based Systems - Language-based Protection. SECURITY: The Security Problem - Authentication - Security Systems and Facilities - Encryption.

Book for Study

1. Abraham Silberschatz, Peter Baer Galvin "Operating System Concepts", 9th Ed., John Wiley & Sons Inc., New Delhi, 2013.
> **Unit-I**   *Chapter 1, Chapter 2*
> **Unit-II**   *Chapter 4, Chapter 6*
> **Unit-III** *Chapter 9, Chapter 10*
> **Unit-IV** *Chapter 11, Chapter14*
> **Unit-V** *Chapter 18, Chapter 19*

Books for Reference
1. William Stallings, "Operating Systems | Internals and Design Principles", 9th Edition., Pearson, United Kingdom, 2018
2. Andrew S. Tanenbaum,Herbert Bos, "Modern Operating Systems", 4th Edition, Prentice Hall, New Delhi, 2016.
3. Pramod Chandra P. Bhatt "An Introduction To Operating Systems Concepts And Practice" , PHI Learning Private Ltd, New Delhi, 2019.

Semester	Course Code	Title of the Course								Hours	Credit
I	**21DCA1CC03**	**OPERATING SYSTEMS**								**6**	**5**
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	2	3	2	2	2	2	3	2	3	2	2.4
CO-2	3	2	2	1	1	2	3	3	3	2	2.5
CO-3	2	2	2	3	2	3	3	2	3	3	2.5
CO-4	3	2	3	2	3	2	1	2	2	2	2.2

CO-5	3	2	2	3	2	3	2	2	2	2	2.3
								Mean Overall Score			2.4
									Result		**High**

Semester	Course Code	Title of the Course	Hours	Credits
I	**21DCA1CC04**	**SOFTWARE ENGINEERING**	**6**	**5**

Course Outcomes

CO. No.	CO- Statements	Cognitive Levels
	On successful completion of this course, students will be able to	**(K- Levels)**
CO-1	Recall the basic concepts of Software Engineering and Software Development Life Cycle Models.	**K1**
CO-2	Comprehend the concepts of Requirement Analysis	**K2**
CO-3	Understand the Software Design Concepts.	**K2**
CO-4	Apply User Interface Design, quality factors to evaluate the software solutions.	**K3**
CO-5	Distinguish Software Testing Strategies.	**K4**

Unit-I: Introduction and Software Life Cycle Models   (18-Hours)

INTRODUCTION:Evolution: Engineering Discipline – Software Development Projects – Exploratory Style of Software Development - Emergence of Software Engineering – Changes in Software Development Practices – Computer Systems Engineering. SOFTWARE LIFE CYCLE MODELS: Basic Concepts - Waterfall Model and its Extensions- RAD Model – Spiral Model.

Unit- II: Requirements Analysis and Design   (18-Hours)

REQUIREMENTS ANALYSIS AND SPECIFICATION: Requirements Gathering and Analysis – Software Requirements Specification (SRS) – Formal System Specification. SOFTWARE DESIGN: Characteristics of a Good Software Design – Cohesion and Coupling – Layered Arrangement – Approaches of Software Design.

Unit- III: Function Oriented Design and Modeling using UML   (18-Hours)

FUNCTION-ORIENTED SOFTWARE DESIGN: Overview of SA/SD Methodology – Structured Analysis – Developing the DFD model as a System – Structured Design - Detailed

Design – Design Overview. OBJECTMODELING USING UML: Basic Object-Orientation Concepts - UML Diagrams – Use Case Model – Class Diagrams – Interaction Diagrams – Activity Diagrams – State Chart Diagram.

Unit-IV:User Interface Design and Testing   **(18-Hours)**

USER INTERFACEDESIGN: Characteristics of a User Interface – Basic Concepts – Types of User Interfaces – Component-Based GUI Development – User Interface Design Methodology. CODING AND TESTING: Coding – Code Review – Testing – Unit Testing – Black-Box Testing – White-Box Testing – Debugging – Program Analysis Tools – Integration Testing – System Testing.

Unit- V:Reliability, Quality Management and CASE   **(18-Hours)**

SOFTWARE RELIABILITY AND QUALITY MANAGEMENT: Software Reliability – Statistical Testing – Software Quality – Software Quality Management System – ISO 9000 – SEI Capability Maturity Model. COMPUTER AIDED SOFTWARE ENGINEERING: CASE Environment – CASE support in Software Life Cycle – Characteristics of CASE Tools – Second Generation CASE Tool – Architecture of a CASE Environment

Book for Study
1. Rajib Mall, Fundamentals of Software Engineering, Prentice Hall of India Private Limited, 4th Ed., 2014.

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    Unit-I   *Chapter 1, Chapter 2*
    Unit-II   *Chapter 4, Chapter 5*
    Unit-III   *Chapter 6, Chapter7*
    Unit-IV   *Chapter 9, Chapter10*
    Unit-V   *Chapter 11, Chapter 12*

References
1. Ian Sommerville, "Software Engineering", Addition Wesely, Singapore, 10th Ed.,2017.
2. K.K.Agarwal&Yogesh Singh, "Software Engineering", NewAge Intl. Publishers, Revised 3rd Ed.,2015.
3.Roger S. Pressman, "Software Engineering - A Practitioner's Approach", McGraw Hill International, 8th Ed., 2019.

Semester	Course Code	Title of the Course	Hours	Credit
I	**21DCA1CC04**	**SOFTWARE ENGINEERING**	**6**	**5**
Course	Programme Outcomes (PO)	Programme Specific Outcomes (PSO)		**Mean**

Outcomes↓	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Scores of COs
CO-1	2	3	2	2	1	2	2	3	3	3	2.3
CO-2	2	2	2	3	2	2	2	2	3	3	2.3
CO-3	1	2	3	3	3	3	3	2	2	3	2.5
CO-4	2	3	2	3	2	2	3	2	3	2	2.4
CO-5	2	2	3	2	1	3	3	2	3	3	2.4
									Mean Overall Score		2.38
									Result		High

Semester	Course Code	Title of the Course	Hours	Credits
I	21DCA1CP01	**Practical - I: C PROGRAMMING**	5	4

Course Outcomes

List of Exercises:

CO. No.	CO- Statements	Cognitive Levels
	On successful completion of this course, students will be able to	(K- Levels)
CO-1	Show the basic structure of C Programming	**K1**
CO-2	Demonstrate the role of constants, variables, operators, arrays and strings	**K2**
CO-3	Solve the problems with various concepts like decision structures, loops, functions, structure and union	**K3**
CO-4	Distinguish file access methods to solve real time problems..	**K4**
CO-5	Analyze the concepts of arrays and pointers in data structure	**K4**

1. Evaluating simple mathematical expressions
2. Evaluating sine and cosine series
3. Printing the given numbers in words using functions
4. Sorting the given set of numbers in Ascending order and search the particular number and find its position in the array
5. Matrix Operation (Addition, Subtraction)
6. String manipulation using Pointers (String copy, concatenation, Compare two strings)
7. Accept and display the student bio data using structure
8. Mark-Sheet processing using structure and files (sequential)
9. Payroll slips for a particular employee using structures and files (Random)

Semester	Course Code		Title of the Course				Hours	Credit
I	21DCA1CP01		**Practical - I: C PROGRAMMING**				5	4

Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	1	1	2	3	2	2	2	3	2	3	2.1
CO-2	1	3	3	3	2	2	3	3	2	3	2.5
CO-3	2	2	2	3	2	3	3	2	3	3	2.5
CO-4	3	2	3	3	3	2	2	3	3	2	2.6

CO-5	2	3	3	3	2	3	3	2	2	3	2.6
									Mean Overall Score		2.46
									Result		High

Semester	Course Code	Title of the Course	Hours	Credits
II	**21DCA2CC05**	**WEB DESIGN USING PHP**	**7**	**5**

Course Outcomes

CO. No.	CO- Statements	Cognitive Levels
	On successful completion of this course, students will be able to	(K- Levels)
CO-1	List the HTML form controls	**K1**
CO-2	Demonstrate the basic concepts and functions in PHP	**K2**
CO-3	Apply Cascading Style Sheets to develop dynamic web pages.	**K3**
CO-4	Create PHP objects for server side Programming	**K4**
CO-5	Build simple database using MySQL for Software Solutions	**K6**

Unit-I: Web Page Building Blocks   **(21-Hours)**

INTRODUCING HTML5: A Basic HTML5 Template - Doctype - HTML Element - Head Element – Defining Page's Structure - Header Element - Section Element - Article Element - Nav Tag Element –Aside Element - Footer Element. HTML5 SEMANTICS: A New Perspective on Types of Content - The Document Online – NewElements in HTML5.

Unit-II: CSS   **(21-Hours)**

INTRODUCING CSS3: CSS3 Selectors - CSS3 Colors- Drop Shadows - Text Shadow.CSS3

GRADIENTS: Linear Gradients - Radial Gradients - Repeating Gradients.CSS3 TRANSFORMS AND TRANITIONS :Transforms - Transitions - Animations – EmbeddedFonts - CSS3 Multicolumn Layouts.

Unit-III : PHP   **(21-Hours)**

ESSENTIAL PHP: Creating your Development Environment- Mixing HTML and PHP - Command Line PHP. STRINGS AND ARRAYS: String Function - Modifying Data in an Array -Deleting Array Elements - Array with Loops - PHP Array Functions – Sorting Array - Splitting

Array - Merging Array. CREATING FUNCTION: Passing Function - Passing Arrays to Function - Passing by Reference - Using Default Arguments - Passing Variable Numbers of Argument - Returning Data from Function – Nesting Functions.

Unit-IV: PHP Data Reading & Browser Handling Power   **(21-Hours)**

READING DATA IN WEB PAGES: Setting up Web Pages to communicate with PHP - Text field - Checkbox - Radio Button - Password Controls – List Boxes -Button - Hidden Control - File Upload. PHP BROWSER HANDLINGPOWER:PHP's Server Variables - HTTP Header - Getting the User's Browser Type - HTTP Header - Data Validation - Client Side Data Validation.

Unit-V: Working with Database   **(21-Hours)**

WORKING WITH DATABASE: Creating a MYSQL Database - Creating a New Table - Putting Data into the New Database - Accessing the Database-Update data into the Database- Insert data into the Database - Delete data from Database- Handling and Avoiding Errors.

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Books for Study
1. Alexis Goldstein, Louis Lazaris, Estelle Weyl, "HTML5 & CSS3 for the Real World", Site Point Pvt. Ltd., 2011.
   Unit-I – *Chapter 1, Chapter 2, Chapter 3(pages 35-45)*
   Unit-II – *Chapter 6, Chapter 7,Chapter 8, Chapter9*
2. Steven Holzner, "The Complete Reference PHP", Tata McGraw Hill Pvt.Ltd. 2008.
   Unit-III – *Chapter 1, Chapter 3, Chapter 4*
   Unit-IV – *Chapter 7(Pages 139-145), Chapter 14(Pages 329-338)*
   Unit-V – *Chapter 10*

Books for Reference
1.   Robin Nixon, "Learning PHP, MySQL & JavaScript 5e: With jQuery, CSS & HTML5", Printed in the United States of America, Fifth Edition, Copyright © 2018.
2.   Steven Holzner, "PHP: The Complete Reference", McGraw-Hill Education, 2017.
3.   Jeremy McPeak, Paul Wilton" Beginning JavaScript ",5th Edition, John Wiley & Sons, Inc, USA, 2015.

Semester	Course Code	Title of the Course										Hours	Credit
II	**21DCA2CC05**	**WEB DESIGN USING PHP**										**7**	**5**
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)						**Mean Scores of COs**	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**			
CO-1	1	2	3	3	2	3	3	2	3	3		2.5	
CO-2	2	2	2	2	3	2	2	3	2	3		2.3	
CO-3	1	3	3	3	2	3	2	2	2	3		2.4	
CO-4	2	2	2	3	3	2	2	3	2	3		2.4	
CO-5	2	2	3	2	2	2	3	2	3	3		2.4	
										Mean Overall Score		2.4	
										Result		High	

Semester	Course Code	Title of the Course	Hours	Credits
II	**21DCA2CC06**	**RECENT TRENDS IN IT**	**6**	**5**

Course Outcomes

CO. No.	CO- Statements	Cognitive Levels
	On successful completion of this course, students will be able to	(K- Levels)
CO-1	Show the knowledge on the concepts of Mobile Computing	**K1**
CO-2	Understand the basic concepts of Cloud Computing and its applications	**K2**
CO-3	Apply the knowledge of big data analytics in Enterprises	**K3**
CO-4	Explain the different technologies in the current scenario	**K5**
CO-5	Elaborate the concepts of Mobile Computing, Cloud Computing, Big Data and Social Networking.	**K6**

Unit – I: Mobile Computing   (**18-Hours**)

MOBILE COMPUTING**:** Introduction – Technical and Other Limitations of Mobile Computing –Wireless Telephony – Cellular Concept- Multiple Access Techniques for Cellular System – Types of Spread Spectrum – Handoff.

Unit – II: Cloud Computing   (**18-Hours**)

CLOUD COMPUTING**:** Cloud Computing Architecture – Introduction – Cloud Reference Model – Types of Clouds – Types of Clouds – Economics of the Cloud – Open Challenges.

Unit – II: Big Data   (**18-Hours**)

BIG DATA**:** Big Data and its Important - Convergence of Key Trend - Relatively Speaking – A WideVariety of Data – The Expanding Universe of Unstructured Data – Setting the Tone at the

Top.

Unit – IV: Social Networking (18-Hours)

SOCIAL NETWORKING**:** Introduction –Social Media Marketing – Big Brands and Social Media- Small Business and Social Media – Twitter and Micro blogging Introduction – History – Protocol – Clients – Tips.

Unit – V: Ethical Hacking (18-Hours)

ETHICAL HACKING**:** Ethics and Legality - Understanding the Purpose of Ethical Hacking-An Ethical Hacker's Skill Set - Ethical Hacking Terminology - The Phases of Ethical Hacking-Identifying Types of Hacking Technologies and Ethical Hacks - Understanding Testing Types - To Be Ethical - Performing a Penetration Test - Keeping It Legal.

Books for Study
1. Rajesh Kumar Maurya, "Mobile Computing", Global Academic Publishers, New Delhi, 1st Ed., 2012.
    Unit-I – *Chapter 1,*

2. Raj Kumar Buuyya, Christian Vecchiola, ThamariSelvi ,"Mastering Cloud Computing", Tata McGraw Hill , New Delhi, 1st Ed., 2013.
    Unit-II –*Chapter 4,*
3. Michael Minelli, Michele Chambers, AmbigaDhiraj, "Big Data Analytics, Emerging Business Intelligence and Analytic Trends for Today's businesses", Wiley India Pvt. Ltd., New Delhi, 2014.
    Unit-III – *Chapter 1,*
4. Den Zarrella "The Social Media Marketing Book", O'Reilly Media Inc, USA, 1st Ed., 2009.
    Unit-IV – *Chapter 1,Chapter 2, Chapter 3, Chapter 4*

5. Kimberly Graves, "Certified Ethical Hacker Study Guide", Wiley publishing Inc, 2010.
    Unit-V – *Chapter 1,*
Books for Reference
1. Rajkamal, "Mobile Computing" 2nd Edition, Oxford Press, England, 2018
2. Asoke K Taukder, Hasan Ahamed Roopa R Yavagal, "Mobile Computing: : Technology, Applications and Service", Tata McGraw Hill Pub. Co.,2nd Edition, New Delhi, 2017.
3. Stephen Orban, "Ahead in the Cloud: Best Practices for Navigating the Future of Enterprise IT", Amazon Asia-Pacific Holdings Private Limited, 1st Edition, 2018.
4. DT Editorial Services, *"BIG DATA BLACK BOOK"*, Dreamtech Press, New Delhi, 2017.
5. Doug Lowe, "Networking- All in one For Dummies", Hoboken, New Jersey, John Wiley & Sons, 7th Edition, 2018.

Semester	Course Code	Title of the Course	Hours	Credits
II	**21DCA2CC06**	**RECENT TRENDS IN IT**	**6**	**5**
Course	Programme Outcomes (PO)	Programme Specific Outcomes (PSO)		**Mean**

Outcomes↓	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Scores of COs
CO-1	2	3	2	2	2	2	3	2	3	2	2.4
CO-2	3	2	2	1	1	2	3	3	3	2	2.5
CO-3	2	2	2	3	2	3	3	2	3	3	2.5
CO-4	3	2	3	2	3	2	1	2	2	2	2.2
CO-5	3	2	2	3	2	3	2	2	2	2	2.3
										Mean Overall Score	2.4
										Result	**High**

Semester	Course Code	Title of the Course	Hours	Credits
II	**21DCA2CC07**	**COMPUTER NETWORKS**	**6**	**5**

CO. No.	CO- Statements	Cognitive Levels (K- Levels)
	On successful completion of this course, students will be able to	
CO-1	Recall the fundamental concepts of Computer Networks	**K1**
CO-2	Understand the modes of transmission and switching techniques for data communication	**K2**
CO-3	Identify the protocols and standards of transmission media.	**K3**
CO-4	Classify different routing algorithms and network addressing scheme	**K4**
CO-5	Explain the knowledge about transport and network layer protocols and functionalities.	**K5**

Course Outcomes

Unit-I: Introduction and Physical Layer   **(18-Hours)**

INTRODUCTION: Uses of Computer Networks – Network Hardware – Network Software – Reference Models: OSI - TCP/IP. PHYSICAL LAYER: Theoretical Basis for data communication – Guided Transmission Media - Wireless Transmission - Public Switched Telephone Networks - Mobile Telephone System

Unit-II: Data Link Layer   **(18-Hours)**

DATA LINK LAYER: Design issues - Error Detection and Correction - Elementary Data Link Protocols - Sliding Window Protocols.

Unit-III: Network Layer   **(18-Hours)**

NETWORK LAYER: Network Layer Design Issues - Routing Algorithms - Congestion Control Algorithms - Quality of Service - Internetworking - The Network Layer in the Internet (IPv4 and IPv6).

Unit-IV: Transport Layer   **(18-Hours)**

TRANSPORT LAYER: Transport Service - Elements of Transport Protocol - Simple Transport Protocol - Internet Transport Layer Protocols.

Unit-V: Application Layer   **(18-Hours)**

THE APPLICATION LAYER: Domain name system - electronic mail - World Wide Web: Architectural Overview - Dynamic Web Document and HTTP.

Book for Study

1. A. S. Tanenbaum, Computer Networks, 5th edition, Pearson Education/ PHI, New Delhi, India, 2013.

Unit-I   *Chapter 1, Chapter 2*
Unit-II *Chapter 3*
Unit-III *Chapter 5*
Unit-IV *Chapter 6*
Unit-V   *Chapter 7*

References

1. William Stallings, *"Data and Computer Communication",* 9[th]Edition, Dorling Kindersley Pvt. Ltd., India, 2018.
2. Andrew S. Tanenbaum, Nickolas Feamster *"Computer Networks",* 5th Edition, Pearson Education India, United Kingdom, 2019.
3. James F. Kurose and Keith W. Ross, *"Computer Networks",* 7th Edition, Pearson Education, Inc., New York, 2017

Semester	Course Code	Title of the Course									Hours	Credits
II	**21DCA2CC07**	**COMPUTER NETWORKS**									**6**	**5**
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs	
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**		
CO-1	2	3	3	2	2	2	3	2	2	1	2.2	
CO-2	2	3	3	2	3	3	2	2	2	2	2.4	
CO-3	1	2	3	2	2	2	2	3	1	2	2.0	
CO-4	2	3	3	3	2	2	2	2	2	2	2.3	
CO-5	2	2	2	2	2	3	2	1	2	3	2.1	
										Mean Overall Score	2.2	
										Result	High	

Semester	Course Code	Title of the Course	Hours	Credits
1	**21DCA2109**	**Management Information Systems**	**6**	**5**

Course Outcomes

CO. No.	CO- Statements	Cognitive Levels
	On successful completion of this course, students will be able to	**(K- Levels)**
CO-1	Relate the basic concepts and technologies used in the field of computer systems.	**K1**
CO-2	Understand the system activities and strategic advantage of management information systems	**K2**
CO-3	Identify the processes of enterprise business system and supply chain management systems	**K3**
CO-4	Apply effectively technical concepts of artificial intelligence using information systems	**K3**
CO-5	Explain the several of security of management challenges in organizations	**K5**

Unit- I: Mechanisms of Information Systems   **(18-Hours)**

COMPONENTS OF INFORMATION SYSTEMS: Information System Resources –People Resources–Hardware Resources- Software Resources- Data Resources- Network Resources- INFORMATION SYSTEM ACTIVITIES: Input of Data Resources-Processing of Data into Information-Output of Information Products-Storage of Data Resources-Control of System Performance - USING INFORMATION TECHNOLOGY FOR STRATEGIC ADVANTAGE**:** Strategic Uses of IT-Reengineering Business Process.

Unit-II: Computer System Organization (18-Hours)

COMPUTER SYSTEM FOR END USER AND ENTERPRISE COMPUTING:Computer Terminals-Network Computers-Information Appliances-Mainframe Computer Systems-Super Computer Systems- COMPUTER PERIPHERALS:Pointing Devices- Pen Based Computing-Speed Recognition Systems-Optical Scanning- COMPUTER SYSTEM MANAGEMENT: System Management Programs- Programming Languages-Machine Languages-Assembler Languages-High Level Languages-Object Oriented Languages

Unit- III: Professional Solicitations (18-Hours)

BUSINESS APPLICATIONS: -Business Systems- Functional Business Systems – ENTERPRISE BUSINESS SYSTEMS: Customer relationship Management-Enterprise Resource Planning- SUPPLY CHAIN MANAGEMENT: The Role of Supply Chain Management-Benefits and Challenge of Supply Chain Management -Trends in Supply Chain Management.

Unit -IV:Emerging Commercial &Information Classification Approaches(18 Hours)

DEVELOPING BUSINESS/IT STRATEGIES: Planning Fundamentals-Organizational Planning - DECISION SUPPORT SYSTEMS: Support in Business-Decision Structure-Decision Trends-Decision Support Systems - ARTIFICIAL INTELLIGENCE TECHNOLOGIES INBUSINESS: Business and AI-Components of an Expert Systems-Expert System Applications-Benefits of Expert Systems-Limitations of Expert Systems.

Unit- V:Organization Experiments (18 Hours)

MANAGEMENT CHALLENGES: Business Ethics-Technology Ethics-Computer Crime-Hacking and Cracking-Cyber Theft-Software Privacy-Privacy Issues-The Current State Cyber Law-Other Challenges - SECURITY MANAGEMENT OF INFORMATION TECHNOLOGY: Encryption-Firewalls-Denial of Service Attacks-e-mail Monitoring-Virus Defenses-Other Security Measures.

Book for Study
1.James O Brien, George M Marakas, "Management Information Systems", Ninth Edition, Tata MC Graw Hill Publishing Company Ltd, New Delhi,2017.
Unit-I *Chapter 1, Chapter 2*
Unit-II *Chapter 3, Chapter 4*
Unit-III *Chapter 6, Chapter 7*
Unit – IV Chapter *9, Chapter 10*

Unit – V *Chapter 11, Chapter 12*

References:

1. A.K. Gupta, S. Chand, "Management Information System",New Delhi, 2010.
2. Dr. S.P. Rajagopalan, "Management Information System", Margham Publications, New Delhi, 2012.
3. P. Mohan, "Management Information System", Himalaya Publishing House, India, 2017

Semester	Course Code	Title of the Course										Hours	Credits
II	**21DCA2109**	**Management Information SYSTEMS**										**6**	**5**
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**			
CO-1	2	3	3	2	3	3	1	3	3	3	2.3		
CO-2	3	2	2	3	3	1	3	2	3	2	2.2		
CO-3	2	3	2	3	3	2	1	2	3	1	2.3		
CO-4	3	2	3	2	1	3	3	2	1	3	2.3		
CO-5	2	3	3	3	2	3	2	3	3	3	2.3		
									Mean Overall Score		2.3		
									Result		High		

Semester	Course Code	Title of the Course	Hours	Credits
II	**21DCA2CP02**	**Practical - I:** **WEB DESIGN USING PHP**	**5**	**4**

CO. No.	CO- Statements On successful completion of this course, students will be able to	Cognitive Levels (K- Levels)
CO-1	Understand the Functionality of PHP Language	**K1, K2**
CO-2	Identify the appropriate programming environment for developing dynamic client-side and server-side web applications.	**K3**
CO-3	Classify the tools to create dynamic website	**K4**
CO-4	Distinguishthe various existing libraries for developing real-time applications.	**K5**
CO-5	Build Dynamic web sites using server-side PHP Programmingand Database connectivity.	**K6**

Course Outcomes

List of Exercises:

1. Creating simple webpage using PHP
2. Use of conditional statements in PHP
3. Use of looping statements in PHP
4. Usage of array functions
5. File manipulation using PHP
6. String Functions and Arrays
7. Functions using PHP
8. Create a session and cookies
9. Form Validation using PHP
10. Database connectivity in PHP with MySQL
11. Insertion, Updation and Deletion of rows in MYSQL tables
12. JavaScript validation

Semester	Course Code	Title of the Course									Hours	Credits
II	21DCA2CP02	Practical - I: Web Design using PHP									5	4
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO-1	3	2	3	2	3	3	2	3	3	3	2.7	
CO-2	2	3	2	3	2	2	3	2	2	3	2.4	
CO-3	2	3	2	1	3	3	3	3	2	3	2.5	
CO-4	1	3	3	3	2	2	2	3	3	3	2.5	
CO-5	2	3	3	2	2	3	2	2	2	2	2.3	
Mean Overall Score											2.48	
Result											High	