B.SC. – INFORMATION TECHNOLOGY

SEM	COURSE CODE	PART	COURSE	COURSE TITLE	INS. HRS /WEEK	CREDIT	MARKS		TOTAL
							CIA	ESE	
I	20U1LT1/LA1/LF 1/LH1/LU1	I	Language – I		6	3	25	75	100
	20UCN1LE1	II	English - I		6	3	25	75	100
	20UIT1CC1	III	Core – I	Programming Foundations	5	5	25	75	100
	20UIT1CC2P		Core – II	C Programming Lab - Practical	3	2	20	80	100
	20UIT1AC1		Allied –I	Numerical Methods And Statistics	5	4	25	75	100
	20UIT1AC2		Allied–II	Entrepreneurship Development	3	2	25	75	100
	20UCN1AE1	IV	AEC-I	Value Education	2	2	100	-	100
				TOTAL	**30**	**21**			**700**
II	20U2LT2/LA2/LF 2/LH2/LU2	I	Language– II		6	3	25	75	100
	20UCN2LE2	II	English– II		6	3	25	75	100
	20UIT2CC3	III	Core– III	C++ Programming	6	5	25	75	100
	20UIT2CC4P		Core –IV	C++ Programming Lab - Practical	3	2	20	80	100
	20UIT2AC3		Allied – III	Optimization Techniques	4	3	25	75	100
	20UIT2AC4		Allied–IV	Digital Logics	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/LF 3/LH3/LU3	I	Language– III		6	3	25	75	100
	20UCN3LE3	II	English – III		6	3	25	75	100
	20UIT3CC5	III	Core– V	Data Structures	4	4	25	75	100
	20UIT3CC6P		Core– VI	Data Structures Lab - Practical	3	2	20	80	100
	20UIT3AC5		Allied– V	Java Programming	4	3	25	75	100
	20UIT3AC6P		Allied–VI	Java Programming Lab - Practical	3	2	20	80	100
	20UIT3GE1	IV	Generic Elective – I #		2	2	-	100	100
	20UCN3AE2		AEC-II	Environmental Studies	2	2	100	-	100
				TOTAL	**30**	**21**			**800**
IV	20U4LT4/LA4/LF 4/LH4/LU4	I	Language–IV		6	3	25	75	100
	20UCN4LE4	II	English– IV		6	3	25	75	100
	20UIT4CC7	III	Core– VII (a)	RDBMS	5	3	10	40	50
	20UIT4CC7 I		Core – VII (b)	Internship	-	2	10	40	50
	20UIT4CC8P		Core - VIII	MYSQL LAB - Practical	3	2	20	80	100
	20UIT4AC7		Allied– VII	Linux Basics	5	3	25	75	100
	20UIT4AC8P		Allied–VIII	Shell Programming Lab - Practical	3	2	20	80	100
	20UIT4GE2	IV	Generic Elective – II #		2	2	-	100	100
	20UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
				TOTAL	**30**	**21**			**700**
V	20UIT5CC9	III	Core – IX (a)	Web Programming	4	3	10	40	50
	20UIT5CC9P		Core – IX (b)	Web Programming Lab - Practical	2	2	10	40	50
	20UIT5CC10		Core – X	Operating System	5	5	25	75	100
	20UIT5CC11		Core – XI	Python Programming	5	5	25	75	100
	20UIT5CC12		Core - XII(a)	Multimedia	3	3	10	40	50
	20UIT5CC12P		Core - XII(b)	Python Programming Lab - Practical	2	2	10	40	50
	20UIT5DE1A/B		DSE – I **		5	4	25	75	100
	20UIT5SE2AP/BP	IV	Skill Enhancement Course – II @		2	2	-	100	100
	20UIT5SE3AP/BP		Skill Enhancement Course – III @		2	2	-	100	100
	20UIT5EC1		Extra Credit Course – I	General Intelligence for competitive examinations	-	4*	--	100*	100*
				TOTAL	**30**	**28**			**700**
VI	20UIT6CC13	III	Core– XIII	Computer Networks	5	5	25	75	100
	20UIT6CC14		Core– XIV	PHP Programming	5	5	25	75	100
	20UIT6CC15		Core - XV	Cyber Forensics	5	5	25	75	100
	20UIT6CC16P1		Core - XVI (A)	Document Process Tools Lab - Practical	2	2	10	40	50
	20UIT6CC16P2		Core - XVI (B)	PHP Programming Lab - Practical	3	3	10	40	50
	20UIT6DE2A/B		DSE – II **		5	4	25	75	100
	20UIT6DE3AP/BP		DSE – III **		4	4	20	80	100
	20UCN6AE3	IV	AEC-III	Gender Studies	1	1	100	-	100
	20UIT6EC2		Extra Credit Course - II	Information Technology for competitive examinations	-	4*	--	100*	100*
	20UITAECA		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	20UIT3GE1	FUNDAMENTALS OF IT
IV	20UIT4GE2	IT INRFASTRUCTURE MANAGEMENT

@ SKILL ENHANCEMENT COURSE

SEMESTER	COURSE CODE	COURSE TITLE
V	20UIT5SE2AP	Software Testing Lab – Practical
	20UIT5SE2BP	VB.Net lab – Practical
	20UIT5SE3AP	Operating Systems Lab – Practical
	20UIT5SE3BP	Animation Lab - Practical

** DISCIPLINE SPECIFIC ELECTIVES

SEMESTER	COURSE CODE	COURSE TITLE
V	20UIT5DE1A	Software Engineering
	20UIT5DE1B	VB.Net
VI	20UIT6DE2A	DATA MINING
	20UIT6DE2B	R Programming
	20UIT6DE3AP	DATAMINING USING WEKA LAB – Practical (20 + 80 = 100 Marks)
	20UIT6DE3BP	R Tools Lab – Practical (20 + 80 = 100 Marks)

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
I	20UIT1CC1	CORE– I	PROGRAMMING FOUNDATIONS	5	5	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

1. Use C language as the base for higher level course in programming
2. Acquire the basic constructs of C programming.
3. Apply structured 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 - Use of Logical Operators – **# The Conditional Operators #**.

UNIT II **15hours**

Loop Control Instruction – Loops – The *while* Loop – More Complex Repetition – The *for* Loop – The *break* Statement – The *continue* Statement – The *do-while* Loop – Case Control Instruction – Decisions with *switch* – **#The *goto* keyword#.**

UNIT III **15hours**

Functions – Passing Values between Functions – Scope Rule of Functions – #Using Library Functions#. Pointers – Call by Value and Call by Reference – An Introduction to Pointers – Pointer Notation –The C Preprocessor – Features of C Preprocessor – Macro Expansion – File Inclusion – Conditional Compilation – #*if* and #*elif* Directives – **# Miscellaneous Directives #** – The Build Process.

UNIT IV **15hours**

Arrays – More on Arrays – Pointers and Arrays – Multidimensional Arrays – Two-Dimensional Arrays - Arrays of Pointers –**#Three-Dimensional Array#**– Strings –Pointers and Strings – Standard Library String Functions –

UNIT V **15hours**

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, Fifteenth Edition, 2017.

UNITI : Chapters 1 2, 3 & 4
UNITII : Chapters 5, 6& 7
UNITIII : Chapters 8, 9 & 12
UNITIV : Chapters 13, 14&15
UNITV : Chapters 17, 18 & 19

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	20UIT1CC1		PROGRAMMING FOUNDATIONS			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.K.M. Akbar Badhusha

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	20UIT1CC2P	CORE – II	C PROGRAMMING LAB	3	2	100	20	80

Develop a program in C

1. Using assignment statements.
2. Using different forms of If statement.
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. To make 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. K.M. Akbar Badhusha

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
I	20UIT1AC1	ALLIED – I	NUMERICAL METHODS AND STATISTICS	5	4	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

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).

UNIT II **15hours**

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 **15hours**

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

UNIT IV **15hours**

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

UNIT V **15hours**

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)** **UNIT II** : Chapter 4 - Section: 4.2, 4.8, 4.9**(T.B.1)**
UNIT III : Chapter 2 - Section: 2.5 to 2.9
Chapter 3 – Section 3.3 to 3.7, 3.13 (**T.B.2)** **UNIT IV**: Chapter 4 - Section-4.5 to 4.8 **(T.B.2)**
UNIT V : 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	**20UIT1AC1**		**NUMERICAL METHODS AND STATISTICS**			**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. K.M. Akbar Badhusha

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	20UIT1AC2	ALLIED – II	ENTERPRENEURSHIP DEVELOPMENT	3	2	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

1. Know the parameters to assess opportunities and constraints for new business ideas.
2. Understand the systematic process to select and screen a business idea.
3. Design and evaluate strategies for successful implementation of ideas.
4. Identify the elements of success of entrepreneurial ventures and write a business plan.
5. Consider the legal and financial conditions for starting a business venture.

UNIT I **9 hours**

Entrepreneurship

Introduction – Meaning and Definition of Entrepreneurship, Entrepreneur and Enterprise –Functions of Entrepreneur - Factors influencing Entrepreneurship – Qualities of an Entrepreneur – **# Types of Entrepreneur #**.

UNIT II **9 hours**

Small Scale Industries

Meaning and Definition – Product Range - Capital Investment - Ownership Patterns – Meaning and importance of Tiny Industries, Ancillary Industries, Cottage Industries -Roles of SSIs-Problems of SSI's - **# Policies Governing SSI's #**.

UNIT III **9 hours**

Formation of Small Scale Industry

Business opportunity - Scanning the Environment - Evaluation of alternatives and Selection based on personal competencies - Formation of a small business venture: location, clearances, permits required, formalities, licensing and registration procedures.

UNIT IV **9 hours**

Preparing the Business Plan (BP)

Meaning – Importance – preparation –BP format: Financial aspects, Marketing aspects, Human Resource aspects, Technical aspects and Social aspects of the BP -**# Common pitfalls to be avoided in preparation of a BP #**.

UNIT V **9 hours**

Project Assistance

Financial Assistance through SFC's, SIDBI, Commercial Banks, IFCI - Non-Financial Assistance from DIC, SISI, AWAKE, KVIC - Financial Incentives for SSI's and Tax Concessions - Assistance for obtaining Raw Material, Machinery, Land and Building and Technical Assistance - **# Industrial Estates: Role and Types #**.

 # ..... # Self-study portion

Text Books:

1. Vasant Desai, *Entrepreneurship Development*, Himalaya Publishing House, 2016
2. H.R. Appannaiah,Gopala Krishna D.S, H.A Bhaskar, *Entrepreneurship Development*, Himalaya Publishing House, 2017

Books for References:

1. Rabindra N. Kanungo "Entrepreneurship and innovation", Sage Publications, New Delhi.
2. Tendon ,C: Environment and Entrepreneur; Cliugh Publications, Allahabad.
3. Siner A 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]

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

Semester	**Code**		**Title of the Course**			**Hours**			**Credits**	
I	**20UIT1AC2**		**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 (✓) = 37, Relationship: High										

Prepared by:

1. Dr. U. Syed Aktharsha

Checked by:

1. K.M. Akbar Badhusha

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	20UIT2CC3	CORE – III	C++ PROGRAMMING	6	5	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

1. Know and apply the concepts of OOP.
2. Implement Object Oriented programming concept using basic syntaxes
3. Increases the skill of problem solving
4. Identify classes, objects, members of a class and the relationships among them needed for finding the solution to specific problem
5. Analyse a problem and design C++ coding to solve it.

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:

http://www.cplusplus.com/doc/tutorial/
https://www.w3schools.com/cpp/

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

Semester	Code	Title of the Course	Hours	Credits
I	20UIT2CC3	C++ PROGRAMMING	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. Dr. M. Sabibullah

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	**20UIT2CC4P**	**CORE – IV**	**C++ PROGRAMMING LAB**	**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 display the 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. Dr. M. Sabibullah

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
II	20UIT2AC3	ALLIED – III	OPTIMIZATION TECHNIQUES	4	3	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

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. Analyse 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 – **# Big (M) 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)
UNIT II : Chapter 10 (sections 10.1, 10.2, 10.5, 10.8, 10.9) Chapter 11 (sections 11.1, 11.2, 11.3, 11.4)
UNIT III : Chapter 12 (sections 12.1 to 12.6)
UNIT IV : Chapter 18 (sections 18.1 to 18.3)
UNIT V : 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
I	20UIT2AC3	OPTIMIZATION TECHNIQUES	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. Dr. M. Sabibullah

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	20UIT2AC4	ALLIED – IV	DIGITAL LOGICS	3	2	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

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**

Number Systems and Codes: Binary, Decimal, Octal and hexadecimal number systems – Conversion from one system to another – Binary Addition – Binary Subtraction – **# Sign-magnitude numbers and 2's complement representation#** - Binary Code (8421, Gray, Excess-3)

UNIT II **9 hours**

Digital Logic: The Basic Gates - AND, OR, NOT - Universal Logic Gates – NOR, NAND. **# Boolean Laws and Theorems #** – Simplification – Sum of Products Method – Karnaugh Simplification (upto 3 variables)

UNIT III **9 hours**

Combinational logic circuits: Multiplexers – Demultiplexers –Decoders -Encoders. Arithmetic Bulding Blocks – Half adder – Half subtractor – Full adder – Full subtractor – Adder-subtractor.

UNIT IV **9 hours**

Sequential Logic Circuits: Flip Flops – RS Flip Flops – D Flip Flops- T Flip Flops –JK Flip-flops. Shift Registers (Serial-In-Serial-Out).

UNIT V **9 hours**

D/A and A/D Conversion – Variable Resistor Network – Binary Ladder – D/A Converter – D/A Accuracy and Resolution – A/D Converters – **# Simultaneous Method #**.

 # ..... # Self-study portion

Text Book:

Donald P Leach, Albert Paul Malvino, GoutamSaha,Digital Principles and Applications, Tata McGraw Hill Education Private Limited, New Delhi, Sixth Edition, 2002

UNIT I : Chapter 5 & 6 (6.1, 6.2, 6.4, 6.5)
UNIT II : Chapter 2 & 3
UNIT III : Chapter 4 (4.1 - 4.3 & 4.6) & 6 (6.7 - 6.8)
UNIT IV : Chapter 8 & 9
UNIT V : Chapter 12 (12.1 – 12.5)

Books for References:

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

Web Reference:

https://learn.sparkfun.com/tutorials/digital-logic/all

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

Semester	Code	Title of the Course	Hours	Credits
I	20UIT2AC4	DIGITAL LOGICS	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. J. FathimaFouzia

Checked by:

1. Dr. M. Sabibullah

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	20UIT3CC5	CORE – V	DATA STRUCTURES	4	4	100	25	75

Course Outcomes (CO):

After completion 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 applications
5. Apply the appropriate structures in problem solving

UNIT I **12 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#

UNIT II **12 hours**

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

UNIT III **12 hours**

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

UNIT IV **12 hours**

Graphs and their Applications: Sequential Representation of Graphs – Warshall's Algorithm – Linked Representation of a Graph – Operations on Graphs – Traversing a Graph – #Topological Sorting#

UNIT V **12 hours**

Sorting and Searching: Introduction – Insertion Sort – Selection Sort¬ – Merging – Merge Sort – #Radix Sort# – Quick Sort - Searching and Data Modification – Hashing

#.....# Self-study portion

Text Book:

1. A. Chitra and P.T. Rajan, *Data Structures*, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2006
   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

Books 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	
III	20UIT3CC5	DATA STRUCTURES				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: **Checked by:**

Mr. O.S. Abdul Qadir 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	20UIT3CC6P	CORE – VI	DATA STRUCTURES LAB	3	2	100	20	80

Develop a program in C / C++ to

1. Perform basic operations on arrays.
2. Create a linked list and insert a node at specific position.
3. Implement stack using array
4. Implement queue using array
5. Insert values in a binary search tree
6. Sort a set of numbers using heap sort.
7. Implement Warshall algorithm.
8. Implement graph traversal (DFS & BFS) using stack and queue
9. Implement Insertion Sort
10. Implement Selection sort
11. Implement Quick Sort

Prepared by:

Mr. O.S. Abdul Qadir

Checked by:

Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UIT3AC5	ALLIED– V	JAVA PROGRAMMING	4	3	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

1. Understand the basic building blocks, control statements, arrays and strings in Java Programming
2. Understand 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 and Swing
5. Understand the usage of networking classes and access the remote objects using RMI

UNIT I **12 hours**

Introduction to Java Programming: Introduction – Features of Java – Applications and Applets – Java Development Kit - The Building Blocks of Java – Data Types – Variable Declarations: Declaring, Initializing and Variables – Variable Types in Java- #Wrapper Classes#–Operators – Control Structures – Arrays – Strings

UNIT II **12 hours**

Java as an OOP Language: Defining Classes – Defining Methods – Knowing *this* – Passing Arguments to Methods – Overloading Methods – Constructor Methods – Inheritance– Overriding Methods – Finalizing Classes, Methods and Variables – Abstract Classes and Methods – Packages – #Interfaces#

UNIT III **12 hours**

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

UNIT IV **12 hours**

Files and I/O Streams: Java I/O – File Streams – FileInputStream and FileOutputStream – Serialization. Applets: Applet Life Cycle – Working with applets – The HTML APPLET Tag – Basic classes in AWT - Event Handling – AWT Components - Layout Managers - # The Swing package #

UNIT V **12 hours**

Networking and RMI: Introduction to Networking- understanding ports- Networking classes: Introduction to RMI-
RMI Architecture-Implementing Remote class and Interfaces-Security

#.....# Self-Study portion

Text Book:

P. Radha Krishna, *Object Oriented Programming through JAVA*, Universities Press, 2007
UNIT I - Chapter 2 (2.1-2.5) & Chapter 3 (3.1-3.8)
UNIT II - Chapter 4
UNIT III - Chapter 5 (5.2-5.6) & Chapter 6 (6.1-6.4)
UNIT IV - Chapter 7 (7.1-7.4), Chapter 8(8.3-8.5), Chapter 10 (10.2,10.5,10.6,10.7) & Chapter 11 (11.2)
UNIT V - Chapter 13

Books for Reference:

1. Herbert Schildt , *JAVA-The Complete Reference*, TATA McGraw Hill Edition, 2011.
2. C. Muthu, *Programming with Java*, Second Edition, Vijay Nicole imprints Pvt. Ltd, 2008.

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	20UIT3AC5	JAVA PROGRAMMING				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 (✓) = 43, Relationship: High										

Prepared by: **Checked by:**

Dr. S. Abdul Saleem 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	20UIT3AC6P	ALLIED– VI	JAVA PROGRAMMING LAB	3	2	100	20	80

1. Simple Programs using Control Statements
    a) Finding Biggest among three Numbers(If statements)
    b) Displaying sum of the individual digits of a given number (while/do..while loop)
    c) Finding Factorial of a given number (for loop)
    d) Displaying the day of a week (switch statement)

2. Program to demonstrate arrays and strings
    a) Sorting a set of given numbers (Arrays)
    b) Arranging the given names in alphabetical order (String)

3. Program to demonstrate the following
    a) Area of a circle (class and objects)
    b) Students Mark Sheet (single inheritance)

4. Program to demonstrate the following
    a) Area of the shapes (interface)
    b) EB-Bill preparation (package)

5. Program to demonstrate the following
    a) Handling multiple exceptions
    b) Creating threads using Runnable interface

6. Program to demonstrate the following
    a) Copying the content of a File into another
    b) Object Serialization

7. Program to demonstrate the following
    a) Displaying geometrical objects on a window
    b) Parameter passing using HTML <applet> tag

8. Program to demonstrate the following
    a) Displaying the Zonal areas names using BorderLayout
    b) Simple user interface using AWT components

9. Program to demonstrate the simple client and server program using sockets

10. Program to demonstrate a simple distributed application using RMI

Prepared by: **Checked by:**

Dr. S. Abdul Saleem Mr. M. Kamal

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
III	20UIT3GE1	Generic Elective–I	FUNDAMENTALS OF IT	2	2	100	--	100

Course Outcomes (CO):

After completion of the course, students will be able to

1. Understand and remember the foundations and use of information systems
2. Understand about Database, Sorting , Searching, and Data mining
3. Examine the Computer Graphics, Multimedia and Animation techniques
4. Utilize the concept of Computer Networks
5. Apply Information Technology in Real- Time Applications

UNIT I **6 hours**

Introduction: Computers – Classifications. Memory units. Input and Output Devices. Software: OS Programming languages – #Software packages#.

UNIT II **6 hours**

Database – Record – Table - DBMS – #Sorting# – Searching, Data warehouse – Data mining.

UNIT III **6 hours**

Computer Graphics – Multimedia – Tools – Virtual reality – Animations – applications.

UNIT IV **6 hours**

Computer Networks – Types – Modem - #Internet# – Email – Ecommerce - Hypermedia.

UNIT V **6 hours**

Computers – Home – Education and training – Business – Science - Medicine - #GIS#

#.....# Self-Study portion

Text Book:

Alex Leon, Mathews Leon, "*Fundamental of Information Technology",* Leon Vikas Publications, Chennai,1998.

UNIT I : Chapter 1, 2, 6, 8-12
UNIT II : Chapter 15, 28-30
UNIT III : Chapter 24, 26
UNIT IV : Chapter 18, 22, 28
UNIT V : Chapter 32 - 35

Books for Reference:

Suresh K Bosandra, "Computers Today", Galgotia Publications Limited, New Delhi, 2010.

Web Reference:

https://www.dcs.bbk.ac.uk/study/modules/fundamentals-of-information-technology/

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

Semester	Code	Title of the Course	Hours	Credits
III	20UIT3GE1	FUNDAMENTALS OF IT	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 (✓) = 38, Relationship: High										

Prepared by:

Mr. P. Shaik Abdulla

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
IV	20UIT4CC7A	CORE-VII (a)	RDBMS	5	3	50	10	40

Course Outcomes (CO):

After completion of the course, students will be able to

1. Understand architecture and data model of DBMS
2. Apply relational database, design ER modeling and describe formal language
3. Recognize and identify the use of normalization using FD and Constraints
4. Write advanced SQL queries in relational database
5. Perform curser management, Error Handling, package and trigger in PL/SQL

UNIT I **15 hours**

Introduction to Databases: Introduction – Traditional File-Based Systems – Database Approach – Roles in Database Environment – Advantages and Disadvantages of DBMSs. Database Environment – The Three-Levels of ANSI-SPARC Architecture –#Database Languages# – Data Modeling.

UNIT II **15 hours**

The Relational Model: Terminology – Views –Entity–Relationship Modeling: Entity Types – Relationship Types – Attributes – Strong and Weak Entity Types – #Attributes on Relationships# – Structural Constraints – The Relational Algebra

UNIT III **15 hours**

Normalization: Purpose of Normalization – How Normalization Support Database Design – Data Redundancy and Update Anomalies – Functional Dependencies – First Normal Form – Second Normal Form – Third Normal Form. Advanced Normalization: More on Functional Dependencies – BCNF – Domain Constraints – Entity Integrity – #Referential Integrity#

UNIT IV **15 hours**

SQL: Data Definition: Creating a Database – Creating a Table – Changing a Table Definition – Removing a Table – Views – SQL Commands – Data Manipulation: Simple Queries – Sorting – Aggregate Functions – Grouping – Sub queries – ANY and ALL – Multi-table Queries – #Combing Tables# – Database Updates

UNIT V **15 hours**

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

#.....# Self-Study portion

Text Books:

1. Thomas M.Connolly, Carolyn E.Begg, *Database Systems A Practical Approach to Design, Implementation, and Management*, 4th Edition by , Pearson Education, Fifth Impression, 2012.

UNIT I: Chapter 1: 1.1, 1.2, 1.3(1.3.1-1.3.4), 1.4, 1.6 Chapter 2: 2.1, 2.2(2.2.1, 2.2.2), 2.3(2.3.1, 2.3.2)
UNIT II: Chapter 3: 3.2, 3.4 Chapter 11: 11.1 – 11.6 Chapter 4: 4.1
UNIT III: Chapter 13: (13.1-13.4, 13.6-13.9) Chapter 14: (14.1.14.2) Chapter 6: 6.2(6.2.2 – 6.2.4)
UNIT IV: Chapter 6: 6.3(6.3.1 – 6.3.4) Chapter 5: 5.1 – 5.3

2. Alexis Leon and Mathews Leon, *Database Management Systems*, Vikas Publishing House Pvt. Ltd., New Delhi.
UNIT V: Chapter 32, 27

Books for Reference:

1. C.J Date, A Kannan and S. Swaminathan, *An Introduction to Database Systems*, 8th Edition, Pearson Education Asia.
2. Ramez Elmasri, Shamkant B. Navathe, *Fundamentals of Database Systems*, 5th Edition, Pearson Education LTD

Web Reference:
www.booksites.net/connbegg
www.w3school.com/sql/

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

Semester	Code		Title of the Course						Hours	Credits
IV	20UIT4CC7A		RDBMS						5	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 = 39, Relationship = High										

Prepared by: Mr. S. Syed Ibrahim

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	**20UIT4CC7B**	**CORE – VII (b)**	**INTERNSHIP**	**--**	**2**	**50**	**--**	**50**

- At the end of Semester IV, during the summer vacation, the students should undergo an Internship in a reputed IT Company or in the IT Division of a reputed company after getting permission from the Department.

- The minimum number of days for Internship will be 30 days.

- A Project Report and a Certificate of Attendance should be submitted after completing the Internship for External Evaluation to the Department on the first day of Semester V.

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UIT4CC8P	CORE-VIII	MYSQL LAB	3	2	100	20	80

1. SQL: Data Definition Languages

Create table with Primary key, Candidate key,
Foreign key, Check
Constraints Table Alteration - Rename table and column name,
Add column,
Drop column,
Modify column size and data type
Drop table

2. SQL: Data Manipulation Languages

Inserting Data into the table Range searching
Update
Tuple Variable
Ordering Tuples
Wildcard
Characters Set operations
Case statement
Aggregate Functions – (average, minimum, maximum, sum, Count)
- Group by with having clause

Nested Sub-queries – (i) using (IN, NOT IN, SOME and ALL)
(ii) Sub-queries in the from clause
(iii) With clause
Deletion –
Removal - all rows, specific rows,
Using sub-queries
Joins – Inner join
Outer join – Left, Right, Full
View

3. PL/SQL Programs

Factorial of a given number using Recursive Function. Student Mark Sheet.
Exception handling.

4. SQL Forms

Employee Pay-Roll Electricity Bill
Income Tax Calculation

Prepared by Mr. S. Syed Ibrahim

Checked by Mr. O.S. Abdul Qadir

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UIT4AC7	ALLIED–VII	LINUX BASICS	5	3	100	25	75

Course Outcomes (CO):

After completion of the course, students will be able to

1. Acquire skills in fundamentals of Linux and Shell Programming
2. Use of Linux Files structure as a base for building Linux programs
3. Apply skills in the working environment of Linux
4. Know the advancement tools of LINUX
5. Understand the concept of inter process communication

UNIT I **15 hours**

Starting with Linux: Introduction to Linux – What is Linux – GNU Project and the free software foundation – Linux distributions – Programming Linux – Linux Programs – Text Editors – The C compiler. #Development System Road Map#.Shell Programming: What is Shell – pipes and Redirection – Shell as a programming language – Shell Syntax.

UNIT II **15 hours**

Working with files – Linux File structure – Library functions – Standard I/O Library – Formatted Input and Output – File and Directory Maintenance – Scanning Directories – Errors – Linux Environment: Program arguments – Environment variables – Time and date – Temporary files – User information –# Host information#-Logging-Resource and Limits.

UNIT III **15 hours**

Terminals: Terminal structure – Terminal Output – Detecting keystrokes –. Managing Text based screens with cursors: The screen – The keyboard – Windows – Sub windows - Using Color. Data Management – #Managing director# –File locking.

UNIT IV **15 hours**

Development tools – The make command and Make files – Source code control – RPM packages – other package formats. Debugging: General debugging techniques – Debugging with gdb – debugging tools.# Processes and signals: Process structure – Starting a new process – Signals-#POSIX Threads#

UNIT V **15 hours**

Inter-Process Communication: Pipes-Process pipes-The Pipe call. Semaphores: Definition-Linux semaphore facilities. Shared Memory –#Message Queues#-Sockets-Socket Connection - Network information.

#.....# Self-Study portion

Text Book:

Book Neil Matthew, Richard Stones, *Beginning Linux Programming*, 4th Edition, Wiley India Pvt. Ltd., 2014

UNIT I : Chapter 1 and 2 **UNIT II**: Chapter 3 and 4 **UNIT III** : Chapter 5, 6 and 7
UNIT IV : Chapter 9, 10, 11 and 12 **UNIT V**: Chapter 13, 14 and 15

Books for Reference:

Richard Petersen, *Linux – The Complete Reference*, Sixth Edition, Tata McGraw-Hill Publications

Web References:

https://www.digitalocean.com/community/tutorials/an-introduction-to-linux-basics https://www.whoishostingthis.com/resources/linux-programming/

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

Semester	Code	Title of the Course	Hours	Credits
IV	20UIT4AC7	LINUX BASICS	5	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 **Checked by**

Mr. A. Basheer Ahamed Mr. S. Peerbasha

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	20UIT4AC8P	ALLIED - VIII	SHELL PROGRAMMING LAB	3	2	100	20	80

1. Program using do while and continue statements.
2. Program to check whether the user is eligible for vote or not.
3. Program to read two words one after another. Display the first word, go to sleep mode for 20 seconds using 'sleep' command. After 20 seconds, display the second word.
4. Program for finding the factorial of a given number using while loop.
5. Program to delete the files interactively using 'rm' command and 'while' statement.
6. Program using three arguments to take the pattern as well as input and output file names. If the pattern is found then display "Pattern Found" else display "Error Message". Also check whether right number of arguments is entered or not
7. Shell script to check whether the given string is palindrome or not
8. Shell script for using cp command to copy files. Display the necessary error message if error occurs.
9. Shell script for a file containing records with each record containing name of the city, name of the state and name of the country. Sort this file with *country* as the primary sort key and *state* as the secondary sort key.
10. Program to prepare the electricity bill based on the following conditions:

    1 to 50 units – Rs. 0

    51 to 100 units – Rs. 1.50/unit

    Above 100 units – Rs. 3.00/unit
11. Program using Menu to copy, edit, rename and delete a file.
12. Simple shell script for mark sheet preparation with minimum of three subject marks.
13. Menu driven program for converting all the upper letters in a file to lower case letters and vice versa
14. Simple program for file operations.
15. Shell script program to add factorial value of any two given numbers.

Prepared by **Checked by**

Mr. A. Basheer Ahamed Mr. S. Peerbasha

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal Marks	External Marks
IV	20UIT4GE2	GENERIC ELECTIVE – II	IT INFRASTRUCTURE MANAGEMENT	2	2	100	--	100

Course Outcomes (CO):

After completion of the course, students will be able to

1. Acquire knowledge of IT Infrastructure and management
2. Apply Service Delivery and Service Support Process in IT infrastructure management
3. Discuss about various storage levels in IT
4. Discuss various security techniques in information technology
5. Develop a new communication mechanism based on emerging trends in information technology

UNIT I **6 hours**

Introduction & IT Infrastructure : Computer Basics – Network and Internet – Computing resources – Information Technology. Introduction to IT Infrastructure Management – Challenges in IT Infrastructure Management – Design issues of IT organizations and IT Infrastructure – Determining customer requirements – IT systems management process – #IT service management process# – Information system design process.

UNIT II **6 hours**

Service Delivery Process & Service Support Process : Service level management – Financial management – T service continuity management – Capacity management – Availability management. Configuration management – Incident management – Problem management – Change management – **# Release management #**.

UNIT III **6 hours**

Storage Management : Introduction to storage – Backup and storage – Archive and retrieve – Disaster recovery – Space management – Database and application protection – Bare Machine Recovery (BMR) – **# Data Retention #**.

UNIT IV **6 hours**

Security Management & IT Ethics : Computer security – Internet security – Physical security – Identity management – Access control system – Intrusion detection. Intellectual property – Privacy and law – Computer Forensics – Ethics and Internet – ***# Cyber crimes #***.

UNIT V **6 hours**

Emerging Trends in IT : Introduction – E-commerce – Electronic Data Interchange – Global system for mobile communication (GSM) - Bluetooth – **#Infrared Technology#**.

#.....# Self-Study portion

Text Book:

Phalguni Gupta, Surya Prakash, Umarani Jayaraman **, "***IT Infrastructure and its Management"***,** , Tata McGraw Hill Education Pvt. Ltd, Second Reprint 2010.

UNIT – I : Chapters 1 & 2, 1.1 to 1.5, 2.1 to 2.7

UNIT – II : Chapters 3 & 4, 3.1 to 3.5, 4.1 to 4.5

UNIT – III : Chapter 5, 5.1 to 5.8

UNIT – IV : Chapter 6 & 7, 6.2 to 6.7, 7.2 to 7.6

UNIT – V : Chapter 8, 8.1 to 8.6

Books for References:

1. Sanjeev Kumar Sharma, Rakesh Saini and Reena Sharma **"***IT Infrastructure and its Management"***.**
2. Surendra Keshari and Narendra Kumar **"***IT Infrastructure and its Management"***,**.

Web References:

https://books.google.co.in

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

Semester	Code	Title of the Course	Hours	Credits
IV	20UIT4GE2	IT INFRASTRUCTURE MANAGEMENT	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 (✓) = 25 , Relationship: Medium										

Prepared by: **Checked by:**

Dr. S. Mohamed Iliyas Dr. S. Abdul Saleem

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