BCA

SEM	COURSE CODE	PART	COURSE	COURSE TITLE	INS. HRS /WEEK	CREDIT	MARKS		TOTAL
							CIA	ESE	
I	20U1LT1/LA1/LF1/LH1/LU1	I	Language – I		6	3	25	75	100
	20UCN1LE1	II	English - I		6	3	25	75	100
	20UCA1CC1	III	Core – I	Programming in C	5	5	25	75	100
	20UCA1CC2P		Core – II	C Programming Lab - Practical	3	2	20	80	100
	20UCA1AC1		Allied –I	Numerical and Statistical Methods	5	4	25	75	100
	20UCA1AC2		Allied –II	Digital Electronics	3	2	25	75	100
	20UCN1AE1	IV	AEC-I	Value Education	2	2	100	-	100
				TOTAL	**30**	**21**			**700**
II	20U2LT2/LA2/LF2/LH2/LU2	I	Language – II		6	3	25	75	100
	20UCN2LE2	II	English – II		6	3	25	75	100
	20UCA2CC3	III	Core – III	Programming in C++	6	5	25	75	100
	20UCA2CC4P		Core – IV	C++ Programming Lab - Practical	3	2	20	80	100
	20UCA2AC3		Allied – III	Operations Research	4	3	25	75	100
	20UCA2AC4		Allied –IV	Entrepreneurship Development	3	2	25	75	100
	20UCN2SE1	IV	Skill Enhancement Course – I @	Soft Skills Development	2	2	100	-	100
				TOTAL	**30**	**20**			**700**
III	20U3LT3/LA3/LF3/LH3/LU3	I	Language– III		6	3	25	75	100
	20UCN3LE3	II	English – III		6	3	25	75	100
	20UCA3CC5	III	Core– V	Java Programming	4	4	25	75	100
	20UCA3CC6P		Core– VI	Java Programming Lab - Practical	3	2	20	80	100
	20UCA3AC5		Allied– V	Principles of Accountancy	4	3	25	75	100
	20UCA3AC6P		Allied–VI	Accounting Package Lab - Practical	3	2	20	80	100
	20UCA3GE1	IV	Generic Elective – I #		2	2	-	100	100
	20UCN3AE2		AEC-II	Environmental Studies	2	2	100	-	100
				TOTAL	**30**	**21**			**800**
IV	20U4LT4/LA4/LF4/LH4/LU4	I	Language–IV		6	3	25	75	100
	20UCN4LE4	II	English– IV		6	3	25	75	100
	20UCA4CC7	III	Core– VII	Data Structures	5	5	25	75	100
	20UCA4CC8		Core - VIII	Multimedia and its Applications	3	2	25	75	100
	20UCA4AC7		Allied– VII	Scripting Languages	5	3	25	75	100
	20UCA4AC8P		Allied–VIII	Scripting Languages Lab - Practical	3	2	20	80	100
	20UCA4GE2	IV	Generic Elective – II #		2	2	-	100	100
	20UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
				TOTAL	**30**	**21**			**700**
V	20UCA5CC9	III	Core – IX	Operating Systems	6	5	25	75	100
	20UCA5CC10		Core – X	Database Management Systems	5	5	25	75	100
	20UCA5CC11		Core – XI	Python Programming	5	5	25	75	100
	20UCA5CC12P1		Core - XII (a)	RDBMS Lab - Practical	2	2	10	40	50
	20UCA5CC12P2		Core - XII (b)	Python Programming Lab - Practical	3	3	10	40	50
	20UCA5DE1A/B		DSE – I **		5	4	25	75	100
	20UCA5SE2AP/BP	IV	Skill Enhancement Course – II @		2	2	-	100	100
	20UCA5SE3AP/BP		Skill Enhancement Course – III @		2	2	-	100	100
	20UCA5EC1		Extra Credit Course - I	General Intelligence for competitive examinations	-	4*	--	100*	100*
				TOTAL	**30**	**28**			**700**
VI	20UCA6CC13	III	Core– XIII	Data Communications and Networking	5	5	25	75	100
	20UCA6CC14		Core– XIV	Internet of Things	5	5	25	75	100
	20UCA6CC15		Core - XV	Software Engineering	5	5	25	75	100
	20UCA6CC16P		Core - XVI	Software Development Lab- Practical	5	5	20	80	100
	20UCA6DE2A/B		DSE – II **		5	4	25	75	100
	20UCA6DE3AP/BP		DSE – III **		4	4	20	80	100
	20UCN6AE3	IV	AEC-III	Gender Studies	1	1	100	-	100
	20UCA6EC2		Extra Credit Course - II	Computer Applications for competitive examinations	-	4*	--	100*	100*
	20UCAAECA		Extra Credit Course for all	Online Course	-	1*	--		
				TOTAL	**30**	**29**			**700**
				GRAND TOTAL	**180**	**140**			**4300**

*** Not Considered for Grant Total and CGPA.**

GENERIC ELECTIVE FOR OTHER MAJOR DEPARTMENT

SEMESTER	COURSE CODE	COURSE TITLE
III	20UCA3GE1	Office Automation
IV	20UCA4GE2	Image Editing Tools

@ SKILL ENHANCEMENT COURSE

SEMESTER	COURSE CODE	COURSE TITLE
V	20UCA5SE2AP	VB .Net Lab - Practical
	20UCA5SE2BP	C# .Net Programming Lab – Practical
	20UCA5SE3AP	Data Analytics Tool – Practical
	20UCA5SE3BP	Software Testing Tools - Practical

* DISCIPLINE SPECIFIC ELECTIVES

SEMESTER	COURSE CODE	COURSE TITLE
V	20UCA5DE1A	VB .Net
	20UCA5DE1B	C# .Net Programming
VI	20UCA6DE2A	PHP Programming
	20UCA6DE2B	R Programming
	20UCA6DE3AP	PHP Programming Lab - Practical (20 + 80 = 100 Marks)
	20UCA6DE3BP	R Tools Lab - Practical (20 + 80 = 100 Marks)

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
I	20UCA1CC1	CORE – I	PROGRAMMING IN C	5	5	100	25	75

Course Outcomes (CO):

1. Use C language as the base for higher level course in programming
2. Acquire the basic constructs of programming languages.
3. Applystructured approach in program design
4. Apply suitable logic in solving problems
5.Develop applications to solve real world problems

UNIT I **15 hours**

Getting Started with C - C Instructions– Decision Control Structure: The *if*Statement – The *if-else* Statement - Use of Logical Operators - **# The Conditional Operators #**.

UNIT II **15 hours**

The Loop Control Structure: The *while* Loop –The *for* Loop – The *break* Statement – The *continue* Statement – The *do-while* Loop – The odd loop.
Case Control Structure: Decisions using*switch* – *switch*Versus if-else Ladder -**#The *goto* keyword#**.

UNIT III **15 hours**

Functions and Pointers: Passing values between Functions – Scope Rule of Functions – Calling Convention – Using Library Functions – Advanced Features of Functions – **#Adding Functions to the Library #**.
The C Preprocessor: Features of C Preprocessor – Macro Expansion – File Inclusion – Conditional Compilation – #*if* and #*elif* Directives – **# Miscellaneous Directives #** – The Build Process.

UNIT IV **15 hours**

Arrays – More on Arrays – Pointers and Arrays – Two dimensional Arrays – Array of Pointers –**# Three-Dimensional Array #**
Strings: More about Strings – Pointers and Strings – Standard Library String Functions – Two-Dimensional Array of Characters – Array of Pointers to Strings – Limitation of Array of Pointers to Strings.

UNITV **15 hours**

Structures: Array of Structures – Additional Features of Structures – Uses of Structures. Console Input / Output – Types of I/O – Console I/O Functions. File Input / Output: Data Organization – File Operations – Counting Characters, Tabs, Spaces – A File-Copy Program – File Opening Modes. – **# String (Line) I/O in Files #** - Record I/O in Files.

 # ..... # Self-study portion

Text Book:

YashavantKanetkar, *Let Us C*, BPB Publications, New Delhi, 13th Edition, 2013.

UNITI : Chapters 1, 2& 3
UNITII : Chapters 4 &5
UNITIII : Chapters 6&8
UNITIV : Chapters 9 & 10
UNITV : Chapters 11, 12 & 13

Books for References:

1. E. Balagurusamy, *Programming in ANSI C*, Tata McGraw Hill Education Private Ltd., Fifth Edition, 2011.
2. D. Ravichandran, *Programming in C*, New Age International (P) Ltd., First Edition, 1996.

Web Reference:

https://www.programiz.com/c-programming

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

Semester	Code	Title of the Course	Hours	Credits
I	20UCA1CC1	PROGRAMMING IN C	5	5

Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓		✓		
CO2	✓	✓				✓	✓	✓	✓	
CO3	✓	✓	✓	✓		✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches (✓) = 40, Relationship: High										

Prepared by:

1. O.S. Abdul Qadir

Checked by:

1. M. Kamal

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
I	20UCA1CC2P	CORE – II	C PROGRAMMING LAB - Practical	3	2	100	20	80

Develop a program in C

1. Using assignment statements.
2. Using different forms of Ifstatement.
3. To demonstrate Logical operators
4. Using While, Do-While & For Loop
5. Using Switch
6. To illustrate the use of Functions& Pointers
7. Using Macro definitions to test whether a character is uppercase or lowercase
8. Tomake use of arrays.
9. To manipulate Strings.
10. To demonstrate structure.
11. Using console I/O Functions.
12. To copy the contents of one file into another

Prepared by:

1. O.S. Abdul Qadir

Checked by:

1. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
I	20UCA1AC1	ALLIED – I	NUMERICAL AND STATISTICAL METHODS	5	4	100	25	75

Course Outcomes (CO):

1. Examine methods for algebraic and transcendental equations with examples
2. Demonstrate and discuss System of Linear Equations with examples
3. Apply domain knowledge for Measures of Central Tendency and skewness.
4. Remember and illustrate the examples of Conditional Probability.
5.Classification and study of Bivariate distributions with examples.

UNIT I **15 hours**

Solution of algebraic and transcendental equations- Bisection method- Method of Successive Approximation or the Iteration method– Newton Raphson Method (This unit contains Problems only).

UNITII **15 hours**

Solution of System of Linear Equations – Gauss Elimination Method, Gauss Jordan Method, Gauss Jacobi Method– Gauss Seidel Method(This unit contains Problems only).

UNIT III **15 hours**

Measures of Central Tendency – Measures of Dispersion-Measures of skewness.(This unit contains Problems only).

UNITIV **15 hours**

Theory of Probability – Definitions of Probability – Sample Space –**# Probability of an Event #**– Independence of Events – Theorems on Probability – Conditional Probability – Baye's Theorem.

UNITV **15 hours**

Correlation (two variables only) – Karl Pearson's Correlation Coefficient and its properties. Spearman's rank correlation coefficient (repeated and non-repeated). Lines of regression – Definition – **# Properties of regression coefficients #** – Simple problems.

 # ..... # Self-study portion

Text Book:

1. Dr.P.Kandasamy, Dr.K.Thilagavathy, Dr.K.Gunavathi, Numerical Methods,S. Chand, First Edition,2008.

2. S.C. Gupta, V.K. Kapoor, Fundamentals of Mathematical Statistics, Sulthan Chand & Sons, Eleventh Edition, 2002.

UNIT I : Chapter 3 – Section 3.1, 3.2, 3.4 **(T.B.1)** **UNITII** : Chapter 4 - Section: 4.2,4.8, 4.9 **(T.B.1)**
UNITIII : Chapter 2 - Section: 2.5 to 2.9
Chapter 3 – Section 3.3 to 3.7, 3.13 (**T.B.2)** **UNITIV** : Chapter 4 - Section-4.5 to 4.8 **(T.B.2)**
UNITV : Chapter 10 - Section: 10.3, 10.6, 10.7.1, 10.7.3, 10.7.4**(T.B.2)**

Books for References:

1. S.S. Sastry, Introductory Methods of numerical analysis, Prentice Hall of India Pvt. Ltd., 2004.
2. S.C. Gupta, V.K. Kapoor, Elements of Mathematical Statistics, Sultan Chand & Sons, 2009.

Web Reference:

1. https://nptel.ac.in/courses/111/107/111107105/
2. https://nptel.ac.in/courses/111/106/111106112/

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

Semester	Code	Title of the Course	Hours	Credits
I	20UCA1AC1	NUMERICAL AND STATISTICAL METHODS	5	4

Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓	✓		✓	✓	✓	
CO2	✓		✓		✓	✓		✓	✓	
CO3	✓	✓		✓	✓	✓	✓	✓	✓	✓
CO4			✓		✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓		✓		✓		✓
Number of matches (✓) = 35, Relationship: High										

Prepared by:

1. Dr. V. Krishnan

Checked by:

1. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
I	20UCA1AC2	ALLIED – II	DIGITAL ELECTRONICS	3	2	100	25	75

Course Outcomes (CO):

1. Perform number conversions from one number system to another and understand the usage of various binary codes
2. Apply Boolean laws and theorems to simplify Boolean expressions
3. Implement Boolean expressions using gate networks
4. Understand the working of combinational circuits
5. Understand the working of sequential circuits

UNIT I **9 hours**

Binary Systems – Digital Computers and Digital Systems-Binary Numbers-Number Base Conversion- Octal and Hexadecimal Number Systems – Number Base Conversion –Complements-Subtraction with r's and (r-1)'s Complements.

UNIT II **9 hours**

Binary Codes – 8421, 2421, Excess-3, Reflected Code – Error Detection Codes – Alphanumeric Code - Basic Logic Gates.

UNIT III **9 hours**

Boolean Algebra: Basic Definitions-Axiomatic Definition of Boolean Algebra-Basic Theorems and Properties of Boolean Algebra– **#Boolean Functions#** –Canonical and Standard Forms- Simplification of Boolean Functions: Map Method –Two and Three Variable Maps - Four Variable Map.

UNIT IV **9 hours**

Combinational Logic –Adders, Subtractors- Binary Parallel Adders – Decimal Adder –Decoders – Encoders - Multiplexers –**#Demultiplexers#**.

UNIT V **9 hours**

Sequential Logic – Flip Flops: Clocked RS, JK and D Flip Flops – **#Shift Register#** – 4-bit Binary Ripple Counter – BCD Ripple Counter.

 # ..... # self-study portion

Text Book:

Morris Mano M, Digital Logic and Computer Design, Pearson Education, Inc., 1979

UNITI : Chapter 1 (Section 1.1 – 1.5)
UNITII : Chapter 1 (Section 1.6,&1.8)
UNITIII : Chapter 2 (Section 2.1 – 2.5) & Chapter 3(Section 3.1-3.3)
UNITIV : Chapter 4 (Section 4.1- 4.4) & Chapter 5 (Section 5.2,5.3,5.5-5.6)
UNITV : Chapter 6 (Section 6.2, 6.3) & Chapter 7 (Section 7.3-7.4)

Books for References:

1. Donald P. Leach and Albert Paul Malvino, GoutamSaha, *Digital PrinciplesandApplications*, TMH, Sixth Edition, 2006.

2.Thomas C. Bartee, Digital Computer Fundamentals, Tata McGraw Hill, 6th Edition, 25th Reprint, 2006.

Web Reference:

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

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

Semester	**Code**		**Title of the Course**			**Hours**			**Credits**	
I	**20UCA1AC2**		**DIGITAL ELECTRONICS**			**3**			**2**	
Course Outcomes COs	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	✓	✓		✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓		✓	✓	✓	✓	✓
CO4	✓	✓	✓	✓		✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓		✓	✓	✓	✓	✓
Number of matches (✓) = 43, Relationship: High										

Prepared by:

1. Dr. S. Abdul Saleem

Checked by:

1. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
II	20UCA2CC3	CORE – III	PROGRAMMING IN C++	6	5	100	25	75

Course Outcomes (CO):

1.Acquire skills in object oriented programming concepts
2.Use object oriented concepts as the base for higher level course in programming
3.Differentiate structured and object-oriented programming.
4. Identify classes, objects, members of a class and the relationships among them needed for finding the solution to specific problem
5.Develop object oriented programs to solve real life problems

UNIT I **18 hours**

Object Oriented Programming concepts: Basic concepts of OOPS-Structure of C++ Program- Tokens-Keywords-Identifiers-constants-Basic data types-User defined data types-Derived data types-Declaration of variables-Reference Variables - Manipulators - Operator in C++ - Scope Resolution Operator - Type cast Operator - Expression and its types - **#control structures#**

UNIT II **18 hours**

Functions: Main Function - Call by reference - Inline function - Function overloading - Default arguments - Math Library functions - Classes and Objects:Specifying the class –Defining Member Function –A C++ Program with class - Nesting of Member Function - Arrays within a class - Static data members and Static member functions - **#Friend Function#**- Returning Object

UNIT III **18 hours**

Constructor and Destructor: Constructors - Parameterized constructor - Multiple constructor in a class - Dynamic initialization of the objects - Copy constructor - Dynamic constructor - Destructor. Operator Overloading and Type conversion: Defining operator overloading - Overloading unary operator - **#Type conversion#**

UNIT IV **18 hours**

Inheritance: Introduction - Single Inheritance - Multilevel inheritance - Multiple inheritance - Virtual base classes. Polymorphism: Pointers - Pointer to objects - this pointer - Pointer to derived classes - **#Virtual Functions#**

UNIT V **18 hours**

Working with Files: Introduction - Classes for File stream - Opening and closing the file - Detecting end of file - File modes. Templates: Introduction - Class templates - Class templates with multiple parameters - Function templates

 # ..... # self-study portion

Text Book:

E.Balagurusamy, *Object Oriented Programming with C++*, [Fourth Edition], Tata McGraw Hill Publications, 2008

UNIT I : 1.5, 2.6, 3.2 – 3.7, 3.10, 3.17, 3.13, 3.14, 3.18, 3.24
UNIT II : 4.2, 4.4, 4.6, 4.7, 4.9, 4.11, 5.3 - 5.7, 5.9, 5.11, 5.12, 5.15 – 5.16
UNIT III : 6.2, 6.3 – 6.8, 7.1 – 7.3
UNIT IV : 8.1, 8.3, 8.5 – 8.7, 9.1 – 9.6
UNIT V : 11.1 – 11.5, 12.1 – 12.4, 12.7

Books for Reference:

1. Herbert Schildt, *Teach yourself C++*, Third Edition, TataMcGraw Hill Publications, 2008

Web Reference:

https://www.programiz.com/cpp-programming
https://www.tutorialspoint.com/cplusplus/index.htm

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

Semester	Code		Title of the Course			Hours			Credits	
II	20UCA2CC3		PROGRAMMING IN C++			6			5	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓		✓		✓		
CO2	✓	✓		✓		✓		✓		
CO3	✓	✓		✓		✓		✓	✓	✓
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches (✓) = 37, Relationship: High										

Prepared by:

1. S. Peerbasha

Checked by:

1. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
II	20UCA2CC4P	CORE – IV	C++ PROGRAMMING LAB - Practical	3	2	100	20	80

Develop a program in C ++

1. To calculate the area and perimeter of any two basic shapes
2. Using different forms of If-Else statement
3. Using While, Do-While & For Loop
4. To illustrate Function Overloading
5. To print your personal details such as name, Roll no, Gender (M/F), Marks for five subjects, Total, Result (Pass/Reappear) by taking input from the user and displaythe same using two member functions
6. To illustrate Friend function
7. To illustrate class with constructors
8. To illustrate Operator Overloading
9. To implement the concept of Single level inheritance
10. To implement the concept of Multi level inheritance
11. To merge the contents of two files
12. To illustrate Function Templates

Prepared by:

1. S. Peerbasha

Checked by:

1. O.S. Abdul Qadir

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
II	20UCA2AC3	ALLIED – III	OPERATIONS RESEARCH	4	3	100	25	75

Course Outcomes (CO):

1.Demonstrate and study of operations research and illustrate the examples of mathematical formulation
2. Classification and study of Transportation problem and Assignment problems with examples
3. Analyze machine elapsed times with examples
4. Illustrate the Replacement Problems suitable examples.
5. Construct the networks and plan execution with examples.

UNIT I **12 hours**

Introduction to Operations Research – Mathematical Formulation of the problem –Graphical Solution Method – Simplex method.

UNIT II **12 hours**

Transportation problem – North West corner rule – Least cost method – Vogel's approximation Method – Assignment problems.

UNIT III **12 hours**

Sequencing Problems: Introduction – Problem of sequencing – Basic term used in sequencing – Processing n Jobs through 2 machines – Processing n Jobs through k machines – **# Processing 2 Jobs through k machines #**.

UNIT IV **12 hours**

Replacement Problems – Introduction – Replacement of Equipment / asset that Deteriorates Gradually– **# Replacement of Equipment that fails suddenly #**.

UNIT V **12 hours**

Network scheduling by PERT/CPM – Introduction – Network and basic components – Rules of network construction – Critical path analysis – Probability consideration in PERT – **# Distinction between PERT and CPM #**.

 # ..... # Self-study portion

Text Book:

KantiSwarup, P.K. Gupta and Man Mohan, Operations Research, Sultan Chand and Sons Publishers, New Delhi, Thirteenth Edition, Reprint 2008.

UNIT I : Chapter 2 (sections 2.1, 2.2) Chapter 3 (sections 3.1, 3.2) Chapter 4 (sections 4.1, 4.4)
UNITII : Chapter 10 (sections 10.1, 10.2, 10.5, 10.8, 10.9) Chapter 11 (sections 11.1, 11.2, 11.3, 11.4)
UNITIII : Chapter 12 (sections 12.1 to 12.6)
UNITIV : Chapter 18 (sections 18.1 to 18.3)
UNITV : Chapter 25 (sections 25.1, 25.2, and 25.4 to 25.7)

Books for References:

1. Sharma, S.D., "Operations Research", KedarNath Ram Nath& Co. (15th Edition), 2010.
2. Richard Bronson, Theory and Problems of Operations Research, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1982.

Web Reference:

https://nptel.ac.in/courses/111/107/111107128/

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

Semester	Code		Title of the Course			Hours			Credits	
II	20UCA2AC3		OPERATIONS RESEARCH			4			3	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓	✓	✓		✓		✓
CO2	✓	✓		✓	✓	✓		✓		✓
CO3	✓		✓	✓	✓		✓		✓	✓
CO4	✓	✓	✓			✓	✓	✓	✓	
CO5		✓	✓	✓	✓		✓		✓	✓
Number of matches (✓) = 35, Relationship: High										

Prepared by:

1. Dr. V. Krishnan

Checked by:

1. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
II	20UCA2AC4	ALLIED – IV	ENTREPRENEURSHIP DEVELOPMENT	3	2	100	25	75

Course Outcomes (CO):

1.Communicate the major concepts of entrepreneurship.
2. Understand Entrepreneurial Motivation and Mobility.
3. Innovate, prototypes or ideas by applying theory into practice.
4. Explain process of setting up of service unit/industry.
5. Describe about support institutions and schemes.

UNIT I **9 hours**

Entrepreneurship

Meaning and Importance - Evolution of term Entrepreneurship - Factors influencing entrepreneurship (Psychological factors, Social factors, Economic factor, Environmental factors) - Characteristics of an entrepreneur - Types of entrepreneurs- **# Rural entrepreneurship, Women entrepreneurship#** - Intrapreneur.

UNIT II **9 hours**

Entrepreneurial Motivation and Mobility

Entrepreneurial Motivation - Meaning – Motivation Theories – Motivating factors – **#Achievement Motivation#** – Entrepreneurial Mobility – Factors influencing Entrepreneurial Mobility – Occupational Mobility – Locational Mobility.

UNIT III **9 hours**

Creativity, Innovation and Idea Generation

Creativity Innovation and entrepreneurship – Creativity Process - **#Components of Creative Performance#** – Selecting Business Ideas – Methods of Generating New Ideas – Dynamics of Project Identification.

UNITIV **9 hours**

Setting Small Enterprises

Introduction – Project Identification and Selection – Project Formulation – Project Appraisal – Financing of Enterprise – **#Ownership Structures#**.

UNITV **9 hours**

Support to Entrepreneurs

A brief overview of financial institutions in India – NSIC, SIDO, SSIB, SSICS, SISI, DICs, Industrial Estates- Sickness in small Business –causes and consequences, Corrective Measures – **# Government Policy for Small Scale Enterprises#** – Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

 # ..... # Self-study portion

Text Book:

1. Khanka, S S. 'Entrepreneurial Development', S Chand & Company Ltd. New Delhi
   UNIT I, UNIT II, UNIT IV and UNIT V
2. SatishTaneja, S.L. Gupta, 'ENTREPRENEUR DEVELOPMENT – New Venture Creation', Galgotia Publishing Company, New Delhi.
   UNIT III

Books for References:

1. Rabindra N. Kanungo "Entrepreneurship and innovation", Sage Publications, New Delhi.
2. Tendon ,C: Environment and Entrepreneur; Cliugh Publications, Allahabad.
3. SinerA David: EntrepreneuralMegabuks; John Wiley and Sons, New York.
4. Srivastava S. B: A Practical Guide to Industrial Entrepreneurs; Sultan Chand and Sons, New Delhi.
5. Prasanna Chandra: Protect Preparation, Appraisal, Implementation; Tata McGraw Hill. New Delhi.

Web References:

http://ediindia.ac.in/e-policy/ [Entepreneurial Policy India]
http://en.wikipedia.org/wiki/List_of_venture_capital_companies_in_India [Venture Capital]
indiavca.org/venture-capital-in-india.html [Venture Capital]
www.bplans.com/ [BUSINESS PLAN]
www.entrepreneur.com/businessplan [BUSINESS PLAN]
http://www.preservearticles.com/201101143322/functions-of-an-entrepreneur.html
https://ecestudy.files.wordpress.com/2015/02/entrepreneur-types-and-functions.pdf
https://www.entrepreneur.com/article/293463
http://www.yourarticlelibrary.com/entrepreneur/entrepreneurship-characteristicsimportance-types-and-functions-of-entrepreneurship/5228
http://www.simplynotes.in/mbabba/entrepreneurial-motivation-meaning-definitionnature-and-factors/
http://www.simplynotes.in/mbabba/role-of-government-in-promoting-entrepreneurship/
http://www.yourarticlelibrary.com/entrepreneurship/entrepreneurship-development-programmes-meaning-need-and-objectives-of-edp/40707

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

Semester	**Code**		**Title of the Course**			**Hours**			**Credits**	
II	**20UCA2AC4**		**ENTREPRENEURSHIP DEVELOPMENT**			**3**			**2**	
Course Outcomes COs	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	✓			✓	✓	✓	✓			
CO2	✓			✓	✓	✓				
CO3	✓	✓		✓	✓	✓	✓	✓		✓
CO4	✓	✓	✓	✓	✓	✓	✓			✓
CO5	✓	✓	✓	✓	✓	✓	✓			✓
Number of matches (✓) = 33, Relationship: Moderate										

Prepared by:

1. Dr. A. Selvarani

Checked by:

1.O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UCA3CC5	CORE – V	JAVA PROGRAMMING	4	4	100	25	75

Course Outcomes (COs):

At the end of the course, students will be able to

1. Understand the basic building blocks, control statements, arrays and strings in Java Programming
2. Implement the concepts of classes, objects, inheritance, polymorphism, packages and interfaces
3. Apply the exception handling mechanism in single and multithreaded programming
4. Develop the window based programs from basic level to file operations using Applet
5. Develop the simple applications using awt components

UNITI **12 hours**

Introduction to Java Programming: Introduction – Features of Java –JavaDeveloper Kit. Java Language Fundamentals: The Building Blocks of Java – Data Types – VariableDeclarations: Declaring, Initializing and Variables – Variable Types in Java. Wrapper Classes –Operators and Assignment – Control Structures – Arrays – # Strings #

UNITII **12hours**

Java as an OOP Language – Defining Classes – Defining Methods – Knowing This – PassingArguments to Methods – Overloading Methods – Constructor Methods – Inheritance– OverridingMethods – Modifiers: The Four Ps of Protection – Finalizing Classes, Methods and Variables – AbstractClasses and Methods – Packages – Interfaces

UNITIII **12hours**

Exception Handling: Introduction – Basics of Exception Handling in Java – Exception Hierarchy – Constructors and Methods in Throwable Class – Handling Exceptions in Java – Throwing User Defined Exceptions. Multithreading – Overview of Threads – Creating Threads – Thread Life-cycle – # Thread Priorities and Thread Scheduling #

UNITIV **12hours**

Files and I/O Streams: Java I/O – File Streams – FileInputStream and FileOutputStream – FilterStreams– RandomAccessFile – Serialization. Applets: Introduction – Java Applications Versus Java Applets –Applet Life Cycle – Working with applets – The HTML APPLET Tag

UNITV **12hours**

The Abstract Window Toolkit: Basic Classes in AWT – Drawing with Graphics class - Class Hierarchyin AWT – Event Handling – AWT Controls – # Layout Managers #

 # ..... # Self-study portion

Text Book:

P. Radha Krishna, *Object Oriented Programming through JAVA*, Universities Press, 2008

UNIT I : Chapter 1 & 2 **UNIT II :** Chapter 3 **UNIT III** : Chapter 5 & 6
UNIT IV : Chapter 7 & 8 **UNIT V :** Chapter 10

Book for Reference:

Herbert Schildt, *The Complete* Reference Java, Fifth Edition, Tata McGraw-Hill, 2015

Web Reference:

https://www.programiz.com/java-programming

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

Semester	Code		Title of the Course			Hours			Credits	
III	20UCA3CC5		JAVA PROGRAMMING			4			4	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓		✓		
CO2	✓	✓				✓	✓	✓	✓	
CO3	✓	✓	✓	✓		✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches (✓) = 40, Relationship: High										

Prepared by:

Mr. M. Kamal

Checked by:

Mr. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UCA3CC6P	CORE – VI	JAVA PROGRAMMING LAB - Practical	3	2	100	20	80

Develop the programs using Java

1. Using Control Statements
    a) Find the prime numbers between 1 to 100
    b) Count the number of digits for given integer using while loop
    c) Find the smallest and biggest digit in 6 digits number using for loop
    d) Self exercise
2. Using String handling functions
    a) Find the ASCII character value of your name
    b) Count the total number of vowels and consonants in a given string
    c) Self exercise
3. To find the perimeter of circle and rectangle using class and objects
4. To demonstrate the following inheritance
    a) Single Inheritance
    b) Multilevel inheritance
5. To demonstrate the concepts
    a) Area of the shapes (interface)
    b) Abstract Class
6. Using package to prepare an EB bill / Telephone bill / Student mark sheet with suitable fields
7. Demonstrate multiple catch clauses
8. Using Thread concept to solve the following
    a) Display the System date and time with specific time interval using extends Thread class
    b) Display a set of numbers. If 25 even numbers have been displayed stop the thread and initiate a new thread class for displaying 25 odd numbers
9. Find the properties of a given directory name
10. Draw a human face using Graphics class
11. Demonstrate the layout managers
    a) BorderLayout
    b) GridLayout
12. Using AWT controls to create a login page

Prepared by: Mr. M. Kamal

Checked by: Mr. O.S. Abdul Qadir

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UCA3AC5	Allied– V	Principles of Accountancy	4	3	100	25	75

Course Outcomes (COs):

At the end of the course, students will be able to

1. State/outline the nature of financial accounting
2. Recognize the basics of financial accounting
3. Analyze assigned questions, exercises and problems
4. Participate in class, to complete written homework assignments and to interact with otherclassmates
5. Participate in collaborative learning, problems and cases in financial accounting selected tofoster cooperative learning

UNITI **12 hours**

Meaning of Accounting – Meaning and Objects of Book Keeping – Accounting Concepts and Conventions – #Principles of Double Entry# – Kinds of Account – Journal and Ledger accounts

UNITII **12hours**

Subsidiary Books – Purchase Book, Sales Book, Purchase Returns Book, Bills Receivable Book, Bills Payable Book, Cash Book, Analytical Petty Cash Book and Journal Proper –Bank Reconciliation Statement

UNITIII **12hours**

Trail Balance –# Preparation# – Errors Disclosed and Errors Not Disclosed by its Suspense account – Rectification of Errors

UNITIV **12hours**

Preparation of Final Accounts – Trading Account, Profit and Loss Account, Balance Sheet – Adjustingand Closing Entries. Methods of Depreciation Fixed Percentage on Original Cost Method andDiminishing Balance Method Only

UNITV **12hours**

Bills of Exchange – #Bill Transaction, Discounting Endorsement# – Sending Bill for Collection, Notingof a Bill, Renewal of a Bill – Insolvency of Acceptor

80% - Problems 20% - Theory

 # ..... # Self-study portion

Text Book:

N. Vinayakam, P.L. Mani, K.L. Nagarajan, *Principles of Accountancy*, EURASIA Publishing HousePVT Ltd., Ne w Delhi, Revised Edition, 2002

UNIT I : Chapter 1 & 2 **UNIT II** : Chapters 3 & 7 **UNIT III** : Chapter 4
UNIT IV : Chapter 6 **UNIT V** : Chapter 8

Book for Reference:

M.C. Shukla, T.S. Grewal, *Advanced Accounts,* Eleventh Edition, S. Chand& Company Pvt. Ltd,Reprinted, 1988

Web Reference:

https://www.accountingcoach.com/accounting-principles/explanation

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

Semester	Code		Title of the Course			Hours			Credits	
III	20UCA3AC5		Principles of Accountancy			4			3	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓		✓	✓		✓	
CO2		✓	✓	✓	✓			✓	✓	✓
CO3	✓	✓	✓	✓		✓	✓	✓	✓	✓
CO4	✓	✓	✓			✓	✓	✓	✓	✓
CO5	✓	✓			✓	✓			✓	
Number of matches (✓) = 35, Relationship: High										

Prepared by:

Dr. Y. Rasheed Khan

Checked by:

Mr. M. Kamal

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UCA3AC6P	ALLIED– VI	ACCOUNTING PACKAGE LAB - Practical	3	2	100	20	80

Solve the following problems using Tally ERP software

1. Architecture and customization of Tally
2. Configuration of Tally
3. Tally Screens and Menus
4. Creation of new company and groups
5. Preparation of voucher entries
    a.Payment voucher
    b.Receipt voucher
    c.Sales voucher
    d.Purchase voucher
    e.Contra voucher
    f.Journal voucher
6. Ledger Creation
7. Preparation of Trail balance
8. Preparation of Profit and Loss statement.
9. Preparation of Balance Sheet
10. Preparation of Bank Reconciliation Statement
11. Creation of Inventory reports
    a. Stock groups
    b. Stock items
    c. Unit measurement
    d. Single and multiple Godown

Prepared by: **Checked by:**

Dr. Y. Rasheed Khan Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UCA3GE1	GENERIC ELECTIVE – I	OFFICE AUTOMATION	2	2	100	--	100

Course Outcomes (COs):

At the end of the course, students will be able to

1. Understand the basic knowledge of computer and components of computer in education.
2. Perform common functional operations in Windows and apply the menus in MS-Word.
3. Understand the menus and Toolbars in MS-Excel.
4. Understand the components of MS-PowerPoint.
5. Understand the Database Create and usage of MS-Access**.**

UNIT I **6 hours**

Introduction- Introduction to computers: What is computer-What's so special about computer- History of Computers: Evolution – The first computer-Next Generations- Basic Anatomy of Computers: The Basic Components – # Functioning of the Components#

UNIT II **6 hours**

MS-WORD – Word Basics: Starting Word - Creating document - Parts of Word window- # Mouse and KeyboardOperations # – The Most important Keys – Formatting Features –Menus – Toolbars and their Icons

UNIT III **6 hours**

MS-EXCEL - Excel Basics: Introduction:Navigating - Selecting cells - Selecting cells with mouse -# Entering and editing text # -Entering numbers Entering Formulas -Entering dates - Alignment -Menus –Toolbars - Icons

UNIT IV **6hours**

MS-POWERPOINT –Navigating in PowerPoint: Creating a new Presentation - Opening a Presentation –Creating a New Slide - Saving and Closing a Presentation - Working with PowerPoint: Inserting Picture – Inserting Text – # Design Template # – Saving the Presentation-Closing a Presentation

UNIT V **6 hours**

MS-Access: Introduction: What is Database – Parts of an Access Window – Starting MS - Access –Creating a New Database – Creating a database through table Wizard - Creating a new table – # Rename Columns # -Saving the Database – Relationships

 # ..... # Self-study portion

Text Book:

Sanjay Saxena, MS Office 2000 for Everyone, Vikas Publishing, 2001

Book for Reference:

Archana Kumar, Computer Basics with Office Automation, First Edition, 2010

Web References:

http://www.bcpls.org/Docs/Computer_Handouts/Word101.pdf

http://www.itdesk.info/Microsoft%20Excel%202010%20notes.pdf

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

Semester	Code		Title of the Course			Hours			Credits	
III	20UCA3GE1		OFFICE AUTOMATION			2			2	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓		✓	✓			✓
CO2	✓		✓	✓	✓	✓		✓	✓	✓
CO3		✓	✓	✓		✓	✓		✓	✓
CO4	✓		✓	✓		✓	✓		✓	✓
CO5		✓		✓	✓	✓		✓	✓	
Number of matches (✓) = 34, Relationship: Moderate										

Prepared by:

Ms. S. Prabavathy

Checked by:

Ms. Tamil Fathima

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UCA4CC7	CORE – VII	DATA STRUCTURES	5	5	100	25	75

Course Outcomes (COs):

At the end of the course, students will be able to

1. Acquire knowledge in the representation of arrays and linked lists
2. Implement the application of arrays and linked lists in various structures
3. Evaluate the use of stack, queue, trees and graphs
4. Describe the concept of graphs and their application
5. Apply the appropriate structures in problem solving

UNITI **15 hours**

INTRODUCTION TO DATA STRUCTURES: Overview – The Need for Data Structures - Definitions – Data Structures. ARRAYS: Overview – Introduction – Range of an Array – Primitive operations – Element Access in an Array – One-dimensional Array - Two-dimensional Array Multidimensional Arrays. LINKED LISTS - Overview – Introduction – Memory Allocation – Benefits – Limitations – Types – Basic Operations – Singly Linked Lists – Simple Algorithms on Linked Lists - Circular Linked Lists - Doubly Linked Lists

UNITII **15hours**

STACKS, QUEUES AND RECURSION: Introduction – Stacks – Array and Linked Representations of Stacks – Arithmetic Expressions; Polish Notation – Recursion: Towers of Hanoi – Queues: Array representation of Queue - # Linked representation of Queues – Deques #

UNITIII **15hours**

TREES: Introduction – Binary Trees– Representing Binary Tress in Memory – Traversing Binary Trees - Traversal Algorithms using Stacks – # Header Nodes # - Binary Search Trees – Searching and Inserting in Binary Search Trees – Deleting in a Binary Search Tree - Heap Sort

UNITIV **15hours**

GRAPHS AND THEIR APPLICATIONS: Sequential Representation of Graphs – Warshall's Algorithm – Linked Representation of a Graph – Operations on Graphs – Traversing a Graph – Topological Sorting

UNITV **15hours**

SORTING AND SEARCHING: Introduction – Insertion Sort – Selection Sort – # Merging – Merge Sort – Radix Sort # – Quick Sort - Searching and Data Modification – Hashing

 # ..... # Self-study portion

Text Books:

1. A. Chitra and P.T. Rajan, *Data Structures*, Tata McGraw – Hill Publishing Company Limited, New Delhi
   UNIT I : Chapters 1, 3 and 4
2. Seymour Lipschutz, *Data Structures*, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2006
   UNIT II : Chapter 6 **UNIT III :** Chapter7 (7.1 – 7.9)
   UNIT IV : Chapter 8 **UNIT V :** Chapter 9

Book for Reference:

Jean Paul Tremblay and Paul G. Sorenson, An Introduction To Data Structures with Applications, Tata McGraw-Hill, Second Edition

Web Reference:

https://www.geeksforgeeks.org/data-structures/

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

Semester	Code		Title of the Course			Hours			Credits	
IV	20UCA4CC7		DATA STRUCTURES			5			4	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓		✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓	
CO4	✓	✓	✓	✓		✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches (✓) = 40, Relationship: High										

Prepared by:

Mr. O.S. Abdul Qadir

Checked by:

Mr. M. Kamal

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UCA4CC8	CORE – VIII	MULTIMEDIA AND ITS APPLICATIONS	3	2	100	25	75

Course Outcomes (COs):

At the end of the course, students will be able to

1. Illustrate about Multimedia and its usage and about uses of Text in Multimedia.
2. Understanding about various operations on Images and Sound.
3. Examine the Animation and Videos techniques in Multimedia.
4. Utilizing the Multimedia Project, Hardware, Software, and Skills.
5. Applying Multimedia in Internet and Deliver the Content.

UNIT I **9 hours**

Introduction: What is Multimedia? – Definition – Where to Use Multimedia – Delivering Multimedia – TEXT: About Font and faces – Using Text in Multimedia: Designing with Text – Fields for Reading – HTML Documents.

UNIT II **9 hours**

Images: Making Still Images - Image File Format-Sound: Power of Sound – Digital Audio – MIDI Audio – MIDI vs Digital Audio – #Audio file format# -Adding sound to your project**.**

UNIT III **9 hours**

Animation: Principles – Animating by computer - Making Animations That Work -Video: Using video –Digital Video Containers – Obtaining Video Clips.

UNIT IV **9 hours**

Making Multimedia: The stages of a multimedia project – What you need – Intangibles, Hardware, Software. Multimedia Skills: The Team.

UNIT V **9 hours**

The Internet and Multimedia: Internet History – Internetworking: Internet Addresses, Connections, The bandwidth Bottleneck, Internet Services, MIME Types, The World Wide Web and HTML. Multimedia on the Web: Tools for the World Wide Web, Web Servers, Web Browsers, Search Engines, Plug-ins and Delivery Vehicles. Delivering: # Testing: Alpha Testing, Beta Testing, Polishing to Gold#.

 # ……. #Self-study Portion

Text Book:

Tay Vaughan, *Multimedia Making it Work*, Tata McGraw – Hill Edition, Eighth Edition, 2011

UNIT I : Chapter 1 &2 **UNIT II :** Chapter 3 &4 **UNIT III :** Chapters 5&6

UNIT IV : Chapters 7&8 **UNIT V :** Chapters 12&14

Books for References:

1. V.K. Jain, *Introduction to Multimedia and its applications*, Khanna Publishing, 2012

2.David Hillman, *Multimedia Technology and Applications,* Galgotia Publications

Web Reference:

https://www.omicsonline.org/conferences-list/multimedia-tools-and-applications

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

Semester	Code		Title of the Course			Hours			Credits	
IV	20UCA4CC8		MULTIMEDIA AND ITS APPLICATIONS			3			2	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓		✓	✓	
CO2	✓		✓	✓			✓			✓
CO3	✓	✓	✓				✓		✓	
CO4	✓			✓			✓	✓	✓	
CO5	✓	✓	✓		✓	✓	✓	✓	✓	✓
Number of matches (✓) = 31, Relationship: Mederate										

Prepared by:

Mr. P. Shaik Abdulla

Checked by:

Mr. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UCA4AC7	Allied - VII	SCRIPTING LANGUAGES	5	3	100	25	75

Course Outcomes (CO):

At the end of the course, students will be able to

1. Understand the basic concepts of HTML, CSS, JavaScript, VBScript and XML
2. Analyze a web page and identify its elements and attributes
3. Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style Sheet
4. Implement interactive web pages using html and JavaScript
5. Develop web application software tools and identify the environments currently available on the market to design web sites.

UNITI **15 hours**

HTML: Introduction – SGML – Outline of HTML Document – Head Section – Body Section – HTML Forms

UNITII **15 hours**

JavaScript: Introduction – Language Elements – Objects of JavaScript – # Other Objects #

UNITIII **15 hours**

DHTML: Introduction – Cascading Style Sheets – DHTML Document Object Model and Collections – Event Handling – Filters and Transitions – Data Binding

UNITIV **15 hours**

VBScript: Introduction – Embedding VBScript Code in an HTML Document – Comments – Variables – Operators – Procedures – Conditional Statements – # Looping Constructs # – Objects and VBScript – Cookies

UNITV **15 hours**

XML: Introduction – HTML vs XML – Syntax of the XML Document – XML Attributes – XML validation – XML DTD – The building blocks of XML Documents – # DTD elements # – DTD Attributes – DTD Entities – DTD validation

 # ..... # Self-study portion

Text Book:

N.P. Gopalan, J. Akilandeswari, Web Technology, PHI Learning Private Limited, New Delhi, Fifth Printing, 2011

UNIT I : Chapter 4 **UNIT II :** Chapter 5 **UNIT III :** Chapter 7
UNIT IV : Chapter 6 **UNIT V :** Chapter 8

Book for Reference:

Douglas Crockford, Java Script: The Good parts, O'Reilly Media, 2008

Web References:

1. https://www.tutorialspoint.com/html/index.htm
2. https://www.tutorialspoint.com/javascript/index.htm
3. https://epdf.pub/vbscript-unleashed.html

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

Semester	Code		Title of the Course			Hours			Credits	
IV	20UCA4AC7		SCRIPTING LANGUAGES			5			4	
Course Outcomes Cos	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓	✓	✓	✓		✓		✓
CO2	✓	✓		✓	✓	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓	✓	✓		✓	✓
CO4	✓	✓	✓	✓		✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓		✓	✓	✓
Number of matches (✓) = 43 Relationship: High										

Prepared by: **Checked by:**

Ms. R. Senthamilselvi Mr. M. Kamal

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UCA4AC8P	ALLIED - VII	SCRIPTING LANGUAGES LAB - Practical	3	2	100	20	80

1. Develop a HTML document to basic alignments on headers and format the document using suitable tags.
2. Develop a HTML document which displays the arts and science department of your college and the courses offered by the department using list.
3. Develop a HTML document to create table with rows and columns and split them using rows span and column span.
4. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.
5. Using CSS and HTML, make a webpage that has two columns. Each column should use half of the width of the page. The left half should have a light gray background and the right half should have a light green background. The left half should have a list of the 5 best-selling books in Amazon's kindle store, and the right should have a list of your five favourite celebrities or athletes.
6. Write a program to illustrate CSS border style properties
7. Develop a JavaScript program to compute the sum of an array of integers.
8. Develop a JavaScript program to generate ten random numbers within 1 to 100 and display the numbers in a table.
9. Write a JavaScript to create an Arithmetic Calculator using user defined Function
10. Develop a JavaScript for loop that will iterate from 0 to 15. For each iteration, it will check if the current number is odd or even, and display a message to the screen.
11. Develop a JavaScript program to check the given String is Palindrome or not.
12. Create a Registration Form using JavaScript. Apply appropriate data validations.
13. Develop a VBScript Program to generate Date and Time in different format.
14. Develop a VBScript program to display the week days.
15. Write a XML program content displaying using XSL & CSS
16. Write a XML program to create XSL for displaying various country names and their currency name.

Prepared by: **Checked by:**

Ms.R. Senthamilselvi Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UCA4GE2	Generic Elective – II	Image Editing Tools	2	2	100	--	100

Course Outcomes (CO):

At the end of the course, students will be able to

1. Acquire the knowledge on photo editing.
2. Learn basic idea in Editing Tools
3. Learn the practical experience in editing video and animation
4. Understand image cropping Operations
5. Get idea on applying Filter and light effect

UNIT I **6 hours**

Workspace and workflow: Panels and menus – Tools. Image and color basics: Image size and resolution- Creating, opening, and importing images-#Viewing images#.

UNIT II **6 hours**

About color- color modes. Layer: Layer basics- Selecting, grouping, and linking layers- layer effects and styles

UNIT III **6 hours**

Selecting: Selecting with the lasso tools -Selecting with the marquee tools. Reshaping and transforming: Crop and straighten photos-Transforming object s- Liquify filter

UNIT IV **6 hours**

Video and animation: - Creating frame animations- Creating timeline animations- Creating images for video- Saving and exporting video and animations- # Editing video and animation layers#

UNIT V **6 hours**

Filter and effects: Filter basics- Filter effects reference- Add Lighting Effects. Saving and exporting: Saving images- # File formats #

 # ..... # Self-study portion

Text Book:

ADOBE® PHOTOSHOP Help and tutorials by Adobe - February 2013

UNIT I : Chapters 3& 4 UNIT II : Chapters 4 & 5 UNIT III : Chapters 6 & 10
UNIT IV : Chapter 13 UNIT V : Chapters 14 & 15

Book for Reference:

Barbara Obermeier, Ted Padova, Photoshop Elements 2020 for Dummies, Published by John Wiley & Sons, Inc., New Jersey, 2020

Web Reference:

https://help.adobe.com/archive/en/photoshop/cs6/photoshop reference.pdf

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

Semester	Code		Title of the Course			Hours			Credits	
IV	20UCA4GE2		IMAGE EDITING TOOLS			2			2	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓	✓	✓		✓	✓		✓
CO2	✓	✓		✓	✓	✓	✓		✓	✓
CO3	✓	✓		✓	✓	✓	✓		✓	✓
CO4	✓	✓	✓	✓	✓	✓		✓	✓	✓
CO5		✓	✓	✓		✓	✓	✓		✓
Number of matches (✓) = 39, Relationship: High										

Prepared by: **Checked by:**

Ms. A.M.S. ZunaithaSulthana MS.S. Benazir Butto

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

SEM	COURSE CODE	PART	COURSE	COURSE TITLE	Ins. Hrs / Week	CREDIT	MARKS		TOTAL
							CIA	ESE	
I	20U1LT1/LA1/ LF1/LH1/LU1	I	Language – I		6	3	25	75	100
	20UCN1LE1	II	English - I		6	3	25	75	100
	20UCA1CC1	III	**Core – I**	Programming in C	5	5	25	75	100
	20UCA1CC2P		**Core – II**	C Programming Lab	3	2	25	75	100
	20UCA1AC1		**Allied –I**	Numerical and Statistical Methods	5	4	25	75	100
	20UCA1AC2		**Allied –II**	Digital Electronics	3	2	25	75	100
	20UCN1AE1	IV	AEC-I	Value Education	2	2	-	100	100
			TOTAL		**30**	**21**			**700**
II	20U2LT2/LA2/ LF2/LH2/LU2	I	Language – II		6	3	25	75	100
	20UCN2LE2	II	English – II		6	3	25	75	100
	20UCA2CC3	III	**Core – III**	Programming in C++	6	5	25	75	100
	20UCA2CC4P		**Core – IV**	C++Programming Lab	3	2	25	75	100
	20UCA2AC3		**Allied – III**	Operations Research	4	3	25	75	100
	20UCA2AC4		**Allied –IV**	Entrepreneurship Development	3	2	25	75	100
	20UCN2SE1	IV	Skill Enhancement Course – I	Environmental Studies	2	2	-	100	100
			TOTAL		**30**	**20**			**700**
III	20U3LT3/LA3/ LF3/LH3/LU3	I	Language– III		6	3	25	75	100
	20UCN3LE3	II	English – III		6	3	25	75	100
	20UCA3CC5	III	**Core– V**	Java Programming	4	4	25	75	100
	20UCA3CC6P		**Core– VI**	Java Programming Lab - Practical	3	2	25	75	100
	20UCA3AC5		**Allied– V**	Principles of Accountancy	4	3	25	75	100
	20UCA3AC6P		**Allied–VI**	Accounting Package Lab - Practical	3	2	25	75	100
	20UCA3GE1	IV	Generic Elective – I #		2	2	-	100	100
	20UCN3AE2		AEC-II	Soft Skills Development	2	2	-	100	100
			TOTAL		**30**	**21**			**800**
IV	20U4LT4/LA4/ LF4/LH4/LU4	I	Language–IV		6	3	25	75	100
	20UCN4LE4	II	English– IV		6	3	25	75	100
	20UCA4CC7	III	**Core– VII**	Data Structures	5	5	25	75	100
	20UCA4CC8		**Core - VIII**	Multimedia and its Applications	3	2	25	75	100
	20UCA4AC7		**Allied– VII**	Scripting Languages	5	3	25	75	100
	20UCA4AC8P		**Allied–VIII**	Scripting Languages Lab - Practical	3	2	25	75	100
	20UCA4GE2	IV	Generic Elective – II #		2	2	-	100	100
	20UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
			TOTAL		**30**	**21**			**700**
V	20UCA5CC9	III	**Core – IX**	Operating Systems	6	5	25	75	100
	20UCA5CC10		**Core – X**	Database Management Systems	5	5	25	75	100
	20UCA5CC11		**Core – XI**	Python Programming	5	5	25	75	100
	20UCA5CC12P		**Core - XII (a)**	RDBMS Lab - Practical	2	3	10	40	50
	20UCA5CC12P		**Core - XII (b)**	Python Programming Lab - Practical	3	2	10	40	50
	20UCA5DE1		DSE – I **		5	4	25	75	100
	20UCA5SE2	IV	Skill Enhancement		2	2	-	100	100
	20UCA5SE3		Skill Enhancement		2	2	-	100	100
	20UCA5EC1		**Extra Credit Course - I**	General Intelligence for competitive examinations	**-**	**4***	**--**	**100***	**100***
			TOTAL		**30**	**28**			**700**

VI	20UCA6CC13	III	**Core– XIII**	Data Communications and Networking	5	5	25	75	100
	20UCA6CC14		**Core– XIV**	Internet of Things	5	5	25	75	100
	20UCA6CC15		**Core - XV**	Software Engineering	5	5	25	75	100
	20UCA6CC16P		**Core - XVI**	Software Development Lab - Practical	5	5	25	75	100
	20UCA6DE2		DSE – II **		5	4	25	75	100
	20UCA6DE3		DSE – III **		4	4	25	75	100
	20UCN6AE3	IV	AEC-III	Gender Studies	1	1	-	100	100
	20UCA6EC2		**Extra Credit Course - II**	**Computer Applications for competitive examinations**	**-**	**4***	**--**	**100***	**100***
	20UCAAECA		**Extra Credit Course - III**	**Online Course**	**-**	***1**	**--**	**--**	**--**
		TOTAL			**30**	**29**			**700**
	GRAND TOTAL				**180**	**140**	**-**	**-**	**4300**

* Discipline Specific Electives

SEMESTER	COURSE CODE	COURSE TITLE
V	20UCA5DE1A	VB .NET
	20UCA5DE1B	C# .NET Programming
VI	20UCA6DE2A	PHP Programming
	20UCA6DE2B	R Programming
	20UCA6DE3AP	PHP Programming Lab - Practical
	20UCA6DE3BP	R Programming Lab - Practical

@ Skill Enhancement Course

SEMESTER	COURSE CODE	COURSE TITLE
V	20UCA5SE2AP	VB .NET Lab - Practical
	20UCA5SE2BP	C# .NET Programming Lab - Practical
	20UCA5SE3AP	Data Analytics Tool - Practical
	20UCA5SE3BP	Software Testing Tools - Practical

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5CC9	Core-IX	OPERATING SYSTEMS	6	5	100	25	75

Course Outcomes (COs):
Students will be able to

CO1. Understand the basic concepts of Operating Systems
CO2. Analyse the different kinds of memory management techniques
CO3. Acquire the knowledge of process state, process scheduling and handling deadlocks
CO4. Realize the device functionalities and the relationships between the devices and the processor
CO5. Understand the basic concept of file, its various allocation strategies and access methods

UNIT I **15 hours**

Operating System Overview – Basic Concepts and Terminologies – Operating System as Resource Manager – Process View Point – Hierarchical and Extended Machine View – I/O Programming and Interrupt Programming – I/O Programming – #Interrupt Structure and Processing#.

UNIT II **15 hours**

Memory Management – Single Contiguous Allocation – Multiprogramming – Partitioned Allocation – Relocatable Partitioned Memory Management – Paged Memory Management – Page Removal Algorithms – Thrashing – Segmented Memory Management – Segmented and Demand Paged Memory Management.

UNIT III **15 hours**

Process Management – Process State Model – Job Scheduling – Process Scheduling –Multiprocessor Systems – Process Synchronization – #Resolving Deadlocks#.

UNIT IV **15 hours**

Device Management – Techniques – Device Characteristics – I/O Traffic Controller – I/O Scheduler and Device Handlers – #Virtual Devices# – Spooling.

UNIT V **15 hours**

Information Management: File System Model – Symbolic, Basic File System – #Access Control Verification# – Logical, Physical File System – Allocation Strategy, Device Strategy Modules.

.....# Self-study portion

Text Book:

S.E. Madnick & J. J. Donovan, *Operating Systems*, McGraw Hill International Book Co, New Delhi, 2017.

Book(s) for Reference:

1. Harvey M. Deitel, An Introduction to Operating Systems, Addison-Wesley Publishing Co., NewYork, 1984.
2. James L. Peterson & Abraham Silbertschatz, An Introduction to Operating Systems, Addison Wesley Publishing Co., New York, 1987

Web References:

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

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

Semester	Code	Title of the Course	Hours	Credits
V	20UCA5CC9	OPERATING SYSTEMS	6	5

Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓		✓		✓
CO2		✓	✓	✓			✓	✓	✓	✓
CO3	✓	✓		✓	✓	✓		✓	✓	✓
CO4	✓		✓	✓	✓		✓	✓	✓	✓
CO5		✓	✓	✓	✓		✓			✓
Number of matches (✓) = 37, Relationship: High										

Prepared by:

Dr.D.I. George Amalarethinam

Checked by:

Dr. G.Ravi

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5CC10	Core-X	DATABASE MANAGEMENT SYSTEMS	5	5	100	25	75

COURSE OUTCOMES (CO):

Students will be able to

CO1: Identify the basic concepts and various data model used in database design
CO2: Apply normalization techniques for the given database application
CO3: Analyse the database using queries to retrieve records
CO4: Apply PL/SQL for processing database
CO5: Illustrate principles of client-server computing and mandatory access control

UNIT I **15 Hours**

Introduction to DBMS – Advantages – DBMS Services – Relational Model - RDBMS Terminology – The Relational Data Structure – Relational Data Integrity – Codd's Rules – Database Architecture and Data Modeling: Conceptual, Physical and Logical Models. E-R Model – #Components of E-R Model# – E-R Model Symbols.

UNIT II **15 Hours**

Normalization: Purpose of Normalization – How Normalization Support Database Design – Data Redundancy and Update Anomalies – Functional Dependencies – First Normal Form – 2nd Normal Form – Third Normal Form – Advanced Normalization – #BCNF#.

UNIT III **15 Hours**

Relational Algebra: Algebraic Operations – Select – Project – Set Operations – Cartesian product - Rename – Join – Division. SQL – Advantages – Types of SQL Commands – Creating table – Modify Table – Views – INSERT, UPDATE, and DELETE Operations – Queries – Aggregate Functions with Grouping and Having Clause – #Sub-Queries#.

UNIT IV **15 Hours**

Joins Operations - Introduction to PL/SQL – Variables – Data Types – Control Structure – Cursors – Iterative Control Statement – PL/SQL Exception – Triggers – Types of Triggers – #Procedures and Packages#.

UNIT V **15 Hours**

Client/Server Technology and Client Server Database: Introduction – Benefits of C/S Computing – Cost of C/S computing – Applications Architecture – Database Security – #Database Security Risks# – Dimension of Database Security – Data Security Requirements – Database Users – Protecting the Data within the Database – Roles – Granting and Revoking Privileges – System Availability Factors – Network Security.

 # ..... # Self-study portion

Text Books:

1. Alexis Leon and Mathews Leon, Database Management Systems, Vikas Publishing House Pvt. Ltd., New Delhi.
   UNIT I: Chapters 5, 7, 8 & 9 UNIT III: Chapters 12, 14, 15 & 16
   UNIT IV: Chapter 21, Glossary of Database Terms: D UNIT V: Chapters 32 & 27

2. Thomas M. Connolly, Carolyn E. Begg, Database Systems A Practical Approach to Design, Implementation and Management, Pearson Education, Fifth impression 2012.
   UNIT II: Chapter 13 (Sections 13.1 – 13.4 & 13.6 – 13.9) & Chapter 14 (14.2)

Book for Reference:

Rajesh Narang, Database Management Systems, PHI Learning (P Ltd, New Delhi, 4th Printing 2009.

Web Reference:
https://www.javatpoint.com/dbms-tutorial

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

Semester	Code		Title of the Course			Hours				Credits
V	20UCA5CC10		DATABASE MANAGEMENT SYSTEMS			5				5
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓	✓		✓	✓	✓		✓
CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓	✓	✓		✓	✓	✓	✓	✓	✓
CO4	✓	✓	✓		✓	✓		✓		✓
CO5	✓			✓	✓	✓	✓		✓	✓
Number of matches (✓) = 39, Relationship: High										

Prepared By
S. Syed Ibrahim

Checked By
Dr. G. Ravi

NOTE:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5CC11	Core – XI	PYTHON PROGRAMMING	5	5	100	25	75

Course Outcomes (CO):
Students will be able to

CO1. Understand the building blocks of python programming
CO2. Apply the various control structures and functions to real time problems
CO3. Perform the List, Tuple and Dictionary concepts
CO4. Implement the MySQL queries and File handling operations with applications
CO5. Understand the concepts of Classes and Object-Oriented Programming

UNIT I **15 hours**

Introduction: Using Python - Input, Processing and Output: Displaying Output with the print Function - Comments - Variables - Reading Input from the Keyboard - Simple Functions: Introduction to Functions - Defining and Calling a Function - **# Local Variables #** - Passing Arguments to Functions - Global Variables and Global Constants

UNIT II **15 hours**

Decision Structures and Boolean Logic: The if Statement - The if-else Statement - Comparing Strings – Nested Decision Structures and the if-elif-else Statement - **# Logical Operators #** - Boolean Variables - Repetition Structures: The while Loop: a Condition-Controlled Loop - The for Loop: a Count-Controlled Loop - Sentinels - Input Validation Loops - Nested Loops

UNIT III **15 hours**

Value-Returning Functions and Modules: Introduction to Value-Returning Functions: Generating Random Numbers - Writing Your Own Value-Returning Functions - The math Module - Storing Functions in Modules - Files and Exceptions: Introduction to File Input and Output - Using Loops to Process Files - Processing Records – Exceptions

UNIT IV **15 hours**

Lists and Tuples: Sequences - Introduction to Lists - List Slicing - Finding Items in Lists with the in Operator - List Methods and Useful Built-in Functions - **# Copying Lists #** - Processing Lists - Two-Dimensional Lists - Tuples - More About Strings: Basic String Operations - String Slicing - Testing, Searching and Manipulating Strings - Dictionaries and Sets: Dictionaries - Sets - Serializing Objects

UNIT V **15 hours**

Classes and Object-Oriented Programming: Procedural and Object-Oriented Programming - Classes - Working with Instances - Techniques for Designing Classes - Inheritance: Introduction to Inheritance - Polymorphism - Getting MySQL for Python - **# import MySQL for Python #** - MySQLDb - Connecting with a Database

 # # Self-study portion

Text Books:

1. Tony Gaddis, "Starting Out with Python", Addison-Wesley Pearson Education, 2nd Edition, 2012
   - **Unit I** : Chapter 2 Sections 2.3 - 2.6, Chapter 3 Sections 3.1, 3.2, 3.4, 3.5, 3.6
   - **Unit II** : Chapter 4 Sections 4.1 - 4.6, Chapter 5 Sections 5.2, 5.3, 5.5, 5.6, 5.7
   - **Unit III** : Chapter 6 Sections 6.1 - 6.4, Chapter 7 Sections 7.1 - 7.4
   - **Unit IV** : Chapter 8 Sections 8.1 - 8.9, Chapter 9 Sections 9.1 - 9.3, Chapter 10 Sections 10.1 - 10.3
   - **Unit V** : Chapter 11 Sections 11.1 - 11.4, Chapter 12 Sections 12.1, 12.2

2. Albert Lukaszewski, "MySQL for Python", [PACKT] Publishing, 1st Edition, 2010
   - **Unit V:** Chapter 1

Book for References:
Mark Lutz, "Programming Python", O'Reilly, 4th Edition, 2010, ISBN: 978-0-596-15810-1

Web Reference:

1. https://onlinecourses.nptel.ac.in/noc19_cs59/preview
2. https://www.learnpython.org/

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

Semester	Code		Title of the Course			Hours			Credits	
V	20UCA5CC11		PYTHON PROGRAMMING			5			5	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓	✓	✓	✓	✓	✓	✓	
CO2		✓	✓	✓		✓	✓		✓	✓
CO3	✓	✓		✓	✓	✓		✓	✓	
CO4	✓		✓		✓	✓	✓	✓	✓	✓
CO5		✓	✓	✓	✓	✓		✓	✓	✓
Number of matches (✓) = 38, Relationship: High										

Prepared by:
1. Lt. J. Hajiram Beevi

Checked by:
1. M.Kamal

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Maximum Marks	Internal Marks	External Marks
V	20UCA5CC12P1	Core – XII(a)	RDBMS LAB - PRACTICAL	2	2	50	10	40

1. SQL: DATA DEFINITION LANGUAGE

a) Table Creation: Primary Key, Candidate key, Foreign Key.

b) Table Alteration: Rename table and Column name, Add Column, Drop column, Modify Column size and Data type.

c) Drop Table

2. SQL: DATA MANIPULATION LANGUAGE

a) Insertion

b) Updates

c) Deletion

d) String Operations

e) Set Operations

f) Tuple Variables

g) Aggregate Functions with Grouping and Having Clause

h) Ordering Tuples

i) Nested Sub-queries – Set Membership (IN, NOTIN), Set Comparison (SOME, ALL Sub-queries in the From Clause)

j) Join Operations – Equi Join, Left-outer join, Right outer join, Self Join.

3. PL/SQL PROCEDURE

a) Reverse the String

b) Find Factorial number using Recursive Function

c) Prepare Student Mark Sheet

d) Employee Pay Roll

e) EB – Bill

Prepared by:
Mr. R.Inbaraj

Checked by:
Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5CC12P2	Core - XII (b)	PYTHON PROGRAMMING LAB - PRACTICAL	3	3	50	10	40

Develop Python programs

1. Demonstrate different Number datatypes
2. Calculate Euclidean distance between two points by taking input from the user
3. Find the Factorial of a given number using Functions
4. Print whether a number is positive/negative using if-else
5. Create a Simple Calculator using if-elif statement
6. Find the sum of all primes between 1 to 100 using for loop
7. Compute the number of characters, words and lines in a file
8. Print all of the unique words in the file in alphabetical order
9. Define a module to find Fibonacci Numbers and import the module to another program
10. Create a list and perform the following methods

    a) insert () b) remove () c) append () d) len () e) pop ()
11. Create a tuple and perform the following operations

    a) Concatenation b) Repetition c) Membership d) Access items e) Slicing
12. Sort (ascending and descending) a dictionary by value
13. Prepare a Students Marks List using Class
14. Find the area of a Circle using Class and Object
15. Perform various database operations (Create, Insert, Delete, Update) using MySQL

Prepared by
1. Lt. J. Hajiram Beevi

Checked by:
1. Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5DE1A	DSE I	VB.NET	5	4	100	25	75

Course Outcomes (CO):
After completion of the course, students will be able to

CO1: Acquire the working knowledge of window-based application development
CO2: Use the controls and functions for creating user interface design
CO3: Utilize the various dialog controls for more interactions
CO4: Apply the Object Oriented Concepts in program development
CO5: Design and implement database connectivity using ADO.NET

UNIT I **15 hours**

The .NET Framework and the Common Language Runtime - Building VB.NET Applications - The Visual Basic Integrated Development Environment - The Visual Basic Language: Keywords – Visual Basic Statements - Constants – Variables – Data Types – Arrays – Strings - Operators - Making Decisions with If...Else Statements - Using Select Case - #Making Selections with Switch and Choose# - Looping Statements - Do Loop -For Loop - For Each...Next Loop - While Loop –With Statement.

UNIT II **15 hours**

Sub Procedures and Functions - Understanding Scope - Handling Exception – Creating Sub Procedures – Creating Functions -Windows Forms – Creating Windows Applications – Adding Control to Forms – Handling Events - MsgBox Function – MessageBox.Show Method -Input Box Function –Text Boxes – Rich Text Boxes – Labels.

UNIT III **15 hours**

Buttons - Checkboxes - Radio Buttons - #Panels# - Group Boxes - List Boxes – Checked List Boxes - Combo Boxes – Picture Boxes – Scroll Bars – Splitters – Pickers - Timers – Menus – Built in Dialog Boxes – Open File Dialogs – Save File Dialogs – Font Dialogs – Color Dialogs.

UNIT IV **15 hours**

Image Lists – Tree Views – List Views – Toolbars – Status Bars – Progress Bars - Tab Controls - Object-Oriented Programming – Creating Classes – Creating Objects – Creating Modules – Creating Constructors – Creating Data Members - Creating Methods – Object-Oriented Inheritance – Access Modifiers –Inheriting from a Base Class – Using Public Inheritance – Using Protected Inheritance – Using Private Inheritance.

UNIT V **15 hours**

Databases – Accessing Data with the Server explorer – Accessing Data with Data Adaptors and Datasets – Working with ADO.NET– Overview of ADO.NET Objects– Using Basic SQL – Creating a New Data Connection – Creating a Dataset – Populating a Dataset – Displaying Data in a Data Grid – Selecting a Data Provider – Data Access Using Data Adapter Controls - Connecting to an MS Jet Database – Using Relational Databases – #Adding Multiple tables to a Dataset# – Using Data Views – Simple Binding – Complex Binding – Binding Data to Controls – Navigating in Datasets.

 # # Self-study portion

Text Book:

Steven Holzner, Visual Basic .NET Programming Black Book, Dreamtech Publisher, Edition. Aug. 2007

UNIT I: Chapters 1 & 2 UNIT II: Chapters 3, 4 & 5 UNIT III: Chapters 6, 7, 8 & 9
UNIT IV: Chapters 10,11& 12 UNIT V: Chapters 21 & 22

Books for Reference:

1. C. Muthu, Visual Basic .Net, Vijay Nicole Imprints Pvt. Ltd. Publisher, 2007.
2. Shirish Chavan, Visual Basic .Net, Pearson Education, 2009.

Web References:

1. https://www.tutorialspoint.com/vb.net/index.htm
2. https://www.javatpoint.com/vb-net

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

Semester	Code		Title of the Course			Hours			Credits	
V	20UCA5DE1A		VB.NET			5			4	
Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓		✓	✓	
CO2		✓			✓	✓	✓			
CO3	✓		✓	✓	✓	✓	✓	✓	✓	✓
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches (✓) = 41, Relationship: High										

Prepared by:
Mr. A. Jainulabudeen

Checked by:
Dr. S. Mohamed Iliyas

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5DE1B	DSE I	C# .NET PROGRAMMING	5	4	100	25	75

Course Outcomes (CO):
After completion of the course, students will be able to

CO1. Design, formulate, and construct applications with .NET platform.
CO2. Understand the various operators in C# programming
CO3. Apply the object-oriented programming concepts.
CO4. Understand and identify exception handling techniques and implement the real time applications
CO5. Develop the web applications using various components in .Net

UNIT I **15 Hours**

What is C# - Why C# - Evolution of C# - Characteristics of C# - application of C# – The Origin of .Net Technology – The .Net framework – The Common Language Runtime - .Net language – Benefits of .Net Approach – C# and the .Net – Literals – Variables – Data Types – Declaration and Initialization of variables – Constant variables – Scope of variables – Boxing and unboxing

UNIT II **15 Hours**

Operators in C# - Expressions in C# - Decision making with if statement – Simple if statement – if…else statement – nested if … else statement – else if ladder - switch statement - ?: operator – while statement – do statement – for statement – for each statement – Declaring methods – main methods invoking methods – nesting of methods –Handing arrays in C# - Manipulation Strings: String Methods

UNIT III **15 Hours**

Classes and objects – Inheritance and Polymorphism: Containment inheritance – Defining sub class - visibility control – multilevel inheritance – overriding methods – hiding methods – abstract class - defining an interface – extending interface –implementing interface. Delegates and Events – Managing Console I/O operations

UNIT IV **15 Hours**

Managing Errors and Exceptions – Types of Errors – Syntax of Exception Handling code – Multiple catch statements – The Exception Hierarchy – General catch handler – using finally statement – Nested try blocks – Throwing our own exceptions - using Exception for debugging – Multithreading in C#

UNIT V **15 Hours**

Windows Forms and Web based application Development on Net: creating windows forms – Customizing a form – Creating and running a sample win app widows application – overview of design patterns – creating and sample app-web based application on .Net

Text Book:

E. Balagurusamy, Programming in C#, Tata McGraw Hill Education Pvt. Ltd, New Delhi, 3rd edition 2012

Book for Reference:

Troy Dimes, C# Programming for Beginners, Kindle Edition, 2015

Web Reference:

1. https://onlinecourses.nptel.ac.in/noc19_ma33/preview
2. https://www.statmethods.net/r-tutorial/index.html

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

Semester	Code	Title of the Course	Hours	Credits
VI	20UCA5DE1B	C# .NET PROGRAMMING	5	4

Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓	✓	✓	✓		✓	✓	✓
CO2	✓	✓		✓	✓		✓	✓	✓	
CO3	✓	✓	✓		✓	✓	✓	✓		✓
CO4	✓	✓		✓			✓	✓	✓	✓
CO5		✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches (✓) = 39, Relationship: High										

Prepared by:
Mr. M. Kamal

Checked by:
Mr. O.S. Abdul Qadir

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5SE2AP	SEC-II	VB.NET LAB - PRACTICAL	2	2	100	---	100

Develop programs using VB .NET to

1. a) Accept any character from keyboard and display whether it is a vowel or not.
   b) Find the area of a circle (Using console application).
2. Reverse a given number (Using window application).
3. Create and validate a login form using select case.
4. Find factorial of a given number using function.
5. Handle any three types of exceptions.
6. Illustrate the use of MsgBox and InputBox Functions
7. Illustrate the use of Checkbox, Radio Buttons and List Box Control
8. Create a stopwatch using timer control.
9. Implement a text editor with cut, copy, paste, save and close operations using menus.
10. Illustrate the use of Tree View and List View.
11. Accept 5 values from Combo Box and display average in MsgBox function using class.
12. Develop a database application to store the details of students using ADO.NET.
13. Develop a database application using ADO.NET to demonstrate insert and delete operations

Prepared by:

Mrs. Benazir Butto

Checked by:

Dr. S. Abdul Saleem

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5SE2BP	SEC II	C# .NET PROGRAMMING LAB - PRACTICAL	2	2	100	--	100

Develop programs using C#

1. To demonstrate nested if statement & else if ladder
2. To find sum of series using foreach statement & to find the odd or even numbers in between 1 to 100 using for loop
3. To perform various arithmetic operations using switch statement
4. To print the reverse order of a given number using do….while & sum of sum of digits using while loop
5. To sort and to reverse the numbers using sort functions
6. To demonstrate ArrayList class
7. To find the vowels, consonants and words of a given sentence using string handling functions
8. To demonstrate multilevel inheritance
9. To create and implement a delegate
10. Using try and catch for exception handling
11. To create and implement an event handler
12. To demonstrate the multithreading
13. Develop a windows application for simple calculator
14. Develop a windows application to prepare student mark sheet

Prepared By

Mr. M.Kamal

Checked By

Mr. O.S. Abdul Qadir

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5SE3AP	SEC-III	DATA ANALYTICS TOOL - PRACTICAL	2	2	100	---	100

Using Mongo DB:

1. Install, configure and run Hadoop and HDFS
2. Implement word count / frequency programs using Map Reduce
3. Implement an MR program that processes a weather dataset using R.
4. Implement Linear and Logistic Regression.
5. Implement SVM classification techniques.
6. Implement Decision tree classification techniques.
7. Implement any two clustering techniques.
8. Visualize data using any plotting framework.
9. Implement an application that stores big data in Hbase
10. Implement an application that stores big data in MongoDB

Prepared by: **Checked by:**

Mr. S. Peerbasha Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
V	20UCA5SE3BP	SEC-III	SOFTWARE TESTING TOOLS - PRACTICAL	2	2	100	---	100

1. Install Selenium IDE: develop a test suite containing minimum 4 test cases for different formats.
2. Perform a test suite for any two websites
3. Install Selenium Web Server and demonstrate it using a script in Java.
4. Develop and test a program to login a specific web page
5. Develop and test a program to update 5 employee records and convert table format into Excel file
6. Develop and test a program to select the number of students who have scored more than 75 in any one subject.
7. Develop and test a program to find out list of employees having salary greater than Rs. 25,000 and age between 35 and 45 years.
8. Develop and test a program to provide total number of objects available on a web page
9. Develop and test a program to get the number of list items in a list / combo box
10. Develop and test a program to count the number of check boxes on the page checked and unchecked count.
11. Develop a test plan document for Library Management System

Prepared by:

Mr. S. Peerbasha

Checked by:

Dr. S. Abdul Saleem

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6CC13	Core– XIII	DATA COMMUNICATIONS AND NETWORKING	5	5	100	25	75

Course Outcomes (CO):
Students will be able to

CO1. To understand the fundamental concepts of computer networks.
CO2. To realize and understand the different carriers used in computer networks.
CO3. To impart the knowledge of switching and routing algorithms.
CO4. To analyze the protocols used in various layers.
CO5. To provide the basic knowledge of X.25 protocol and its layers.

UNIT I **15 hours**

INTRODUCTION: Computer Networks-Categories of Network- Open System and OSI model- Transmission Media-Transmission mode-Interfacing-Multiplexing-Types of Errors-Error Detection- Error Correction

UNIT II **15 hours**

LAN: Types of Network and Topology-LAN Transmission Equipment- Token Bus-Token Ring-FDDI Ethernet Technologies. WAN: WAN Transmission methods- WAN carrier types- WAN Transmission Equipment-WAN Protocols

UNIT III **15 hours**

Networking and Internetworking Devices: Repeaters – Bridges – Routers – Gateways. Routing Algorithms: Distance Vector Algorithm –Link State Algorithm - Dijkstra Algorithm. TCP/IP Protocol Suite: Part-I: Network Layer-Internetwork Protocol (IP).Transport layer: UDP-TCP

UNIT IV **15 hours**

Point-to-Point Protocol PPP: Transition states – PPP Layers-Link Control Protocol LCP – Network Control Protocol - ISDN: Services - ISDN Layers- Future of ISDN

UNIT V **15 hours**

ATM: Design Goals: Packet Networks-Mixed Network packets - Cell Networks -Asynchronous TDM - ATM Architecture - ATM Layers. Network Security: Fundamental Concepts-Securing Network using Firewall

Text Books:

1. Brijendra Singh, Data communication and Computer Networks, Second edition

   UNIT I : Chapter 1.3,1.4,1.7,2.4,2.7,2.8,2.9,3.1,3.2,3.3

   UNIT II : Chapter 6.1,6.2,6.5,6.6,6.7,6.10,7.1,7.2,7.3,7.5. UNIT V: Chapter 14.1, 14.7

2. Behrouz A.Forouzan, Data Communications and Networking, Tata McGraw Hill, Second Edition

   UNIT III : Chapter 21 and 24 UNIT IV : Chapter 16.1, 16.4, 16.6

   UNIT V : Chapter 19.1, 19.2, 19.5

Book for Reference:

Wayne Tomasi, *Introduction to data communication and networking*, First edition

Web Reference:

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

Semester	Code	Title of the Course	Hours	Credits
VI	20UCA6CC13	DATA COMMUNICATIONS AND NETWORKING	5	5

Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓		✓	
CO2	✓	✓			✓	✓	✓			✓
CO3	✓	✓	✓	✓		✓	✓	✓	✓	✓
CO4	✓	✓	✓		✓	✓	✓		✓	✓
CO5	✓		✓	✓	✓	✓	✓	✓		
Number of matches (✓) = 39, Relationship: High										

Prepared by: Dr. Mozibur Raheman Khan

Checked by: Mr. B.Mohamed Faize Basha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6CC14	CORE – XIV	INTERNET OF THINGS	5	5	100	25	75

Course Outcomes (COs):

Students will be able to

CO1. Identify the components of IoT.
CO2. Comprehend the schemas for real time applications in IoT.
CO3. Analyse the building blocks of internet of things and characteristics.
CO4. Gain programming knowledge in Raspberry Pi with Python.
CO5. Understand different IoT based real time applications.

UNIT I **15 hours**

Fundamentals Of IoT: Introduction to IoT - Characteristics, Physical design of IoT - Things in IoT, IoT Pro -Logical design of IoT-#IoT Enabling Technologies#- IoT Levels and Deployment templates.

UNIT II **15 hours**

Design Methodology of IoT and Logical Design using Python - IoT Design Methodology - #Case study on IoT System for Weather Monitoring, Motivation for Using Python#. IoT Systems – Logical Design using Python - Python Modules, File Handling, Date/Time Operations, Python Packages of Interest for IoT.

UNIT III **15 hours**

IoT Physical Devices and End Points - What is an IoT Device – Basic building block of an IoT device, Raspberry Pi, Abo - Board, Raspberry Pi Interfaces, #Programming Raspberry Pi with Python.#

UNIT IV **15 hours**

IoT in Real-time Application -# Implementation in real time# – Programming Connected Devices, Programming and connecting devices using Python and C language. Raspberry Pi with Raspbian Operating System.

UNIT V **15 hours**

Supporting boards with IoT – Galieo Intel board and Windows OS.# Case Study – IoT Temperature Controller.#

 # ..... # Self-study portion

Text Books:

1. ArshdeepBahga, Vijay Madisetti, Internet of Things – A Hands-on Approach, VPT publisher, First Edition, 2015.

2. Etter, IoT (Internet of Things) Programming – A Simple and Fast Way of Learning IoT, Kindle Edition, 2016.

Books for Reference:

1. Olivier Hersent, Omar Elloumi and David Boswarthick (2012), The Internet of Things- Key Applications and Protocols, Wiley.

2. Dieter Uckelmann, Mark Harrison, Florian Michahelles (2011), Architecting the Internet of Things, Springer.

Web References:

1.www.pubnub.com/blog/2015-05-27-internet-of-things-101-getting-started-w-raspberry-pi/
2.www.theinternetofthings.eu/what-is-the-internet-of-things 3.www.ibm.com/blogs/bluemix/2015/04/tutorial-using-a-raspberry-pi-python-iot-twilio-bluemix/

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

Semester	Code	Title of the Course	Hours	Credits
VI	20UCA6CC14	INTERNET OF THINGS	5	5

Course Outcomes COs	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓		✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓		✓	✓			
CO3		✓	✓		✓	✓		✓	✓	✓
CO4	✓	✓		✓			✓		✓	✓
CO5	✓	✓		✓	✓	✓	✓	✓		
Number of matches (✓) = 39, Relationship: High										

Prepared by:

K.M. Akbar Badhusha

Checked by:

Dr. K.Nafis Ahamed

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6CC15	CORE – XV	SOFTWARE ENGINEERING	5	5	100	25	75

Course Outcomes (COs):
Students will be able to

CO1. Understand the different software process models
CO2. Acquire the knowledge of system engineering process
CO3. Realize the system design process and design quality
CO4. Understand the various software testing methods
CO5. Understand the software quality assurance and metrics.

Unit I **13 hours**

Introduction - The Evolving Role of the Software – The Changing Nature of Software – Legacy Software – Software Myths – A Generic View of Process – A Process Framework – The CMM Integration – The Process Models: The Waterfall Model – The RAD Model – The Evolutionary software process models – The Prototyping Model – The Spiral Model – Specialized Process Models: The Component based development – #The Formal Methods Model# - Aspect-Oriented Software Development

Unit II **12 hours**

Systems Engineering Hierarchy – Requirements Engineering Tasks – Requirements Analysis – Analysis Modelling Approaches – #Data Modelling Concepts# – Flow-oriented Modelling – Creating a Behavioral Model.

Unit III **12 hours**

Design Process and Design Quality – Design Concepts – Design Model – Pattern-Based Software Design – Software Architecture – Data design – Architectural Design – # Mapping Data Flow into a Software Architecture#.

Unit IV **12 hours**

Testing Strategies – A Strategic Approach to Software Testing – Test Strategies for Conventional Software – Unit Testing – Integration Testing – Validation Testing – System Testing – The Art of Debugging – Software Testing Fundamentals – White-box Testing – Basis-path Testing – Control Structure Testing – Black-box Testing – Object-Oriented Testing Methods.

Unit V **12 hours**

Quality Concepts – Software Quality Assurance – Software Reviews – Formal Technical Reviews – Software Reliability – Metrics in the Process and Project Domains -- Software Measurement – Metrics for Software Quality – Establishing a Software Metrics Program.

..... # self-study portion.

Text Book:

Roger S. Pressman, Software Engineering - A Practitioner's Approach, McGraw Hill International Edition, USA, Sixth Edition, 2008

UNIT I : Chapter 1 (Sections 1.1, 1.3-1.5), Chapter 2 (Sections 2.2, 2.3) & Chapter 3 (Sections 3.2, 3.3.2, 3.4.1, 3.4.2, 3.5.1-3.5.3)
UNIT II : Chapter 6 (Section 6.2), Chapter 7 (Section 7.2) & Chapter 8 (Sections 8.1-8.3, 8.6, 8.8)
UNIT III : Chapter 9 (Sections 9.2-9.5), Chapter 10 (Sections 10.1, 10.2, 10.4, 10.6)
UNIT IV : Chapter 13 (Sections 13.1, 13.3, 13.5, 13.6, 13.7) & Chapter 14 (Sections 14.1, 14.3-14.7)
UNIT V : Chapter 22 (Sections 22.1-22.3, 22.6) & Chapter 26 (Sections 26.1-26.4, 26.7)

Books for Reference:

1. Shari Lawrence Fleeger and Joanne M. Atlee, *Software Engineering: Theory and Practice*, Pearson Education South Asia, New Delhi, Fourth Edition, Third Impression 2013.
2. Ian Sommerville, *Software Engineering*, Pearson Education Asia, New Delhi, Ninth Edition, 2015.
3. Jibitesh Mishra, *Software Engineering*, Pearson Education, First Edition, 2011.

Web References:

1. www.pubnub.com/blog/2015-05-27-internet-of-things-101-getting-started-w-raspberry-pi/
2. www.theinternetofthings.eu/what-is-the-internet-of-things 3.www.ibm.com/blogs/bluemix/2015/04/tutorial-using-a-raspberry-pi-python-iot-twilio-bluemix/

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

Semester	Code		Title of the Course			Hours			Credits	
VI	20UCA6CC15		SOFTWARE ENGINEERING			5			5	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓			✓	✓	✓		✓	✓
CO3	✓			✓		✓		✓	✓	
CO4	✓	✓		✓	✓	✓	✓	✓		✓
CO5	✓	✓	✓		✓	✓	✓		✓	✓
Number of matches (✓) = 36, Relationship: High										

Prepared by:

Mr. M. Abdullah

Checked by:

S. Peer Basha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6CC16P	Core -VI	SOFTWARE DEVELOPMENT LAB - PRACTICAL	5	5	100	20	80

1. **Develop a web applications using (HTML, CSS, JAVASCRIPT, PHP, .NET WITH DATABASE)**

   i. Online Feedback System (School)

   ii. E-Library Website

   iii. E-Ticket Booking

   iv. Online Grocery Store

   v. Job Portal Website

   v. Hospital Management Systems

2. **Develop a desktop application with Database using Java/VB.Net with MS SQL/SQL Server Database**

   i. Milk Society Management Systems

   ii. Covid Contact tracing System

   iii. Toll Plaza Management System

   iv. Course Registration System

   v. Food Ordering System

   vi. Attendance Management Systems (Factory)

Prepared by:

Mrs. Senthamil Selvi

Checked by:

Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6DE2A	DSE – II	PHP PROGRAMMING	5	4	100	25	75

Course Outcomes (CO):
Students will be able to

CO1. Understand the use of data types, expressions, operators, control statements, functions, strings, and arrays
CO2. Apply the object-oriented concepts with forms and files
CO3. Understand the cookies and sessions
CO4. Develop a website with the MYSQL database connectivity
CO5. Develop a server-side scripting language for web applications

UNIT I **15 HOURS**

Introduction and Overview: Lexical Structure – #Data types# – Expressions, Operators, Control Statements and Functions: Operator Precedence –Arithmetic, String Concatenation, Comparison, Bitwise, Logical and Assignment Operators –Flow Control Statements – Functions

UNIT II **15 HOURS**

Strings: Quoting String Constants – Printing Strings – Cleansing Strings – Comparing Strings – Manipulating and Searching Strings – Arrays: Types of Arrays – Important functions in array – Functions on Complete Arrays – #Sorting#

UNIT III **15 HOURS**

Objects: Object Oriented Concepts - Classes and Objects in PHP - Declaring Methods - Declaring Properties - Declaring Constants - Inheritance - Abstract Classes - Constructors - Destructors - Form Handling - Processing Forms - Form Validation. . Files and Directories – Opening and creating files in PHP – Closing files in PHP – File uploading in PHP – File Downloading in PHP – Reading the contents of a Directory – Deleting the contents of a Directory – #Creating the new Directories#

UNIT IV **15 HOURS**

Cookies: #Need for Cookies – Uses of Cookies# – Anatomy of a Cookie – Creating and Accessing Cookies in PHP – Deleting Cookies – PHP Sessions – Starting a PHP Session – Storing a Session variable – Destroying a Session – Forms: Form Handling – Processing Forms – Form Validation

UNIT V **15 HOURS**

MySQL: Connecting to and disconnecting from the Server – MySQL data types – SHOW and CREATE databases – Creating a table – DESCRIBE, INSERT and SELECT command – #DROP tables and databases# – Update, Alter and Delete Operations – MySQL access with PHP: Open a connection to the MySQL server – Disconnect a connection from MySQL server – Creating a database using PHP – Selecting MySQL database using PHP – Creating a table using PHP -Insert data into MySQL using PHP

#..... # Self-study portion

Text Book:

HajiramBeevi J, Khairunnisa and MunawaraBanu S, Primer on PHP, Yazhini Publication, 1st Edition, 2016

UNIT I **:** Chapter 1(1.3, 1.4), Chapter 2 (2.1, 2.3-2.10, and 2.12
UNIT II **:** Chapter 3, 4
UNIT III **:** Chapter 10, Chapter 6(6.1, 6.2, and 6.8 – 6.11)
UNIT IV **:** Chapter 7, 11
UNIT V **:** Chapter 8 (8.1- 8.9), Chapter 99.1 -9.6)

Book for References:
Julie Meloni and Matt Telles, PHP 6, Course Technology, CENGAGE Learning, India Edition, 2008

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

Semester	**Code**		**Title of the Course**			**Hours**		**Credits**	
VI	**20UCA6DE2A**		**PHP PROGRAMMING**			**5**		**4**	
Course Outcomes COs	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**			
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	✓	✓		✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓			✓		✓
CO3		✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓		✓			✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓			✓
Number of matches (✓) = 39, Relationship: High										

Prepared by:
Mrs. Khairunnisa

Checked by:
Ltn. J. Hajiram Beevi

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6DE2B	DSE - II	R PROGRAMMING	5	4	100	25	75

Course Outcomes (CO):
After completion of the course, students will be able to

CO1. Acquire the basic constructs of R
CO2. Understand the loading and retrieval techniques of data
CO3. Understand how data is analyzed and visualized using statistic functions
CO4. Use R programming in Linear Algebra and Set theory
CO5. Identify how to interface R with other languages

UNIT I **15 hours**

Getting Started: How to Run R - Introduction to Functions - Some important R Data Structures - Vectors: Scalars, Vectors, Arrays and Matrices - Declarations - Common Vector Operations - Vectorized Operations - NA and NULL Values - Filtering - Matrices and Arrays: Creating Matrices - General Matrix Operations - Applying Functions to Matrix Rows and Columns - Adding and Deleting Matrix Rows and Columns - Naming Matrix Rows and Columns - **# Higher Dimensional Arrays #**

UNIT II **15 hours**

Lists: Creating Lists - General List Operations - Accessing List Components and Values - Applying Functions to Lists - **# Recursive Lists #** - Data Frames: Creating Data Frames - Merging Data Frames - Applying Functions to Data Frames - Factors and Tables: Factors and Levels - Common Functions used with Factors - Working with Tables - Other Factor and Table Related Functions

UNIT III **15 hours**

R Programming Structures: Control Statements - Arithmetic and Boolean Operators and Values - Default Values for Arguments - Return Values - No Pointers in R - Writing Your Own Binary Operations - **# Anonymous Functions #** - Doing Math and Simulations in R: Math Functions - Functions for Statistical Distributions - Sorting - Linear Algebra Operations on Vectors and Matrices - Set Operations - Simulation Programming in R

UNIT IV **15 hours**

Object-Oriented Programming: S3 Classes - S4 Classes - S3 Versus S4 - Managing Your Objects - Input/Output: Accessing the Keyboard and Monitor - Reading and Writing Files - Accessing the Internet - String Manipulation: An Overview of String-Manipulation Functions - Regular Expressions

UNIT V **15 hours**

Graphics: Creating Graphs - Customizing Graphs - Saving Graphs to Files - Creating Three-Dimensional Plots - Interfacing R to Other Languages: Writing C/C++ Functions to be called from R - Using R from Python

#..... # Self-study portion

Text Book:

Norman Matloff, "The Art of R Programming A Tour of Statistical Software Design", No Starch Press, 2011.

Unit I : Chapter 1, 2, 3
Unit II : Chapter 4, 5, 6
Unit III : Chapter 7, 8
Unit IV : Chapter 9, 10, 11
Unit V : Chapter 12, 15

Book for References:

Garrett Grolemund, "Hands-On Programming with R", O'Reilly, First Edition, 2014,

Web Reference:

1. https://onlinecourses.nptel.ac.in/noc19_ma33/preview
2. https://www.statmethods.net/r-tutorial/index.html

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

Semester	**Code**		**Title of the Course**			**Hours**			**Credits**	
VI	**20UCA6DE2B**		**R PROGRAMMING**			**5**			**4**	
Course Outcomes COs	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	✓		✓	✓	✓	✓		✓	✓	✓
CO2		✓			✓		✓	✓	✓	✓
CO3	✓	✓	✓	✓		✓	✓	✓		
CO4		✓	✓	✓	✓		✓	✓	✓	✓
CO5	✓		✓	✓	✓	✓	✓	✓		✓
Number of matches (✓) = 37, Relationship: High										

Prepared by:
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Checked by:
1. Ms. S. Munawara Banu

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6DE3AP	DSE-III	PHP PROGRAMMING LAB - PRACTICAL	4	4	100	20	80

Develop a PHP programs to

1. Demonstrate conditional statements Switch and If…Else
2. Calculate the sum of sum of numbers for a given input using while loop
3. Merge the two array values in an array and print the numbers in ascending order
4. Calculate the electricity bill based on the following conditions.

   Conditions:

   i. For first 50 units – Rs. 3.50/unit

   ii. For next 100 units – Rs. 4.00/unit

   iii. For next 100 units – Rs. 5.20/unit

   iv. For units above 250 – Rs. 6.50/unit

   You can use conditional statements.
5. Find the GCD of two numbers using user-defined functions
6. Illustrate the use of constructors and destructors
7. Design a simple web page to generate multiplication table for a given number
8. Count the number of words in a string.
9. To upload a file & to download a file
10. How to get names of all the subfolders and files present in a directory
11. To store the current date and time in a COOKIE and display the 'Last Visited' date and time on the web page
12. To store the page views count in SESSION, to increment the count on each refresh and to show the count on web page
13. To draw the human face
14. Demonstrate various DML operations using MYSQL and PHP.
15. Design an authentication web page in PHP with MySQL to check username and password

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1. Ms. Khairunnisa

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1. Ms. Hajiram Beevi

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCA6DE3BP	DSE - III	R PROGRAMMING LAB - PRACTICAL	4	4	100	20	80

Develop R programs to

1. Read two vectors V1 and V2 containing values (49,21,34,53,11) and (14,49,53,34,81). Now find out the values of V1 that are not present in V2 and store it into a new vector without using any predefined function
2. Create a user defined function that performs the binary search on a numeric vector
3. Create two 3 X 3 matrices A and B and perform the following operations a) Transpose of the matrix
   b) addition c) subtraction
4. Create a data frame that stores some basic information of laptop such as the configuration of laptop from at least five companies. Apply length(), str(), summary(), duplicated(), unique() functions or other functions on the data frame
5. Create a data frame that stores the temperature of 10 cities along with their names. Using the function rownames(), put suitable names of the rows and columns of the data frame
6. Create a list that stores some arbitrary numbers as components. Add three new numbers on the list and delete the third and eighth number of the list
7. Check whether a year (integer) entered by the user is a leap year or not
8. Create a recursive function that generates the Fibonacci series
9. Create two vectors where one vector contains positive values and the other contains negative values. Find the correlation between the two vectors
10. Extract first 10 English letters in lower case and last 10 letters in upper case and extract letters between 22^{nd} to 24^{th} letters in upper case
11. Get the unique elements of a given string and unique numbers of vector
12. Illustrate the use of regular expressions
13. Create a simple bar plot of five subjects' marks
14. Create a simple pie chart of monthly expenditure
15. Draw an empty plot and an empty plot specify the axes limits of the graphic

Prepared by: **Checked by:**

Lt. J. Hajiram Beevi Mr. M.Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
VI	20UCS6EC2	ECC – II	COMPUTER APPLICATIONS FOR COMPETITIVE EXAMINATIONS	--	4*	100*	--	100*

UNIT I : Programming Languages (C, C++, Java,)

UNIT II : Database Management Systems, Data Structure and Algorithms

UNIT III : Operating Systems**,** Computer Networks

UNIT IV : Web Programming (JavaScript, VB.Net, PHP, Python Programming)

UNIT V : IoT, Software Testing

Prepared by:
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Mr. O.S. Abdul Qadir