

**PGDCSA**  
**SYLLABUS - 2018**

**SCHOOLS OF EXCELLENCE**  
**with**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**



**SCHOOL OF COMPUTING SCIENCES**  
**St. JOSEPH'S COLLEGE (Autonomous)**

Special Heritage Status Awarded by UGC  
Accredited at 'A' Grade (3<sup>rd</sup> cycle) by NAAC  
College with Potential for Excellence Conferred by UGC

DBT-STAR & DST-FIST Sponsored College  
**TIRUCHIRAPPALLI - 620 002, INDIA**

**Post-Graduate Diploma Computer Science Application  
(PGDCA)**

**Programme outcomes (POs)**

1. Graduates are prepared to be creators of new knowledge leading to innovation, entrepreneur and employable in various sectors such as Private, Government and Research organizations.
2. Graduates are trained to evolve/ adopt new technologies in their own discipline.
3. Graduates are groomed to engage in lifelong learning process by exploring knowledge independently
4. Graduates are framed to design and conduct experiments/ demonstrate/ create models to analyze and interpret data.
5. Graduates ought to have the ability of effectively communicating the findings of Biological Sciences/Computing Sciences/ Languages and Culture/ Management Studies/ Physical Sciences/ and to incorporate with existing knowledge.

**Programme Specific Outcomes (PSOs)**

1. Fundamental knowledge on the workings of various Computing Technologies
2. Basic knowledge of recent trends in general computing and information technology
3. An Ability to design and develop simple applications for different platforms

**Course Pattern - 2018 Set**

Sem.	Code	Course	Hr	Cr
I	18DCA1101	C Programming	7	5
	18DCA1102	Foundations of Computer Science	6	5
	18DCA1103	Operating Systems	6	5
	18DCA1104	Systems Analysis and Design	6	5
	18DCA1105	Software Lab - I (C Programming)	5	4
Total for Semester I			30	24
II	18DCA2106	Web Design using PHP	7	5
	18DCA2107	Recent Trends in IT	6	5
	18DCA2108	Creative Virtualization and Image Manipulation	6	5
	18DCA2109	Customer Relationship Management and ERP	6	5
	18DCA2110	Software Lab - II (Web Design using PHP)	5	4
Total for Semester II			30	24
Total for all Semesters			60	48

**Semester I  
18DCA1101**

**Hours/Week: 7  
Credits : 5**

**C-PROGRAMMING**

**Course Outcomes:**

1. Understand the basic terminology of algorithm, flowchart and gain awareness used in computer programming
2. Design programs involving the various concepts like decision structures, loops, functions of C language
3. Demonstrate the single, multi-dimensional arrays, String functions and user defined functions
4. Compare the structure and union of C and apply it to construct array of structures and structure function
5. Understand the dynamics of memory by the use of pointers and pointers with functions
6. Comprehend the Processing of sequential and random access file concepts

**Unit-I: 18 hr**

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: 19 hr**

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: 18 hr**

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: 18 hr**

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: 18 hr**

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.

**Textbook**

- Balagurusamy. E, “Programming in ANSI C”, Sixth Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2012.

**Book for Reference**

- Gottfried S Byron, “Programming with C”, Schaum’s Outline Series, Tata McGraw-Hill, New Delhi, 2001.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

Semester I	Code 18DCA1101	Title of the Paper C PROGRAMMING										Hours 7	Credits 5	
		Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	4	3	4	4	4	4	3	4	4	4	3.7		
CO2	4	4	4	3	3	5	4	4	4	4	4	3.8		
CO3	4	4	4	5	4	4	3	4	4	4	4	4.0		
CO4	4	4	4	4	3	4	4	4	4	4	4	3.8		
CO5	4	4	4	5	4	4	4	4	4	4	4	4.1		
CO6	4	4	3	4	4	4	4	3	4	4	4	3.7		
<b>Grant Total</b>											<b>23.1</b>			
<b>Overall Mean Score for COs</b>											<b>3.8</b>			

**To find out Relationship:**

<b>Mean Score of COs =</b> $\frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$	<b>Mean Overall Score for COs =</b> $\frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$
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**Values of Scaling:**

<b>Overall Mean Score:</b>	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
<b>Result:</b>	Very poor	Poor	Moderate	High	Very High

**Result:** The Score for this Course is 3.8 (High Relationship)

**Semester I**  
**18DCA1102**

**Hours/Week: 6**  
**Credits : 5**

**FOUNDATIONS OF COMPUTER SCIENCE**

**Course Outcomes:**

1. Understand the basic terminology in the digital logic used in computers
2. Comprehend the Number system
3. Understand the Database Management System and Internet Concepts
4. Emphasize the need, role, importance and uses of databases in application development
5. Identify the various types of Networks
6. Explore the various types of Software Life Cycle Models

**Unit-I: 16 hr**

**COMPUTERARCHITECTURE:**

Electronic computers – Low and High level languages – Peripheral Devices – Memory Mapped I/O – I/O Instructions - Processor – Memory Cache - CISC and RISC.

**Unit-II: 16 hr**

**NUMBERSYSTEM:**

Decimal, Binary Number Systems – signed and unsigned representations – fixed and floating point representation of integers. MEMORY UNITS: RAM – ROM - PROM and EPROM.

**Unit-III: 16 hr**

**DATABASE MANAGEMENT SYSTEMS:**

History- Quality of Information - DBMS Definition - Characteristics – Types of Database Management System.

**Unit-IV: 15 hr**

**NETWORKS:**

Overview of Network – Communication Processors - Communication Media – Types of Computer Networks - Network Topologies - Network Architecture.

**Unit-V: 15 hr**

**INTERNET:**

Introduction - Evolution of Internet - Basic Internet Terms - Internet Applications: Email - FTP - Video Conferencing - Newsgroups - Mailing List - Search Engines - Data Over Internet – Internet and Viruses.

**Textbooks**

1. Alexis Leon, Mathews Leon “Fundamentals of Information Technology”, Vikas Publishing Ltd, 2nd Ed., 2010. Units-I,II,III,IV
2. ITL Education Solutions Limited, “Introduction of Computer Science”, Pearson Education, India, 2<sup>nd</sup> Ed., 2011. Unit-V

**Book for Reference**

1. ITL Education Solutions Limited, “Introduction to Information Technology”, Pearson Education, India, 2<sup>nd</sup> Ed., 2012.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester I	Course Outcomes (COs)	Code 18DCA1102	Title of the Paper FOUNDATIONS OF COMPUTER SCIENCE										Hours 6	Credits 5	
			Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	4	4	3	4	4	4	4	4	3	3	3	3.7		
CO2	4	3	4	4	3	4	4	3	3	4	4	4	3.6		
CO3	4	4	3	3	4	4	5	4	4	4	4	4	3.8		
CO4	4	4	3	4	4	4	4	3	3	4	4	4	3.7		
CO5	4	3	3	4	3	4	4	3	3	3	3	3	3.3		
CO6	3	4	3	4	4	4	4	4	4	3	4	4	3.6		
<b>Overall Mean Score for COs</b>											<b>Grant Total</b>	<b>21.7</b>	<b>3.6</b>		

To find out Relationship:

$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$	$\text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$
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Values of Scaling:

Overall Mean Score:	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Result:	Very poor	Poor	Moderate	High	Very High

Result: The Score for this Course is 3.6 (High Relationship)

Semester I  
18DCA1103

Hours/Week: 6  
Credits : 5

**OPERATING SYSTEMS**

**Course Outcomes:**

1. Understand the basic concept of Computer System and Operating System Structure
2. Gain Knowledge of the fundamental aspects of process and processor managements with deadlocks and CPU scheduling
3. Introduce memory and virtual memory techniques
4. Understand files, directories and its accessing methods and its structures
5. Ability to know mass storage devices and its scheduling
6. Understand the security on the operating system and protection mechanisms

**Unit-I: 16 hr**  
INTRODUCTION: Meaning - Early Systems - Multiprogrammed Batch Systems - Real-Time Systems. COMPUTER SYSTEM STRUCTURES: Computer-System Operation -Storage Hierarchy - General System Architecture.

**Unit-II: 16 hr**  
PROCESS MANAGEMENT: Processes - Process Concept - Operation on Processes - Inter-Process Communication. CPU SCHEDULING: Basic Concepts - Scheduling Algorithms - Real Time Scheduling.

**Unit-III: 16 hr**  
MEMORY MANAGEMENT: Background - Swapping - Paging - Segmentation with Paging. VIRTUAL MEMORY: Demand Paging - Page Replacement - Allocation of Frames - Thrashing.

**Unit-IV: 15 hr**  
FILE SYSTEM INTERFACE: File Concept - Access Methods – Directory Structures. MASS STORAGE STRUCTURE: Disk Structure - Disk Scheduling - Swap-Space Management - Stable-Storage Implementation.

**Unit-V: 15 hr**  
PROTECTION: Goals of Protection - Access Matrix - Capability Based Systems - Language-based Protection. SECURITY: The Security Problem - Authentication - Security Systems and Facilities - Encryption.

**Textbook**

1. Abraham Silberschatz, Peter Baer Galvin “Operating System Concepts”, 6th Ed., John Wiley & Sons Inc., New Delhi 2003.

**Books for Reference**

1. Harvey M. Deitel, “An Introduction to Operating System”, Addison Wesley, New York, 1999.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Prentice Hall, New Delhi, 1997.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

Semester I	Course Outcomes (COs)	Code 18DCA1103	Title of the Paper OPERATING SYSTEMS										Hours 6	Credits 5	
			Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	4	4	3	3	4	4	4	4	4	4	4	3.7		
CO2	4	4	3	4	4	4	4	3	3	4	4	4	3.7		
CO3	4	4	4	3	4	5	4	4	4	4	4	4	4.0		
CO4	5	4	4	3	4	4	4	3	3	4	4	4	3.8		
CO5	4	4	3	3	4	4	4	4	4	3	4	4	3.6		
CO6	4	3	4	4	4	4	4	4	4	4	4	4	3.8		
<b>Grant Total</b>											<b>22.6</b>				
<b>Overall Mean Score for COs</b>											<b>3.7</b>				

**To find out Relationship:**

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$$

$$\text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

**Values of Scaling:**

Overall Mean Score:	0-0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Result:	Very poor	Poor	Moderate	High	Very High

**Result:** The Score for this Course is 3.7 (High Relationship)

**Semester I**  
**18DCA1104**

**Hours/Week: 6**  
**Credits : 5**

**SYSTEMS ANALYSIS AND DESIGN**

**Course Outcomes:**

1. Define and describe the five phases of the system development life cycle
2. State at least five expected benefits from systems projects
3. Explain at least three ways in which information systems support business requirements
4. Describe how systems analysts interact with users, management and other information systems professionals
5. Develop data flow diagrams and decision tables
6. Evaluate systems development alternatives

**Unit-I:** **16 hr**  
SYSTEM CONCEPT AND INFORMATION SYSTEM ENVIRONMENT: The System Concept - Characteristics of System- Elements of System-Types of System - System Development - System Development Cycle. ROLE OF SYSTEM ANALYZER: Definition -- Role of Analyzer - Analyzer User Interface - Place of Analyzer in MIS Organization.

**Unit-II:** **16 hr**  
SYSTEM PLANNING AND INITIAL INVESTIGATION: Bases for Planning- Initial Investigation - INFORMATION GATHERING: Kinds of Information- Sources -Information Gathering Tools.

**Unit-III:** **16 hr**  
FEASIBILITY STUDY: Introduction - System Performance – Definition - Feasibility Study - Cost Benefit Analysis – Introduction - Data Analysis - Cost Benefit Analysis –System Proposal. DESIGN: The Process - Design Methodologies – Development – Activities.

**Unit-IV:** **15 hr**  
INPUT /OUTPUT FORM DESIGN: Input Design – Output Design - FILE ORGANIZATION AND DATABASE DESIGN: File Structure – File Organization - Database design - Role of Database Administrator. SYSTEM TESTING AND QUALITY ASSURANCE: Reason for Testing - Test Plan – Quality Assurance - Data Processing Audit.

**Unit-V:** **15 hr**  
HARDWARE/SOFTWARE SELECTION: Hardware Industry - Software Industry-Procedure for Selecting Software and Hardware - Evaluation Process -Implementation and Maintenance. Conversion – Post Implementation Review – Maintenance.

**Textbook**  
1. M. Awad Elias,” Systems Analysis and Design”, Galgotia Publication & Pvt. Ltd, 2nd edition, 2005. Ch: 1-14, 16

**Books for Reference**  
1. Alan Dennis, Barbara Haley Wixom, Roberta M. Roth, “Systems Analysis and Design “Fifth Edition, John Wiley and sons publication Pvt Limited, US, 2012.  
2. Yourdon Edward, “Modern Structured Analysis”, Prentice-Hall of India, New Delhi, 2001.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester I Course Outcomes (COs)	Code 18DCA1104	Title of the Paper SYSTEMS ANALYSIS AND DESIGN										Hours 6	Credits 5	
		Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	3	3	4	4	3	4	4	4	4	3	4	4	3.6
CO2	4	4	4	3	4	4	3	4	4	4	5	4	4	4.0
CO3	4	3	4	5	3	4	4	3	3	4	4	3	4	3.6
CO4	4	4	4	4	3	4	4	4	3	4	4	4	4	3.8
CO5	3	4	3	5	4	4	4	4	4	4	4	4	4	3.8
CO6	4	3	4	4	4	4	4	4	4	3	3	4	4	3.6
<b>Grant Total</b>											<b>22.4</b>			
<b>Overall Mean Score for COs</b>											<b>3.7</b>			

To find out Relationship:

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \quad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

Values of Scaling:

Overall Mean Score:	0.0-1.0 Very poor	1.1-2.0 Poor	2.1-3.0 Moderate	3.1-4.0 High	4.1-5.0 Very High
Result:					

Result: The Score for this Course is 3.7 (High Relationship)

Semester I  
18DCA1105

Hours/Week: 5  
Credits : 4

**Software Lab-I:  
C PROGRAMMING**

**Course Outcomes:**

1. Design the basic concept of C Programming, and its different modules that includes conditional and looping expressions
2. Identify the Role of constants, variables, identifiers, operators, type conversion and develop Arrays, Strings and Functions programming
3. Design the concept of structure and union programs
4. Use of pointers to solve problems associated with array of pointers and function pointers
5. Apply the command line arguments involving the idea of modularity
6. Develop sequential file and random files concept for data processing

**List of Practical Exercises:**

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)



Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester I	Course Outcomes (COs)	Code 18DCA1105	Title of the Paper Software Lab-I: C PROGRAMMING										Hours 5	Credits 4	
			Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
			PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	4	4	4	4	4	4	4	4	4	4	4	4.0		
CO2	4	4	4	4	4	4	4	4	4	4	4	4	4.0		
CO3	4	4	4	4	4	4	4	4	4	3	4	4	3.8		
CO4	4	4	4	4	4	4	4	4	4	4	4	5	4.1		
CO5	4	4	4	5	4	4	4	4	3	3	4	4	4.0		
CO6	4	4	4	4	4	4	4	4	4	4	4	5	4.0		
<b>Grant Total</b>											<b>23.9</b>				
<b>Overall Mean Score for COs</b>											<b>3.9</b>				

To find out Relationship:

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \quad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

Values of Scaling:

Overall Mean Score:	0.0-1.0 Very poor	1.1-2.0 Poor	2.1-3.0 Moderate	3.1-4.0 High	4.1-5.0 Very High
Result:					

Result: The Score for this Course is 3.9 (High Relationship)

**WEB DESIGN USING PHP**

**Course Outcomes:**

1. Gain knowledge on HTML5 structure for presentation of information in web pages
2. Apply HTML5 and CSS3 standards to build dynamic websites
3. Understand the Functionality of PHP Language and MySQL
4. Develop Applications using PHP with MySQL with dynamic forms
5. Associate the syntax and functions available to deal with file processing for files on the server as well as processing web URLs
6. Design the paradigm for dealing with AJAX FORMS using PHP

**Unit-I: 18 hr**  
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 - New Elements in HTML5. HTML5 TABLES: Table Attributes and Elements.

**Unit-II: 18 hr**  
INTRODUCING CSS3: CSS3 Selectors - CSS3 Colors- Drop Shadows - Text Shadow. CSS3 GRADIENTS: Linear Gradients - Radial Gradients - Repeating Gradients. CSS TRANSFORMS AND TRANSITIONS: Transforms - Transitions - Animations - Embedded Fonts - CSS3 Multicolumn Layouts.

**Unit-III: 19 hr**  
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: 18 hr**  
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:** **18 hr**

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.

**Textbooks**

1. Alexis Goldstein, Louis Lazaris, Estelle Weyl, "HTML5 & CSS3 for the Real World", Site Point Pvt. Ltd., 2011.
2. Steven Holzner, "The Complete Reference PHP", Tata McGraw Hill Pvt.Ltd. 2008.

**Book for Reference**

1. Leon Atkinson, "Core PHP Programming", Pearson Education, 2004.

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes**

Semester II	Code 18DCA2106	Title of the Paper WEB DESIGN USING PHP										Hours 7	Credits 5	
		Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	4	4	4	3	4	4	4	4	5			4.0	
CO2	5	4	3	4	4	4	4	3	4	4			3.8	
CO3	4	3	4	5	3	4	4	4	4	3			3.7	
CO4	4	4	4	4	3	4	4	3	4	4			3.7	
CO5	4	4	4	5	4	4	4	4	4	4			4.1	
CO6	4	4	4	4	4	4	4	4	4	5			4.1	
<b>Grant Total</b>											<b>23.4</b>			
<b>Overall Mean Score for COs</b>											<b>3.9</b>			

**To find out Relationship:**

$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$	$\text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$
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**Values of Scaling:**

<b>Overall Mean Score:</b>	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
<b>Result:</b>	Very poor	Poor	Moderate	High	Very High

**Result: The Score for this Course is 3.9 (High Relationship)**

**Semester II**  
**18DCA2107**

**Hours/Week: 6**  
**Credits : 5**

### **RECENT TRENDS IN I.T.**

#### **Course Outcomes:**

1. Gain knowledge on the concepts of Mobile Computing
2. Describe the basic concepts of Cloud Computing and its applications
3. Extend their knowledge of big data analytics in Enterprises
4. Explore the different technologies in the current scenario
5. Gain knowledge on the concepts of Mobile Computing, Cloud Computing, Big Data and Social Networking
6. Gain idea about the Ethical Hacking

#### **Unit-I:**

**16 hr**

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:**

**16 hr**

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

#### **Unit-III:**

**15 hr**

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

#### **Unit-IV:**

**15 hr**

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:**

**16 hr**

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.

#### **Textbooks**

1. Rajesh Kumar Maurya, “Mobile Computing”, Global Academic Publishers, New Delhi, 1<sup>st</sup> Ed., 2012. Unit: I
2. Raj Kumar Buuyya, Christian Vecchiola, Thamari Selvi, ”Mastering Cloud Computing”, Tata McGraw Hill, New Delhi, 1<sup>st</sup> Ed., 2013. Unit: II
3. Michael Minelli, Michele Chambers, Ambiga Dhiraj, “Big Data Analytics, Emerging Business Intelligence and Analytic Trends for Today’s businesses”, Wiley India Pvt. Ltd., New Delhi, 2014. Unit: III
4. Den Zarrella “The Social Media Marketing Book”, O’Reilly Media Inc, 1<sup>st</sup> Ed., 2009. Unit: IV
5. Kimberly Graves, “Certified Ethical Hacker Study Guide”, Wiley publishing Inc, 2010. Unit: V

#### **Books for Reference**

1. Asoke K Taukder, Roopa R Yavagal, “Mobile Computing”, Tata McGraw Hill Pub. Co., New Delhi, 2005.
2. George Reese, “Cloud Application Architectures”, O’Reilly Media, Inc, 1<sup>st</sup> Ed., 2009.
3. Alan Nugent, Dr, Ferm Halper, Marcia Kaufman, Alan Nugent, Dr, Ferm Halper, Marcia Kaufman, “Big Data for Dummies”, Judith Hurwitz, Wiley Publications, 2013.
4. William Stallings, “Cryptography and network Security – Principles and Practices”, Prentice Hall (Pearson Education), 4<sup>th</sup> Ed., 2006.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester II Course Outcomes (COs)	Code 18DCA2107	Title of the Paper RECENT TRENDS IN IT										Hours 6	Credits 5	
		Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	4	4	3	4	3	4	4	4	3	4	3	3	3.6	
CO2	4	4	4	5	4	4	4	4	3	3	4	4	4.0	
CO3	4	4	3	4	3	3	4	4	4	4	4	4	3.6	
CO4	4	4	4	3	4	4	4	4	3	3	4	4	3.7	
CO5	4	4	4	4	3	3	4	4	4	4	4	4	3.7	
CO6	4	4	3	4	4	4	4	4	4	4	3	4	3.7	
<b>Grant Total</b>											<b>22.3</b>			
<b>Overall Mean Score for COs</b>												<b>3.7</b>		

To find out Relationship:

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$$

$$\text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

Values of Scaling:

Overall Mean Score:	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Result:	Very poor	Poor	Moderate	High	Very High

Result: The Score for this Course is 3.7 (High Relationship)

Semester II  
18DCA2108

Hours/Week: 6  
Credits : 5

### CREATIVE VIRTUALIZATION AND IMAGE MANIPULATION

#### Course Outcomes:

1. Understand the basic concepts of computer based media
2. Distinguish between 2D and 3D images
3. Manipulate images in GIMP
4. Create basic 3D animations
5. Conceptual study of Interactive Animation and application
6. Create basic 3D models and animations

**Unit-I: 16 hr**

INTRODUCING MULTIMEDIA: The Importance of Multimedia – Impact of Multimedia – Configuration of a Multimedia PC – Taxonomy of Multimedia Objects – Multimedia Computer Components – Emerging Technology.

**Unit-II: 16 hr**

ELEMENTS OF GRAPHIC DESIGN: Point – Line – Shape – Form – Light – Color – Texture – Scale – Movement – Space – Balance – Proportion – Abstraction – Typography.

**Unit-III: 15 hr**

2D GRAPHICS WITH GIMP: Basic Computer Graphics – IMAGE MANIPULATION: Straightening – Cropping – Scaling – Perspective FIXING IMAGES: Assessing Images – Brightness and Darkness - Editing – Color – Brushes – Sharpening – Removing Noise.

**Unit-IV: 15 hr**

DIGITAL IMAGING PROJECTS: Layers – Adding Text to Images - Filters – Cloning - DIGITAL ART: Painting in GIMP – Tools – Advantages – Color Basics – Drawing in Gimp – Tools for Drawing – Drawing Freely – Drawing with Selections – Assistive Painting – Problems with Paths – Paths Dialog.

**Unit-V: 16 hr**

FUNDAMENTALS OF 3D: History of Graphics and Special Effects – 3D Hardware and Software – POLYGONS: 2D to 3D transformation – Meshes – Extruding – Edges and Edge Loops – UV coordinates – Aesthetics and Compatibility – NURBS: From Straight to Curvy – Nurb Surfaces – Advantages and Disadvantages – RENDERING: Image Size and Aspect –

Quality and Optimization – Antialiasing – Bucket Rendering – Batch Rendering – Network Rendering – Stylized Renders - Tools to Use.

**Textbooks**

1. Fred T. Hofstetter, “Multimedia Literacy 3rd Ed”, McGraw-Hill International, 2001. Unit: I
2. Richard Poulin, “The Language of Graphic Design - An Illustrated Handbook for Understanding Fundamental Design Principles”, Rockport Publishers, 2011. Unit: II
3. Jan Smith, Roman Joost, “GIMP for Absolute Beginners” Apress International, 2012. Units: III & IV
4. Ami Chopine, “3D ART ESSENTIALS The Fundamentals of 3D Modeling, Texturing, and Animation” Focal Press, 2011. Unit: V

**Books for Reference**

1. Daniel James “Crafting Digital Media: Audacity, Blender, Drupal, GIMP, Scribus, and Other Open Source Tools” Apress International, 2009.
2. John M Blain, “The Complete Guide to Blender Graphics Computer Modeling and Animation”, Taylor & Francis Group, 2012.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester II Course Outcomes (COs)	Code 18DCA2108	Title of the Paper CREATIVE VIRTUALIZATION AND IMAGE MANIPULATION										Hours 6	Credits 5	
		Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)							Mean Score of COs
		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1		4	4	3	4	3	4	4	3	4	4	3	4	3.6
CO2		4	4	4	3	4	4	4	4	4	4	4	3	3.7
CO3		4	4	3	4	4	4	4	4	3	4	4	4	3.7
CO4		4	4	4	5	4	4	4	4	4	4	4	4	4.1
CO5		4	4	3	4	3	4	4	4	3	4	3	4	3.6
CO6		4	4	4	5	4	4	4	4	4	3	4	4	4.0
<b>Grant Total</b>											<b>22.7</b>			
<b>Overall Mean Score for COs</b>												<b>3.7</b>		

To find out Relationship:

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}}$$

$$\text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

Values of Scaling:

Overall Mean Score:	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Result:	Very poor	Poor	Moderate	High	Very High

Result: The Score for this Course is 3.7 (High Relationship)

**Semester II**  
**18DCA2109**

**Hours/Week: 6**  
**Credits : 5**

**CUSTOMER RELATIONSHIP MANAGEMENT AND ERP**

**Course Outcomes:**

1. Learn the basic concepts of Customer Relationship Management
2. Emphasize the need for CRM in different Aspects
3. Understand the concept of Customer Satisfaction
4. Recognize various Technologies used in CRM
5. Extend their knowledge of Enterprise Resource Planning
6. Familiarize the concept of ERP implementation life cycle

**Unit-I:** **16 hr**  
CUSTOMER RELATIONSHIP MANAGEMENT FUNDAMENTALS: Theoretical perspectives of relationship - Evolution of relationship marketing - Stages of relationship - Issues of relationship- Purpose of relationship marketing. APPROACH TOWARDS MARKETING: A paradigm shift-Historical Perspectives - CRM Definitions- Emergence of CRM practice: CRM cycle - Stakeholders in CRM - Significance of CRM - Types of CRM - Success Factors in CRM - CRM Comprehension- CRM Implementation.

**Unit-II:** **16 hr**  
CUSTOMER SATISFACTION: Meaning-Definition-Significance of Customer Satisfaction- Components of Customer Satisfaction-Customer Satisfaction Models-Rationale of Customer Satisfaction-Measuring Customer Satisfaction-Customer satisfaction and marketing program evaluation-Customer Satisfaction Practices-Cases of Customer Satisfaction.

**Unit-III:** **16 hr**  
CUSTOMER RELATIONSHIP MANAGEMENT: Technology Dimensions - E-CRM in Business CRM: A changing Perspective-Features of e-CRM-Advantages of e-CRM- Technologies of e-CRM- Voice Portals-Web Phones-BOTs-Virtual Customer Representative-Customer Relationship Portals-Functional Components of CRM.

**Unit-IV:** **15 hr**  
ENTERPRISE RESOURCE PLANNING (ERP): an overview – benefits of ERP - ERP and related technologies – Business process reengineering - Data warehousing – Data mining – online analytical processing.

**Unit-V:** **15 hr**  
ERP IMPLEMENTATION: ERP implementation life cycle – ERP PRESENT AND FUTURE: ERP and E- Commerce – ERP and Internet.

**Textbooks**

1. Alok Kumar Rai: Customer Relationship Management: Concepts and Cases (Second Edition) -PHI Learning, 2012. Units I, II & III
2. Alexis Leon, “ERP Demystified”, 2nd Ed, Tata Mc Graw Hill publishing Company Ltd, New Delhi, 2008. Units IV & V

**Books for Reference**

1. Simon Knox, Adrian Payne, Stan Maklan: Customer Relationship Management- Routledge Inc, 2001.
2. Sheth J N, Parvatiyar A. and Shainesh G.: Customer relationship management: Emerging Concepts, Tools, & Applications, Tata McGraw-Hill Education, 2001.
3. Garg Vinod K & Venkitakrishnan N.K, Enterprise resource planning, Second edition, Prentice Hall of India, 2006 (ISBN 81-203-2254-1).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester II Course Outcomes (COs)	Code 18DCA2109	Title of the Paper CUSTOMER RELATIONSHIP MANAGEMENT & ERP										Hours 6	Credits 5	
		Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)						Mean Score of COs
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4			
CO1	4	4	3	4	3	4	4	4	4	3	4	3	3	3.6
CO2	4	3	4	4	4	4	4	4	4	4	4	4	4	3.8
CO3	4	4	3	4	3	3	3	4	4	4	4	4	4	3.6
CO4	3	4	3	3	4	4	3	4	4	3	4	4	4	3.5
CO5	3	4	5	3	3	3	5	4	4	4	3	3	3	3.7
CO6	4	4	3	4	4	4	4	4	4	4	3	3	3	3.7
<b>Grant Total</b>											<b>21.9</b>			
<b>Overall Mean Score for COs</b>											<b>3.6</b>			

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To find out Relationship:

$$\text{Mean Score of COs} = \frac{\text{Total of Values}}{\text{Total No. of POs \& PSOs}} \quad \text{Mean Overall Score for COs} = \frac{\text{Total of Mean Scores}}{\text{Total No. of COs}}$$

Values of Scaling:

Overall Mean Score:	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Result:	Very poor	Poor	Moderate	High	Very High

Result: The Score for this Course is 3.6 (High Relationship)

Semester II  
18DCA2110

Hours/Week: 5  
Credits : 4

**Software Lab-II:  
WEB DESIGN USING PHP**

**Course Outcomes:**

1. Create and Design Pages using HTML
2. Style pages using CSS
3. Create a simple web-based system to develop, Test and debug a simple PHP scripts
4. Design PHP scripts that are used to create and populate database
5. Test and debug object-oriented PHP scripts
6. Design and Manipulate forms to provide user authentication, and perform cookies manipulation

**List of Practical Exercises:**

1. Create Page Structure and Navigation using HTML
2. Create Form Input and Validation using HTML
3. CSS Selectors, Text and Drop Shadows
4. CSS Transition- Rotating Box and Gradients
5. Simple Programs and String Functions
6. Functions
7. Arrays
8. Form Validation and Cookies Manipulation
9. Database Operations - Insert, Update and Delete
10. Student Mark list

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