B.Sc., INFORMATION TECHNOLOGY

Syllabus

Program Code: UIT

2023 - Onwards

MANNAR THIRUMALAI NAICKER COLLEGE

(AUTONOMOUS)

Re-accredited with "A" Grade by NAAC

PASUMALAI, MADURAI – 625 004

GUIDLINESS FOR OUTCOME BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM

(FOR UG PROGRAM FROM 2023 -2024 ONWARDS)

ELIGIBILITY FOR ADMISSION

Candidates seeking admission to the UG Degree program must have passed the Higher Secondary Education (respective groups – Arts / Science) of the Government of Tamil Nadu or any other state or its equivalent qualification.

DURATION OF THE COURSE

The duration of the course shall be three academic years comprising six semesters with two semesters in each academic year.

Subjects of Study

Part I : Tamil / Hindi /

Part II : English

Part III :

1.Core Subjects
2.Allied Subjects
3.Electives

Part IV:

1.Non Major Electives (I Year)
2.Skill Based Subjects
3.Environmental Studies - Mandatory Subject
4.Value Education - Mandatory Subject

Part V :

Extension Activities

ARTS & SCIENCE

CBCS COURSE STRUCTURE FOR UG PROGRAMS

Sem I	Credit	Sem II	Credit	Sem III	Credit	Sem IV	Credit	Sem V	Credit	Sem VI	Credit
1.1. Language - Tamil	3	2.1. Language - Tamil	3	3.1. Language - Tamil	3	4.1. Language - Tamil	3	5.1 Core Course – \CC IX	4	6.1 Core Course – CC XIII	4
1.2 English	3	2.2 English	3	3.2 English	3	4.2 English	3	5.2 Core Course – CC X	4	6.2 Core Course – CC XIV	4
1.3 Core Course – CC I	4	2.3 Core Course – CC III	4	3.3 Core Course – CC V	4	4.3 Core Course – CC VII Core Industry Module	4	5. 3.Core Course CC -XI	4	6.3 Core Course – CC XV	4
1.4 Core Course – CC II	4	2.4 Core Course – CC IV	4	3.4 Core Course – CC VI	4	4.4 Core Course – CC VIII	4	5. 3.Core Course –/ Project with viva-voce CC - XII	4	6.4 Elective -VII Generic/ Discipline Specific	3
1.5 Elective I Generic/ Discipline Specific	3	2.5 Elective II Generic/ Discipline Specific	3	3.5 Elective III Generic/ Discipline Specific	3	4.5 Elective IV Generic/ Discipline Specific	3	5.4 Elective V Generic/ Discipline Specific	3	6.5 Elective VIII Generic/ Discipline Specific	3
1.6 Skill Enhancement Course SEC-1 (NME)	2	2.6 Skill Enhancement Course SEC-2 (NME)	2	3.6 Skill Enhancement Course SEC-4, (Entrepreneurial Skill)	1	4.6 Skill Enhancement Course SEC-6	2	5.5 Elective VI Generic/ Discipline Specific	3	6.6 Extension Activity	1
1.7Ability Enhancement Compulsory Course (AECC) Soft Skill-1	2	2.7 Skill Enhancement Course – SEC-3(NME)	2	3.7 Skill Enhancement Course SEC-5	2	4.7 Skill Enhancement Course SEC-7	2	5.6 Value Education	2	6.7 Professional Competency Skill	2
1.8 Skill Enhancement - (Foundation Course)	2	2.8 Ability Enhancement Compulsory Course (AECC) Soft Skill-2	2	3.7 Ability Enhancement Compulsory Course (AECC) Soft Skill-3	2	4.7 7Ability Enhancement Compulsory Course (AECC) Soft Skill-4	2	5.5 Summer Internship /Industrial Training	2		
				3.8 E.V.S	-	4.8 E.V.S	2				
	23		**23**		**22**		**25**		**26**		**21**
	Total Credit Points										**140**

QUESTION PAPER PATTERN FOR THE CONTINUOUS INTERNAL ASSESSMENT

Note: Duration – 1 hour

(FOR PART I, PART II & PART III)

The components for continuous internal assessment are:

Part –A

Four multiple choice questions (answer all) 4 x01= 04 Marks

Part –B

Two questions (‘either …. or ‘type) 2 x05= 10 Marks

Part –C

Two questions (‘either …. or ‘type) 2 x 08=16 Marks

Total 30 Marks

THE COMPONENTS FOR CONTINUOUS INTERNAL ASSESSMENT ARE:

(60 Marks of two continuous internal assessments will be converted to 15 marks)

Two tests and their average --15 marks

Seminar /Group discussion / Quiz Test --5 marks

Assignment --5 marks

Total 25 Marks

QUESTION PAPER PATTERN FOR THE SUMMATIVE EXAMINATIONS:

Note: Duration- 3 hours

Part –A

Ten multiple choice questions	10 x01	= 10 Marks

No Unit shall be omitted: not more than two questions from each unit.)

Part –B

Five Paragraph questions (‘either …. or ‘type)	5 x 05	= 25 Marks

(One question from each Unit)

Part –C

Five Paragraph questions (‘either …. or ‘type)	5 x 08	= 40 Marks

(One question from each Unit)

Total	75 Marks

PART-IV- SKILL BASED PAPERS / NME:

The Scheme of Examination for Skill Based Papers: (Except Practical Lab Subjects)

QUESTION PAPER PATTERN FOR THE CONTINUOUS INTERNAL ASSESSMENT (SKILL BASED AND NME COURSES) DURATION – 1 HOUR

- 50 MCQs will be asked for each internal assessment tests (50 x 1=50 Marks) and converted for 15 marks

THE COMPONENTS FOR CONTINUOUS INTERNAL ASSESSMENT ARE:

Two tests and their average	--15 marks
Seminar /Group discussion / Quiz Test	-- 5 marks
Assignment	-- 5 marks
Total	25 Marks

SUMMATIVE EXAMINATION PATTERN (SKILL BASED AND NME COURSES) DURATION – 3 HOURS

Pattern of the Question Paper for Skill Based and Non-Major Elective courses (External)

75 Multiple choice questions will be asked from five units (75 x 1=75 Marks)

(15MCQ's from each unit)

PART-IV- ENVIRONMENTAL STUDIES AND VALUE EDUCATION

QUESTION PAPER PATTERN (INTERNAL ASSESSMENT)

Pattern of the Question Paper for Environmental Studies & Value Education (Internal)

50 MCQs will be asked for each internal assessment tests (50 x 1=50 Marks) and converted for 15 marks

Two tests and their average	--	15 marks
Project	--	10 marks

Total		25 Marks
		---

* The students as Individual or Group must visit a local area to document environmental assets – river / forest / grassland / hill / mountain – visit a local polluted site – urban / rural / industrial / agricultural – study of common plants, insects, birds – study of simple ecosystem – pond, river, hill slopes, etc.

SUMMATIVE EXAMINATION PATTERN

Pattern of the Question Paper for Environmental Studies & Value Education only) (External)

75 Multiple choice questions will be asked from five units (75 x 1=75 Marks)

(15MCQ's from each unit)

PART V EXTENSION ACTIVITIES: (MAXIMUM MARKS: 100)

1. NCC
2. NSS
3. Physical Education
4. YRC
5. RRC
6. Health & Fitness Club
7. Eco Club
8. Human Rights Club

Internal Examinations - - 25 Marks

Summative Examinations - - 75 Marks

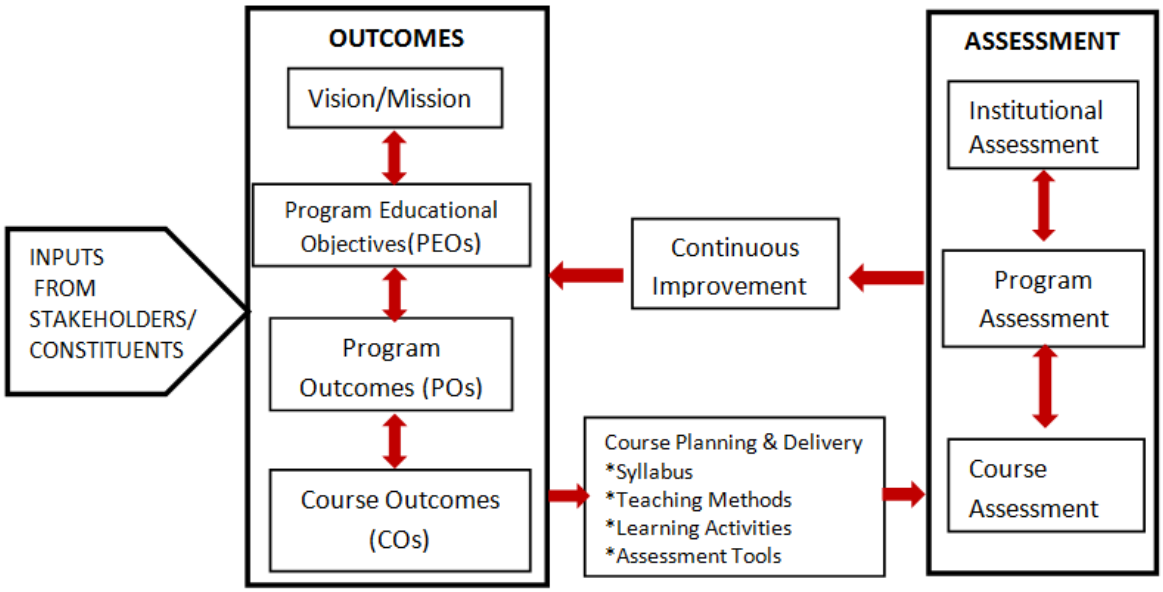
100

OUTCOME BASED EDUCATION:

OBE starts with the identification and articulation of clear and measurable learning outcomes for each course or program. These outcomes describe the skills, knowledge, and abilities that students are expected to acquire. The curriculum, instructional methods, and assessments are aligned with the defined learning outcomes. This ensures that everything taught and evaluated is directly related to what students are expected to learn.

The Learning Outcomes-Based Approach to curriculum planning and transaction in our institution ensures whether the teaching-learning processes are oriented towards enabling students to attain the defined learning outcomes relating to the courses within a programme. The outcome based approach, particularly in the context of undergraduate studies, requires a significant shift from teacher-centric to learner-centric pedagogies and from passive to active/participatory pedagogies.

Assessment Method: The students are assessed with 2 internal examination and the summative examination which includes problem based assignments; practical assignment laboratory reports; observation of practical skills; individual project reports ,case-study reports; team project reports; oral presentations, including seminar presentation; viva voce interviews; computerized adaptive testing; etc. and any other pedagogic approaches as per the context.



INSTITUTIONAL VISION

To Mould the learners into accomplished individuals by providing them with a stimulus for social change through character, confidence and competence.

INSTITUTIONAL MISSION

1. Enlightening the learners on the ethical and environmental issues.

2. Extending holistic training to shape the learners in to committed and competent citizens.

3. Equipping them with soft skills for facing the competitive world.

4. Enriching their employability through career oriented courses.

5. Ensuring accessibility and opportunity to make education affordable to the underprivileged.

Highlights of the Revamped Curriculum:

- Student-centric, meeting the demands of industry & society, incorporating industrial components, hands-on training, skill enhancement modules, industrial project, project with viva-voce, exposure to entrepreneurial skills, training for competitive examinations, sustaining the quality of the core components and incorporating application oriented content wherever required.
- The Core subjects include latest developments in the education and scientific front, advanced programming packages allied with the discipline topics, practical training, devising mathematical models and algorithms for providing solutions to industry / real life situations. The curriculum also facilitates peer learning with advanced mathematical topics in the final semester, catering to the needs of stakeholders with research aptitude.
- The General Studies and Mathematics based problem solving skills are included as mandatory components in the 'Training for Competitive Examinations' course at the final semester, a first of its kind.
- The curriculum is designed so as to strengthen the Industry-Academia interface and provide more job opportunities for the students.

- The Industrial Statistics course is newly introduced in the fourth semester, to expose the students to real life problems and train the students on designing a mathematical model to provide solutions to the industrial problems.
- The Internship during the second year vacation will help the students gain valuable work experience that connects classroom knowledge to real world experience and to narrow down and focus on the career path.
- Project with viva-voce component in the fifth semester enables the student, application of conceptual knowledge to practical situations. The state of art technologies in conducting a Explain in a scientific and systematic way and arriving at a precise solution is ensured. Such innovative provisions of the industrial training, project and internships will give students an edge over the counterparts in the job market.
- State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature are incorporated as Elective courses, covering conventional topics to the latest - Artificial Intelligence.

MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS),
MADURAI – 625 004
B.SC INFORMATION TECHNOLOGY CURRICULUM
(For the student admitted during the academic year 2023-2024 onwards)

Course Code	Title of the Course	Hrs	Credits	Maximum Marks		
				Int	Ext	Total
FIRST SEMESTER						
Part – I	**Tamil / Alternative Course**					
23UTAGT11	தமிழ் இலக்கிய வரலாறு - I	6	3	25	75	100
Part – II	**English**					
23UENGE11	GENERAL ENGLISH - I	6	3	25	75	100
Part - III	**Core Courses**					
23UITCC11	PROGRAMMING IN C	5	5	25	75	100
23UITCP11	PROGRAMMING IN C LAB	5	5	25	75	100
Part - III	**Elective Course**					
23UELEA12	DIGITAL LOGIC	4	3	25	75	100
Part IV	**Non Major Elective**					
23UITNM11	FUNDAMENTALS OF INFORMATION TECHNOLOGY	2	2	25	75	100
Part IV	**Foundation Course**					
23UITFC11	FUNDAMENTALS OF COMPUTERS	2	2	25	75	100
	Total	30	23	175	525	700
SECOND SEMESTER						
Part – I	**Tamil / Alternative Course**					
23UTAGT21	தமிழ் இலக்கிய வரலாறு – II	6	3	25	75	100
Part – II	**English**					
23UENGE21	GENERAL ENGLISH - II	6	3	25	75	100
Part - III	**Core Courses**					
23UITCC21	JAVA PROGRAMMING	5	5	25	75	100
23UITCP21	JAVA PROGRAMMING LAB	5	5	25	75	100
Part - III	**Elective Course**					
23UMTEA23	STATISTICAL AND NUMERICAL METHODS - I	4	3	25	75	100
Part IV	**Non Major Elective**					
23UITNM21	BASICS OF INTERNET	2	2	25	75	100
Part IV	**Skill Enhancement course**					
23UITSP21	INTRODUCTION TO HTML LAB	2	2	25	75	100
	Total	30	23	175	525	700


FIRST SEMESTER

Course Name	PROGRAMMING IN C			
Course Code	23UITCC11	**L**	**P**	**C**
Category	CORE	5	-	5

COURSE OBJECTIVES

- To familiarize the students with the understanding of code organization.
- To improve the programming skills.
- Learning the basic programming constructs.

UNIT - I Studying Concepts of Programming Languages **15**

Language Evaluation Criteria - Language design - Language Categories - Implementation Methods – Programming Environments - Overview of C: History of C- Importance of C- Basic Structure of C Programs-Executing a C Program- Constants, Variables and Data types - Operators and Expressions - Managing Input and Output Operations.

UNIT - II Decision Making and Branching **15**

Decision Making and Looping - Arrays - Character Arrays and Strings

UNIT - III User Defined Functions **15**

Elements of User Defined Functions- Definition of Functions- Return Values and their Types- Function Call- Function Declaration- Categories of Functions- Nesting of Functions-Recursion

UNIT - IV Structures and Unions **15**

Introduction- Defining a Structure- Declaring Structure Variables Accessing Structure Members- Structure Initialization- Arrays of Structures- Arrays within Structures- Unions- Size of Structures.

UNIT - V Pointers **15**

Understanding Pointers- Accessing the Address of a Variable- Declaring Pointer Variables- Initializing of Pointer Variables- Accessing a Variable through its Pointer- Chain of Pointers- Pointer Expressions- Pointer and Scale Factor- Pointer and Arrays- Pointers and Character Strings- Array of Pointers- Pointer as Function Arguments- Functions Returning Pointers- Pointers to Functions-**File Management in C**

Total Lecture Hours **75**

BOOKS FOR STUDY:

- Robert W. Sebesta, (2012), ―Concepts of Programming Languages‖, Fourth Edition, Addison Wesley (Unit I : Chapter – 1)
- E. Balaguruswamy, (2010), ―Programming in ANSI C‖, Fifth Edition, Tata McGraw Hill Publications

BOOKS FOR REFERENCES:

- Ashok Kamthane, (2009), ―Programming with ANSI & Turbo C‖, Pearson Education
- Byron Gottfried, (2010), ―Programming with C‖, Schaums Outline Series, Tata McGraw Hill Publications

WEB RESOURCES:

- **http://www.tutorialspoint.com/cprogramming/**
- **http://www.cprogramming.com/**
- **http://www.programmingsimplified.com/c-program-examples**
- **http://www.programiz.com/c-programming**
- **http://www.cs.cf.ac.uk/Dave/C/CE.html**
- **http://fresh2refresh.com/c-programming/c-function/**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		K LEVEL
After studying this course, the students will be able to:		
CO1	Outline the fundamental concepts of C programming languages, andits features	K1 to K4
CO2	Demonstrate the programming methodology.	K1 to K4
CO3	Identify suitable programming constructs for problem solving.	K1 to K4
CO4	Select the appropriate data representation, control structures, functions and concepts based on the problem requirement.	K1 to K4
CO5	Evaluate the program performance by fixing the errors.	K1 to K4

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				
CO5	-	M	S	S	M	S				

S- STRONG M – MEDIUM L - LOW

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	2	3	2	2
CO 2	3	3	2	3	2	2
CO 3	3	3	3	3	2	2
CO 4	3	3	2	3	2	2
CO 5	3	3	2	3	2	2
WEIGHTAGE	15	14	11	15	10	10
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	100	93	73	100	67	67

LESSON PLAN:

UNIT	PROGRAMMING IN C	HRS	PEDAGOGY
I	**Studying Concepts of Programming Languages**- Language Evaluation Criteria - Language design - Language Categories - Implementation Methods – Programming Environments - Overview of C: History of C- Importance of C- Basic Structure of C Programs- Executing a C Program- Constants, Variables and Data types - Operators and Expressions - Managing Input and Output Operations	15	ICT, CHALK & TALK

II	**Decision Making and Branching**: Decision Making and Looping - Arrays - Character Arrays and Strings	**15**	**ICT, CHALK & TALK**
III	**User Defined Functions:** Elements of User Defined Functions- Definition of Functions- Return Values and their Types- Function Call- Function Declaration- Categories of Functions- Nesting of Functions- Recursion	**15**	**ICT, CHALK & TALK**
IV	**Structures and Unions:** Introduction- Defining a Structure- Declaring Structure Variables Accessing Structure Members- Structure Initialization- Arrays of Structures- Arrays within Structures- Unions- Size of Structures.	**15**	**ICT, CHALK & TALK**
V	**Pointers:** Understanding Pointers- Accessing the Address of a Variable- Declaring Pointer Variables- Initializing of Pointer Variables- Accessing a Variable through its Pointer- Chain of Pointers- Pointer Expressions- Pointer and Scale Factor- Pointer and Arrays- Pointers and Character Strings- Array of Pointers- Pointer as Function Arguments- Functions Returning Pointers- Pointers to Functions- **File Management in C**	**15**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE)
Formative Examination - Blue Print
Articulation Mapping – K Levels with Course Outcomes (COs)

Internal	Cos	K Level	Section A		Section B Either or Choice	Section C Either or Choice
			MCQs			
			No. of. Questions	K - Level		
CI AI	CO1	K1 – K4	2	K1,K2	2(K3)	2(K4)
	CO2	K1 – K4	2	K1,K2	2(K3)	2(K4)
CI AII	CO3	K1 – K4	2	K1,K2	2(K3)	2(K4)
	CO4	K1 – K4	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		No. of Questions to be asked	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	Section A (Multiple Choice Questions)	Section B (Either / Or Choice)	Section C (Either / Or Choice)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100
CIA II	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	**Section A (Multiple Choice Questions)**	**Section B (Either or Choice**	**Section C (Either/ or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**5**			**5**	**3.6**	**3.6**
K2	**5**			**5**	**3.6**	**3.6**
K3		**50**		**50**	**35.7**	**35.7**
K4			**80**	**80**	**57.1**	**57.1**
Marks	**10**	**50**	**80**	**140**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	**Unit**	**CO**	**K-level**		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions **PART – B**				**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions **PART – C(5 x 8 = 40 Marks)**				
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	PROGRAMMING IN C LAB			
Course Code	23UITCP11	**L**	**P**	**C**
Category	CORE	5	-	5

COURSE OBJECTIVES:

- The Course aims to provide exposure to problem-solving through C programming
- It aims to train the student to the basic concepts of the C -Programming language
- Apply different concepts of C language to solve the problem

CONTENTS **75**

1. Programs using Input/ Output functions
2. Programs on conditional structures
3. Command Line Arguments
4. Programs using Arrays
5. String Manipulations
6. Programs using Functions
7. Recursive Functions
8. Programs using Pointers
9. Files
10. Programs using Structures & Unions

BOOKS FOR STUDY:

- Robert W. Sebesta, (2012), ―Concepts of Programming Languages‖, Fourth Edition, Addison Wesley (Unit I : Chapter – 1)

E. Balaguruswamy, (2010), ―Programming in ANSI C‖, Fifth Edition, Tata McGraw Hill Publications

BOOKS FOR REFERENCES:

- Ashok Kamthane, (2009), ―Programming with ANSI & Turbo C‖, Pearson Education Byron Gottfried, (2010), ―Programming with C‖, Schaums Outline Series, Tata McGraw Hill Publications

WEB RESOURCES:

- http://www.tutorialspoint.com/cprogramming/
- http://www.cprogramming.com/
- http://www.programmingsimplified.com/c-program-examples
- http://www.programiz.com/c-programming
- http://www.cs.cf.ac.uk/Dave/C/CE.html
- http://fresh2refresh.com/c-programming/c-function/

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Demonstrate the understanding of syntax and semantics of C programs.	**K1 to K4**
CO2	Identify the problem and solve using C programming techniques.	**K1 to K4**
CO3	Identify suitable programming constructs for problem solving.	**K1 to K4**
CO4	Analyse various concepts of C language to solve the problem in an efficient way.	**K1 to K4**
CO5	Develop a C program for a given problem and test for its correctness.	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				
CO5	-	M	S	S	M	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	2	3	2	2
CO 2	3	3	2	3	2	2
CO 3	3	3	3	3	2	2
CO 4	3	3	2	3	2	2

CO 5	**3**	**3**	**2**	**3**	**3**	**2**
WEIGHTAGE	**15**	**14**	**11**	**15**	**11**	**10**
WEIGHTED PERCENT OF COURSE CONTRIBUTION TO POS	**100**	**93**	**73**	**100**	**73**	**67**

LESSON PLAN:

S.NO	List of Programs	Hours	Pedagogy
1.	Programs using Input/ Output functions	**75**	**Laboratory Experiments**
2.	Programs on conditional structures		
3.	Command Line Arguments		
4.	Programs using Arrays		
5.	String Manipulations		
6.	Programs using Functions		
7.	Recursive Functions		
8.	Programs using Pointers		
9.	Files		
10.	Programs using Structures & Unions		

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	**5**				
	CO2	**K2**		**5**			
	CO3	**K3**			**5**		
	CO4	**K4**				**5**	
	CO5	**K5**					**5**
Question Pattern CIA		**No. of Questions to be asked**	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**
		Total Marks for each section	**5**	**5**	**5**	**5**	**5**

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	**5**					**5**	**20**	**20**
	K2		**5**				**5**	**20**	**20**
	K3			**5**			**5**	**20**	**20**
	K4				**5**		**5**	**20**	**20**
	K5					**5**	**5**	**20**	**20**
	Marks						**25**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programmingprinciples**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	**15**				
	CO2	**K2**		**15**			
	CO3	**K3**			**15**		
	CO4	**K4**				**15**	
	CO5	**K5**					**15**
Question Pattern		No. of Questions to be asked	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**
		Total Marks for each section	**15**	**15**	**15**	**15**	**15**

Distribution of Marks with K Level								
K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	15					**15**	**20**	**20**
K2		15				**15**	**20**	**20**
K3			15			15	20	20
K4				15		**15**	20	20
K5					15	15	20	20
Marks						**75**	**100**	**100**

Course Name	DIGITAL LOGIC			
Course Code	23UELEA12	**L**	**P**	**C**
Category	ALLIED	4	-	3

COURSE OBJECTIVES:

- To learn how to work on combinational Logic.
- To learn the Arithmetic Circuits and Flip-Flops.
- To learn the types of Registers.
- To implement the basic concept of memories.

UNIT - I Number Systems and Codes **12**

BinaryNumbersystem–Binarytodecimal–decimaltobinary–hexadecimal–ASCIIcode– Excess-3Code–Graycode.

DigitalLogic: TheBasicGates–NOT,OR,AND-UniversalLogicGates–NOR, NAND.

UNIT - II Combinational Logic Circuits: **12**

Boolean Laws and Theorems. - Sum of Products method - Truth table to Karnaugh Map –Pairs, Quads, and Octets – Don't Care Condition Product-of sums method -Product-of sumsSimplifications.

DataProcessingCircuits: Multiplexers–Demultiplexers-1-of-16Decoder–BCD-to-decimalDecoders–Seven segmentDecoders–Encoders–Exclusive-ORGates-ParityGeneratorsandCheckers.Arrays and Strings.

UNIT – III Arithmetic Circuits and Flip-Flops **12**

BinaryAddition-BinarySubtraction–2'SComplementRepresentation-2'sComplementArithmetic–ArithmeticBuildingBlocks:Adder-Subtractor.

Flip-Flops-RSFlip-Flops – Gated Flip-Flops– Edge-triggered RS Flip-Flops – Edge-triggeredDFlip-flops–Edge-triggeredJKFlip-Flops– JKMasterSlaveFlip- flops.

UNIT - IV Types of Registers **12**

SerialIn-SerialOut–SerialIn-ParallelOut–ParallelIn-ParallelOut–RingCounter–RippleCounter–SynchronousCounter

UNIT - V Memory **12**

Semiconductor memory–RAM– SRAM – DRAM – ROM– PROM- EPROM–EEPROM Magnetic memory – Hard Disk – Floppy Disk Optical memory –CDROM – CDR– CDRW– DVD.

Total Lecture Hours **60**

BOOKS FOR STUDY:

- DonaldPLeach,AlbertPaulMalvino,GoutamSaha(2015)- DigitalPrinciplesandApplications,8th edition ,McGraw-HillEducation.
- M.MorrisMano (2007) -ComputerSystemArchitecture,3rd Edition,PearsonEducation.

UNITI :TextBook 1:Chapters5:(5.1to5.9)and2:(2.1to2.3)

UNITII :TextBook1:Chapters3:(3.1to3.8)and4:(4.1to4.7)

UNITIII:TextBook1:Chapters6:(6.1to6.8)and8:(8.1to8.5,8.8)

UNITIV:TextBook1:Chapters9:(9.1to9.6)and10:(10.1,10.3)

UNITV:TextBook1:Chapter13:(13.1, 13.2, 13.3, 13.5)

BOOKS FOR REFERENCES:

- R.AnanthaNatarajan - DigitalDesign,,PHILearning,.
- PrinciplesofDigitalElectronics,K.Meena,PHILearning,2013.
- DigitalComputerFundamentals,ThomasC.BarteeTMH2007.
- Ashok Kamthane, (2009), ―Programming with ANSI & Turbo C‖, Pearson Education
- Byron Gottfried, (2010), ―Programming with C‖, Schaums Outline Series, Tata McGraw Hill Publications

WEB RESOURCES:

- **https://soaneemrana.org/onewebmedia/DIGITAL%20PRINCIPLES%20AND%20APPLICATION%20BY%20LEACH%20&%20MALVINO.pdf**
- **https://www.javatpoint.com/digital-computers**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		K LEVEL
After studying this course, the students will be able to:		
CO1	Understand the basic so number system and logic gates	K1 to K4
CO2	Understand combinatorial logic circuits and implementation of circuits	K1 to K4
CO3	Analyze the concept of Arithmetic circuits and Flip Flops.	K1 to K4
CO4	Relate the ideas of types of registers	K1 to K4
CO5	Analyze the concept of different types of memories	K1 to K4

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	S	-	-				
CO2	M	S	S	M	M	-				
CO3	M	M	S	S	M	S				
CO4	S	M	S	M	S	M				
CO5	S	S	S	S	S	S				

S- STRONG M – MEDIUM L - LOW

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	2	2	2	3	2	2
CO 2	3	2	2	3	2	2
CO 3	3	3	2	3	2	2
CO 4	3	3	2	3	2	2
CO 5	3	3	3	3	2	2
Weightage	14	13	13	15	10	10
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	93	87	87	100	67	67

LESSON PLAN:

UNIT	DIGITALLOGIC FUNDAMENTALS	HRS	PEDAGOGY
I	BinaryNumbersystem–Binarytodecimal–decimaltobinary–hexadecimal–ASCIIcode– Excess-3Code–Graycode. **DigitalLogic:**TheBasicGates–NOT,OR,AND-UniversalLogicGates–NOR, NAND.	12	ICT, CHALK & TALK
II	Boolean Laws and Theorems. - Sum of Products method - Truth table to Karnaugh Map –Pairs, Quads, and Octets – Don't Care	12	ICT, CHALK & TALK

	Condition Product-of sums method -Product-of sumsSimplifications. **DataProcessingCircuits:**Multiplexers–Demultiplexers-1-of-16Decoder–BCD-to-decimalDecoders–Seven segmentDecoders–Encoders–Exclusive-ORGates-ParityGeneratorsand Checkers. Arrays and Strings.		
III	BinaryAddition-BinarySubtraction–2'SComplementRepresentation-2'sComplementArithmetic–ArithmeticBuildingBlocks:Adder-Subtractor . **Flip-Flops**-RSFlip-Flops – Gated Flip-Flops– Edge-triggered RS Flip-Flops – Edge-triggeredDFlip-flops– Edge-triggeredJKFlip-Flops– JKMasterSlaveFlip- flops.	**12**	**ICT, CHALK & TALK**
IV	SerialIn-SerialOut–SerialIn-ParallelOut–ParallelIn-ParallelOut–RingCounter– RippleCounter–SynchronousCounter	**12**	**ICT, CHALK & TALK**
V	Semiconductor memory–RAM– SRAM – DRAM – ROM–PROM- EPROM–EEPROM Magnetic memory – Hard Disk – Floppy Disk Optical memory –CDROM – CDR– CDRW– DVD.	**12**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	**Cos**	**K Level**	**Section A**		**Section B Either or Choice**	**Section C Either or Choice**
			MCQs			
			No. of. Questions	**K - Level**		
CI AI	**CO1**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO2	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
CI AII	**CO3**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO4	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		**No. of Questions to be asked**	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	Section A (Multiple Choice Questions)	Section B (Either / Or Choice)	Section C (Either / Or Choice)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100
CIA II	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO 5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	**Section A (Multiple Choice Questions)**	**Section B (Either or Choice**	**Section C (Either/ or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**5**			**5**	**3.6**	**3.6**
K2	**5**			**5**	**3.6**	**3.6**
K3		**50**		**50**	**35.7**	**35.7**
K4			**80**	**80**	**57.1**	**57.1**
Marks	**10**	**50**	**80**	**140**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	**Unit**	**CO**	**K-level**		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions **PART – B**				**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions **PART – C(5 x 8 = 40 Marks)**				
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	FUNDAMENTALS OF COMPUTERS			
Course Code	23UITFC11	**L**	**P**	**C**
Category	FOUNDATION COURSE	2	-	2

COURSE OBJECTIVES:

- To analyze a problem with appropriate problem solving techniques
- To understand the main principles of imperative, functional and logic oriented programming languages an
- To increase the ability to learn new programming languages.

UNIT - I	**Introduction**	**6**

Characteristics of Computers - Evolution of Computers.**Basic Computer Organization:** I/O Unit - Storage Unit - Arithmetic Logic Unit - Control Unit - Central Processing Unit.

UNIT - II	**Computer Software**	**6**

Types of Software - System Architecture **Computer Languages:** Machine Language - Assembly Language - High Level Language - Object Oriented Languages

UNIT – III	**Problem Solving Concepts**	**6**

Problem Solving in Everyday life - Types of Problems - Problem solving with computers - Difficulties with Problem Solving

UNIT - IV	**Problem Solving concepts for the computer**	**6**

Constant Variables - Data Types - Functions -Operators - Expressions and Equations .
Organizing the Solution: Analyzing the problem - Algorithm - Flowchart - Pseudo code

UNIT - V	**Programming Structure**	**6**

Structuring a solution - Modules and their function - Local and Global variables - Parameters - Return values - Sequential Logic Structure - Problem solving with Decision - Problem Solving with Loops.

Total Lecture Hours	**30**

BOOKS FOR STUDY:

- Pradeep K.Sinha and Priti Sinha, (2004) —Computer Fundamentals‖, Sixth Edition, BPB Publications.
  Unit I : Chapter 1 & 2,
  Unit II : Chapter 10 & 12
- Maureen Sprankle and Jim Hubbard, (2009) —Problem Solving and Programming Concept, Ninth Edition, Prentice Hall.
  Unit III: Chapter 1,2 &3
  Unit IV : Chapter 3,
  Unit V : Chapter 4,5 ,6,7 & 8

BOOKS FOR REFERENCES:

- R.G. Dromey, (2007), —How to Solve it by Computer‖, Prentice Hall International Series in Computer Science.
- C. S. V. Murthy, (2009), —Fundamentals of Computers‖, Third Edition, Himalaya Publishing House.

WEB RESOURCES:

- **http://www.tutorialspoint.com/computer_fundamentals/**
- **http://www.comptechdoc.org/basic/basictut/**
- **http://www.homeandlearn.co.uk/**
- **http://www.top-windows-tutorials.com/computer-basics/**
- **https://www.programiz.com/article/flowchart-programming (Algorithm and flow chart)**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Outline the Computer fundamentals and various problem solving concepts in Computers	**K1 to K2**
CO2	Describe the basic computer organization, software, computer languages, software development life cycle and the need of structured programming in solving a computer problem	**K1 to K2**
CO3	Identify the types of computer languages, software, computer problems and examine how to set up expressions and equations to solve the problem.	**K1 to K2**
CO4	Choose most appropriate programming languages, constructs and features to solve the problems in diversified domains.	**K1 to K2**
CO5	Analyze the design of modules and functions in structuring the solution and various Organizing tools in problem solving.	**K1 to K2**

MAPPING WITH PROGRAM OUTCOMES:										
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	L	L	-	-				
CO2	M	M	M	S	S	S				
CO3	M	S	S	S	M	S				
CO4	S	S	S	M	S	S				
CO5	S	S	S	M	M	S				
S- STRONG				M – MEDIUM					L - LOW	

CO / PO MAPPING:						
COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	2	2	2	3
CO 2	3	2	2	2	3	2
CO 3	3	3	3	3	2	2
CO 4	3	2	2	2	2	3
CO 5	3	3	2	2	3	2
Weightage	15	12	11	11	12	12
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	100	80	73	73	80	80

LESSON PLAN:

UNIT	Fundamentals of Computers	HRS	PEDAGOGY
I	**Introduction:** Characteristics of Computers - Evolution of Computers **Basic Computer Organization:** I/O Unit - Storage Unit - Arithmetic Logic Unit - Control Unit - Central Processing Unit.	6	ICT, CHALK & TALK
II	**Computer Software:** Types of Software - System Architecture **Computer Languages:** Machine Language - Assembly Language - High Level Language - Object Oriented Languages	6	ICT, CHALK & TALK
III	**Problem Solving Concepts:** Problem Solving in Everyday life - Types of Problems - Problem solving with computers - Difficulties with Problem Solving	6	ICT, CHALK & TALK
IV	**Problem Solving concepts for the computer:** Constant Variables - Data Types - Functions -Operators - Expressions and Equations - **Organizing the Solution:** Analyzing the problem - Algorithm - Flowchart - Pseudo code	6	ICT, CHALK & TALK

V	**Programming Structure:** Structuring a solution - Modules and their function - Local and Global variables - Parameters - Return values - Sequential Logic Structure - Problem solving with Decision - Problem Solving with Loops	**6**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)				
Internal	**Cos**	**K Level**	**Section A**	
			MCQs	
			No. of. Questions	**K - Level**
CI AI	**CO1**	**K1 – K2**	**25**	**K1,K2**
	CO2	**K1 – K2**	**25**	**K1,K2**
CI AII	**CO3**	**K1 – K2**	**25**	**K1,K2**
	CO4	**K1 – K2**	**25**	**K1,K2**
Question Pattern CIA I & II		**No. of Questions to be asked**	**50**	
		No. of Questions to be answered	**50**	
		Marks for each question	**1**	
		Total Marks for each section	**50**	

* Two Formative examinations will be conducted as a part of Continuous Internal Assessment under which, 50 MCQ's will be asked [50X1=50 marks] from any 4 CO's. (Ist Test-2 CO's & IInd Test-2 CO's) in equal weightage

Distribution of Marks with K Level CIA I & CIA II					
	K Level	Section A (Multiple Choice Questions)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	30	30	60	100
	K2	20	20	40	
	K3				
	K4				
	Marks	50	50	100	100
CIA II	K1	30	30	60	100
	K2	20	20	40	
	K3				
	K4				
	Marks	50	50	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)				
S. No	COs	K - Level	Section A (MCQs)	
			No. of Questions	K – Level
1	CO1	K1-K2	15	K1,K2
2	CO2	K1-K2	15	K1,K2
3	CO3	K1-K2	15	K1,K2
4	CO4	K1-K2	15	K1,K2
5	CO5	K1-K2	15	K1,K2
No. of Questions to be Asked			75	
No. of Questions to be answered			75	
Marks for each question			1	
Total Marks for each section			75	
(Figures in parenthesis denotes, questions should be asked with the given K level)				

In summative examinations, 75 MCQ's will be asked [75X1=75 marks] from all 5 CO's in equal weightage.

Distribution of Marks with K Level				
K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**40**	**40**	**53**	**100**
K2	**35**	**35**	**47**	
K3				
K4				
Marks		**75**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.				

Course Name	FUNDAMENTALS OF INFORMATION TECHNOLOGY			
Course Code	23UITNM11	L	P	C
Category	NON MAJOR ELECTIVE	2	-	2

COURSE OBJECTIVES:

- Understand basic concepts and terminology of information technology.
- Have a basic understanding of personal computers and their operation.
- Be able to identify data storage and its usage
- Get great knowledge of software and its functionalities
- Understand about operating system and their uses

UNIT - I Introduction to Computers **6**

Introduction, Definition, .Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer

UNIT - II Basic Computer Organization **6**

Role of I/O devices in a computer system. Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, Output Units: Monitors and its types. Printers: Impact Printers and its types. Non Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT – III Storage Fundamentals **6**

Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives

UNIT - IV Software **6**

Software and its needs, Types of S/W. System Software: Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. Application S/W and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w

UNIT - V Operating System: **6**

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters.
Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

Total Lecture Hours **30**

BOOKS FOR STUDY:

- Anoop Mathew, S. KavithaMurugeshan (2009), " Fundamental of Information Technology", Majestic Books.
- Alexis Leon, Mathews Leon," Fundamental of Information Technology", 2nd Edition.
- S. K Bansal, "Fundamental of Information Technology".

BOOKS FOR REFERENCES:

- Bhardwaj SushilPuneet Kumar, "Fundamental of Information Technology"
- GG WILKINSON, "Fundamentals of Information Technology", Wiley-Blackwell
- A Ravichandran , "Fundamentals of Information Technology", Khanna Book Publishing

WEB RESOURCES:

- **https://testbook.com/learn/computer-fundamentals**
- **https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html**
- **https://www.javatpoint.com/computer-fundamentals-tutorial**
- **https://www.tutorialspoint.com/computer_fundamentals/index.htm**
- **https://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP						
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓			
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓					

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Learn the basics of computer, Construct the structure of the required things in computer, learn how to use it.	**K1 to K2**
CO2	Develop organizational structure using for the devices present currently under input or output unit.	**K1 to K2**
CO3	Concept of storing data in computer using two header namely RAM and ROM with different types of ROM with advancement in storage basis	**K1 to K2**
CO4	Work with different software, Write program in the software and applications of software.	**K1 to K2**
CO5	Usage of Operating system in information technology which really acts as a interpreter between software and hardware.	**K1 to K2**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	M	M	S	S				
CO2	M	S	S	S	M	S				

CO3	M	M	S	S	M	S				
CO4	S	M	M	S	S	S				
CO5	L	M	S	M	S	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	3	3
CO 3	2	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	2	2	3	3
Weightage	14	15	14	14	15	15
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	93	100	93	93	100	100

LESSON PLAN:

UNIT	Fundamentals of Information Technology	HRS	PEDAGOGY
I	Introduction to Computers: Introduction, Definition, .Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer	6	ICT, CHALK & TALK
II	**Basic Computer Organization:** Role of I/O devices in a computer system. Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, Output Units: Monitors and its types. Printers: Impact Printers and its types. Non Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.	6	ICT, CHALK & TALK
III	**Storage Fundamentals:** Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives	6	ICT, CHALK & TALK
IV	**Software:** Software and its needs, Types of S/W. System Software: Operating	6	ICT, CHALK &

	System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. Application S/W and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w		**TALK**
V	**Operating System:** Functions, Measuring System Performance, Assemblers, Compilers and Interpreters.Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.	**6**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)				
Internal	**Cos**	**K Level**	**Section A**	
			MCQs	
			No. of. Questions	**K - Level**
CI AI	**CO1**	**K1 – K2**	**25**	**K1,K2**
	CO2	**K1 – K2**	**25**	**K1,K2**
CI AII	**CO3**	**K1 – K2**	**25**	**K1,K2**
	CO4	**K1 – K2**	**25**	**K1,K2**
Question Pattern CIA I & II		**No. of Questions to be asked**	**50**	
		No. of Questions to be answered	**50**	
		Marks for each question	**1**	
		Total Marks for each section	**50**	

***** Two Formative examinations will be conducted as a part of Continuous Internal Assessment under which, 50 MCQ's will be asked [50X1=50 marks] from any 4 CO's. (I^{st} Test-2 CO's & II^{nd} Test-2 CO's) in equal weightage

Distribution of Marks with K Level CIA I & CIA II					
	K Level	Section A (Multiple Choice Questions)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	30	30	60	100
	K2	20	20	40	
	K3				
	K4				
	Marks	50	50	100	100
CIA II	K1	30	30	60	100
	K2	20	20	40	
	K3				
	K4				
	Marks	50	50	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)				
S. No	COs	K - Level	Section A (MCQs)	
			No. of Questions	K – Level
1	CO1	K1-K2	15	K1,K2
2	CO2	K1-K2	15	K1,K2
3	CO3	K1-K2	15	K1,K2
4	CO4	K1-K2	15	K1,K2
5	CO5	K1-K2	15	K1,K2
No. of Questions to be Asked			75	
No. of Questions to be answered			75	
Marks for each question			1	
Total Marks for each section			75	
(Figures in parenthesis denotes, questions should be asked with the given K level)				

In summative examinations, 75 MCQ's will be asked [75X1=75 marks] from all 5 CO's in equal weightage.

Distribution of Marks with K Level				
K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**40**	**40**	**53**	**100**
K2	**35**	**35**	**47**	
K3				
K4				
Marks		**75**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.				


SECOND SEMESTER

Course Name	JAVA PROGRAMMING			
Course Code	23UITCC21	**L**	**P**	**C**
Category	CORE	5	-	5

COURSE OBJECTIVES:

- To provide knowledge on fundamentals of object-oriented programming
- To have the ability to use the SDK environment to create, debug and run servlet programs

UNIT - I Fundamentals of Object- Oriented Programming **15**

Introduction – Object Oriented Paradigm – Concepts of Object – Oriented Programming – Benefits of OOP – Evolution: Java History- Java Features - Differs from C and C++ - Overview of Java Language: Java Program- Structure – Tokens – Java Statements – Java Virtual Machine – Command Line Arguments.

UNIT - II Constants, Variables and Data Types **15**

Operators and Expressions – Decision making and Branching – Looping – Arrays - Strings – Collection Interfaces and classes

UNIT - III Classes objects and methods **15**

Introduction – Defining a class – Method Declaration – Constructors - Method Overloading – Static Members – Nesting of methods – Inheritance – Overriding – Final variables and methods – Abstract methods and classes

UNIT - IV Multiple Inheritance **15**

Defining Interfaces – Extending Interfaces – Implementing Interfaces – Packages: Creating Packages – Accessing Packages – Using a Package – Managing Errors and Exceptions - Multithreaded Programming

UNIT - V Layout ManagersJDBC – Java Servlet **15**

Servlet Environment Role – Servlet API – Servlet Life Cycle – Servlet Context – HTTP Support – HTML to Servlet Communication

Total Lecture Hours **75**

BOOKS FOR STUDY:

- E Balagurusamy(2010), "Programming with Java", Tata McGraw Hill Edition India Private Ltd, 4th Edition
- C Xavier,"Java Programming – A Practical Approach", Tata McGraw Hill Edition Private Ltd

BOOKS FOR REFERENCES:

- P.Naughton and H.Schildt (1999), "Java 2 The Complete Reference", TMH, 3rd Edition
- JaisonHunder& William Crawford (2002),"Java Servlet Programming", O'Reilly
- Jim Keogh (2002), "J2EE: The Complete Reference", Tata McGraw Hill Edition.

WEB RESOURCES:

- **http://www.tutorialspoint.com/cprogramming/**
- **http://www.cprogramming.com/**
- **http://www.programmingsimplified.com/c-program-examples**
- **http://www.programiz.com/c-programming**
- **http://www.cs.cf.ac.uk/Dave/C/CE.html**
- **http://fresh2refresh.com/c-programming/c-function/**

Nature of Course	EMPLOYABILITY	✓	SKILL ORIENTED		ENTREPRENEURSHIP							
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓				
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓						
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**												

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Outline the fundamental concepts of C programming languages, andits features	**K1 to K4**
CO2	Demonstrate the programming methodology.	**K1 to K4**
CO3	Identify suitable programming constructs for problem solving.	**K1 to K4**
CO4	Select the appropriate data representation, control structures, functions and concepts based on the problem requirement.	**K1 to K4**
CO5	Evaluate the program performance by fixing the errors.	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				
CO5	-	M	S	S	M	S				

S- STRONG	M – MEDIUM	L - LOW

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	2	2	2	2
CO 2	2	3	2	2	2	2
CO 3	2	3	3	3	2	2
CO 4	2	3	2	2	2	2
CO 5	3	3	2	2	2	2
WEIGHTAGE	12	14	11	11	10	10
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	80	93	73	73	63	63

LESSON PLAN:

UNIT	JAVA PROGRAMMING	HRS	PEDAGOGY
I	**Fundamentals of Object- Oriented Programming**: Introduction – Object Oriented Paradigm – Concepts of Object – Oriented Programming – Benefits of OOP – Evolution: Java History- Java Features - Differs from C and C++ - Overview of Java Language: Java Program- Structure – Tokens – Java Statements – Java Virtual Machine – Command Line Arguments	15	ICT, CHALK & TALK
II	Constants, Variables and Data Types – Operators and Expressions – Decision making and Branching – Looping – Arrays - Strings – Collection Interfaces and classes	15	ICT, CHALK & TALK
III	**Classes objects and methods**: Introduction – Defining a class – Method Declaration – Constructors - Method Overloading – Static Members – Nesting of methods – Inheritance – Overriding – Final variables and methods – Abstract methods and classes	15	ICT, CHALK & TALK
IV	**Multiple Inheritance**: Defining Interfaces – Extending Interfaces – Implementing Interfaces – Packages: Creating Packages – Accessing Packages – Using a Package – Managing Errors and Exceptions - Multithreaded Programming	15	ICT, CHALK & TALK
V	Layout Managers - JDBC – Java Servlet: - Servlet Environment Role – Servlet API – Servlet Life Cycle – Servlet Context – HTTP Support – HTML to Servlet Communication	15	ICT, CHALK & TALK

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	**Cos**	**K Level**	**Section A**		**Section B Either or Choice**	**Section C Either or Choice**
			MCQs			
			No. of. Questions	**K - Level**		
CI AI	**CO1**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO2	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
CI AII	**CO3**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO4	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		**No. of Questions to be asked**	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	**Section A (Multiple Choice Questions)**	**Section B (Either / Or Choice)**	**Section C (Either / Or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**
CIA II	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	Section A (Multiple Choice Questions)	Section B (Either or Choice	Section C (Either/ or Choice)	Total Marks	% of (Marks without choice)	Consolidated %
K1	5			5	3.6	3.6
K2	5			5	3.6	3.6
K3		50		50	35.7	35.7
K4			80	80	57.1	57.1
Marks	10	50	80	140	100	100
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	Unit	CO	K-level		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions **PART – B**				**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions **PART – C(5 x 8 = 40 Marks)**				
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	JAVA PROGRAMMING LAB			
Course Code	23UITCP21	**L**	**P**	**C**
Category	CORE	5	-	5

COURSE OBJECTIVES:

- To design and develop applications using different Java programming language techniques, JDBC & Servlets
- To design and develop applications using different Java programming language techniques, JDBC & Servlets

CONTENTS **75**

1. Basic Programs
2. Arrays
3. Strings
4. Array List, HashSet and Vector collection classes
5. Classes and Objects
6. Interfaces
7. Inheritance
8. Packages
9. Exception Handling
10. Threads
11. Linked List
12. Stacks
13. Queue
14. Sorting
15. Binary Tree Representation
16. Working with Database using JDBC
17. Web application using Servlet

BOOKS FOR STUDY:

- E Balagurusamy(2010), “Programming with Java”, Tata McGraw Hill Edition India Private Ltd, 4th Edition.
- C Xavier,”Java Programming – A Practical Approach”, Tata McGraw Hill Edition Private Ltd.

BOOKS FOR REFERENCES:

- P.Naughton and H.Schildt (1999), “Java 2 The Complete Reference”, TMH, 3rd Edition
- Jaison Hunder & William Crawford (2002),”Java Servlet Programming”, O'Reilly

Jim Keogh (2002), “J2EE: The Complete Reference”, Tata McGraw Hill Edition.

WEB RESOURCES:

- **http://www.tutorialspoint.com/cprogramming/**
- **http://www.cprogramming.com/**
- **http://www.programmingsimplified.com/c-program-examples**
- **http://www.programiz.com/c-programming**
- **http://www.cs.cf.ac.uk/Dave/C/CE.html**
- **http://fresh2refresh.com/c-programming/c-function/**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Identify and explain the way of solving the simple problems	**K1 to K4**
CO2	Use appropriate software development environment to write, compile and execute object-oriented Java programs	**K1 to K4**
CO3	Analyze and identify necessary mechanisms of Java needed to solve real-world problem	**K1 to K4**
CO4	Test for defects and validate a Java program with different inputs	**K1 to K4**
CO5	Design, develop and compile Core Java , GUI , JDBC and servlet applications that utilize OOP and data structure concepts	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	S	M	M				
CO2	M	M	S	S	M	M				
CO3	S	M	S	S	S	S				
CO4	S	S	S	S	S	M				
CO5	S	S	S	S	S	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	3	3	2	2
CO 2	3	3	3	3	2	2

CO 3	**3**	**3**	**3**	**2**	**2**	**3**
CO 4	**3**	**3**	**3**	**3**	**3**	**2**
CO 5	**3**	**3**	**2**	**3**	**2**	**2**
WEIGHTAGE	**15**	**14**	**14**	**14**	**11**	**11**
WEIGHTED PERCENT OF COURSE CONTRIBUTION TO POS	**100**	**93**	**93**	**93**	**73**	**73**

LESSON PLAN: JAVA PROGRAMMING & DATA STRUCTURES LAB			
S.NO	**CONTENTS**	**Hours**	**Pedagogy**
1.	Basic Programs	**75**	**Laboratory Experiments**
2.	Arrays		
3.	Strings		
4.	ArrayList, HashSet and Vector collection classes		
5.	Classes and Objects		
6.	Interfaces		
7.	Inheritance		
8.	Packages		
9.	Exception Handling		
10.	Threads		
11.	Linked List		
12.	Stacks		
13.	Queue		
14.	Sorting		
15.	Binary Tree Representation		
16.	Working with Database using JDBC		
17.	Web application using Servlet		

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	**5**				
	CO2	**K2**		**5**			
	CO3	**K3**			**5**		
	CO4	**K4**				**5**	
	CO5	**K5**					**5**
Question Pattern CIA		**No. of Questions to be asked**	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**
		Total Marks for each section	**5**	**5**	**5**	**5**	**5**

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	**5**					**5**	**20**	**20**
	K2		**5**				**5**	**20**	**20**
	K3			**5**			**5**	**20**	**20**
	K4				**5**		**5**	**20**	**20**
	K5					**5**	**5**	**20**	**20**
	Marks						**25**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.

Distribution of Marks with K Level								
K Level	Syntax & Semantics	Programming principles	Concept Applications	Coding	Debugging & Output	Total Marks	% of (Marks without choice)	Consolidated %
K1	15					15	20	20
K2		15				15	20	20
K3			15			15	20	20
K4				15		15	20	20
K5					15	15	20	20
Marks						75	100	100

Course Name	STATISTICAL AND NUMERICAL METHODS - I			
Course Code	23UMTEA23	L	P	C
Category	ALLIED	4	-	3

COURSE OBJECTIVES:

- Understand the concept of basic statistics
- Know the curve fitting and errors in computation
- Understand the concepts of skewness and Interpolation.

UNIT - I	**Measures of averages**	**12**

Measures of dispersion– Skewness based on moments

UNIT - II	**Correlation and Regression**	**12**

Correlation and regression-Rank correlation coefficient.

UNIT - III	**Numbers**	**12**

Index numbers and Curve fitting (all types of curves)

UNIT - IV	**Errors in Computation**	**12**

Errors in Numerical Computation–Iteration method–Bisection method –Regulafalsi method–Newton Raphson method.

UNIT - V	**Interpolation**	**12**

Interpolation: Newton's Interpolation formulae–CentralDifferenceInterpolation formulae(Gaussforwardandbackwardformulaeonly)–Lagrange's Interpolation formula–Inverse Interpolation.

Total Lecture Hours	**60**

BOOKS FOR STUDY:

- Dr.S.Arumugam&Isaac,**Statistics**,New GammaPublications,Reprint2012.
- S. Arumugam and A. Thanga Pandi Isaac, A. Soma Sundaram, **Numerical Methods**, ScitechPublication, Third Edition, 2007.

BOOKS FOR REFERENCES:

- S.C.Gupta,V.K.Kapoor,**ElementsofMathematicalStatistics,**SultanChand&SonsPublications,NewDelhi,2001.
- T.VeerarajanandT.Ramachandran,**NumericalMethods,**TataMcGrawHill,SecondEdition,NewDelhi,2006.
- S.S.Sastry,**IntroductoryMethodsofNumericalAnalysis**,PrenticeHallIndiaPrivateLimited, Fourth Edition, NewDelhi, 2008.

WEB RESOURCES:

- **http://www.numerical-methods.com/**
- **https://www.khanacademy.org/math**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Make the student sunders and the Statistical and Numerical Methods concepts.	**K1 to K4**
CO2	To design and conduct experiments as well as toan alyze and interpret data.	**K1 to K4**
CO3	To Identify formulate and solve the problems.	**K1 to K4**
CO4	Thiscourseenablethestudentstousetheproblemsolvingskillsinawidevariety ofsituations.	**K1 to K4**
CO5	Enables them to understand the concepts of Interpolation.	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M			S	S				
CO2	M		S	M	S	S				
CO3	S	S	S	M	M	M				
CO4	S	S	M	M	M	S				
CO5	S	M	M	S	S	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:						
COS	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO 1	**3**	**2**	**2**	**2**	**2**	**2**
CO 2	**2**	**3**	**2**	**2**	**2**	**2**
CO 3	**2**	**3**	**3**	**3**	**2**	**2**
CO 4	**2**	**3**	**2**	**2**	**2**	**2**
CO 5	**3**	**3**	**2**	**2**	**2**	**2**
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	**12**	**14**	**11**	**11**	**10**	**10**

LESSON PLAN:

UNIT	STATISTICAL AND NUMERICAL METHODS-I	HRS	PEDAGOGY
I	Measures of dispersion – Skewness based on moments	**12**	**ICT, CHALK & TALK**
II	Correlation and regression-Rank correlation coefficient.	**12**	**ICT, CHALK & TALK**
III	Index numbers and Curve fitting (all types of curves)	**12**	**ICT, CHALK & TALK**
IV	Errors in Numerical Computation – Iteration method–Bisection method –Regulafalsi method–Newton Raph son method.	**12**	**ICT, CHALK & TALK**
V	Interpolation:Newton'sInterpolationformulae–CentralDifferenceInterpolationformulae(Gaussforwardandbackwardformulaeonly)–Lagrange'sInterpolationformula–InverseInterpolation	**12**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	Cos	K Level	Section A		Section B Either or Choice	Section C Either or Choice
			MCQs			
			No. of. Questions	K - Level		
CI AI	CO1	2	2	K1,K2	2(K3)	2(K4)
	CO2	2	2	K1,K2	2(K3)	2(K4)
CI AII	CO3	2	2	K1,K2	2(K3)	2(K4)
	CO4	2	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		No. of Questions to be asked	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	Section A (Multiple Choice Questions)	Section B (Either / Or Choice)	Section C (Either / Or Choice)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100
CIA II	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	Section A (Multiple Choice Questions)	Section B (Either or Choice	Section C (Either/ or Choice)	Total Marks	% of (Marks without choice)	Consolidated %
K1	5			5	3.6	3.6
K2	5			5	3.6	3.6
K3		50		50	35.7	35.7
K4			80	80	57.1	57.1
Marks	10	50	80	140	100	100
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	Unit	CO	K-level		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions **PART – B**				**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions **PART – C(5 x 8 = 40 Marks)**				
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	BASICS OF INTERNET			
Course Code	23UITNM21	**L**	**P**	**C**
Category	NON MAJOR ELECTIVE	2	-	2

COURSE OBJECTIVES:

- Knowledge of Internet medium
- Internet as a mass medium
- Features of Internet Technology
- Internet as source of infotainment
- Study of internet audiences and about cyber crime

UNIT - I	**World Wide Web**	**6**

The emergence of internet as a mass medium – the world of 'world wide web'.

UNIT - II	**Features**	**6**

Features of internet as a technology

UNIT - III	**Infotainment**	**6**

Internet as a source of infotainment – classification based on content and style.

UNIT - IV	**Demo graph and Psychograph**	**6**

Demographic and psychographic descriptions of internet 'audiences' – effect of internet on the values and life-styles.

UNIT - V	**Present issues**	**6**

Present issues such as cyber-crime and future possibilities.

	Total Lecture Hours	**30**

BOOKS FOR STUDY:

- Douglas E. Comer, The Internet Book**, Taylor and Francis, 2019.**

BOOKS FOR REFERENCES:

- "Mastering HTML5 and CSS3 Made Easy", Teach Comp Inc., 2014.
- Thomas Michaud, "Foundations of Web Design: Introduction to HTML & CSS"

WEB RESOURCES:

- **https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf**
- **https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Knows the basic concept of www	**K1 to K2**
CO2	Understand the concept of technology.	**K1 to K2**
CO3	Understand the infotainment and content.	**K1 to K2**
CO4	Know the concept of creating link to email address, demographic and psychographic descriptions.	**K1 to K2**
CO5	Understand the concept of cyber-crime.	**K1 to K2**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	S	-	-	-				
CO2	S	M	M	M	S	-				
CO3	S	M	S	-	M	S				
CO4	S	M	S	S	M	S				
CO5	-	S	S	M	S	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	3	3	-	-	3
CO 2	2	3	3	2	3	2
CO 3	2	2	3	3	3	2
CO 4	2	2	3	3	3	2
CO 5	2	2	3	3	2	3
WEIGHTAGE	11	12	15	11	11	12
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	73	80	100	73	73	80

LESSON PLAN:			
UNIT	**BASICS OF INTERNET**	**HRS**	**PEDAGOGY**
I	The emergence of internet as a mass medium – the world of 'world wide web'.	**12**	**ICT, CHALK & TALK**
II	Features of internet as a Technology	**12**	**ICT, CHALK & TALK**
III	Internet as a source of infotainment – classification based on content and style.	**12**	**ICT, CHALK & TALK**
IV	Demographic and psychographic descriptions of internet 'audiences' – effect of internet on the values and life-styles.	**12**	**ICT, CHALK & TALK**
V	Present issues such as cybercrime and future possibilities.	**12**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)				
Internal	**Cos**	**K Level**	**Section A**	
			MCQs	
			No. of. Questions	**K - Level**
CI AI	**CO1**	**K1 – K2**	**25**	**K1,K2**
	CO2	**K1 – K2**	**25**	**K1,K2**
CI AII	**CO3**	**K1 – K2**	**25**	**K1,K2**
	CO4	**K1 – K2**	**25**	**K1,K2**
Question Pattern CIA I & II		**No. of Questions to be asked**	**50**	
		No. of Questions to be answered	**50**	
		Marks for each question	**1**	
		Total Marks for each section	**50**	

* Two Formative examinations will be conducted as a part of Continuous Internal Assessment under which, 50 MCQ's will be asked [50X1=50 marks] from any 4 CO's. (Ist Test-2 CO's & IInd Test-2 CO's) in equal weightage

Distribution of Marks with K Level CIA I & CIA II					
	K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**30**	**30**	**60**	**100**
	K2	**20**	**20**	**40**	
	K3				
	K4				
	Marks	**50**	**50**	**100**	**100**
CIA II	**K1**	**30**	**30**	**60**	**100**
	K2	**20**	**20**	**40**	
	K3				
	K4				
	Marks	**50**	**50**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)				
S. No	COs	K - Level	Section A (MCQs)	
			No. of Questions	K – Level
1	CO1	K1-K2	15	K1,K2
2	CO2	K1-K2	15	K1,K2
3	CO3	K1-K2	15	K1,K2
4	CO4	K1-K2	15	K1,K2
5	CO5	K1-K2	15	K1,K2
No. of Questions to be Asked			75	
No. of Questions to be answered			75	
Marks for each question			1	
Total Marks for each section			75	
(Figures in parenthesis denotes, questions should be asked with the given K level)				

In summative examinations, 75 MCQ's will be asked [75X1=75 marks] from all 5 CO's in equal weightage.

Distribution of Marks with K Level				
K Level	Section A (Multiple Choice Questions)	Total Marks	% of (Marks without choice)	Consolidated %
K1	40	40	53	100
K2	35	35	47	
K3				
K4				
Marks		75	100	100
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.				

Course Name	INTRODUCTION TO HTML LAB			
Course Code	23UITSP21	**L**	**P**	**C**
Category	SKILL	-	2	2

COURSE OBJECTIVES:

- Insert a graphic within a web page.
- Create a link within a web page.
- Create a table within a web page.
- Insert heading levels within a web page.
- Insert ordered and unordered lists within a web page. Create a web page.

Contents **30**

1. Create a web page
2. Insert a image in the webpage
3. Create a link to a webpage
4. Create marquee in a webpage
5. Create a table within a web page.
6. Insert heading levels within a web page.
7. Insert ordered and unordered lists within a web page

Total Lecture Hours **30**

BOOKS FOR STUDY:

- "Mastering HTML5 and CSS3 Made Easy", TeachUComp Inc., 2014.
- Thomas Michaud, "Foundations of Web Design: Introduction to HTML & CSS"

BOOKS FOR REFERENCES:

- David Du Rocher **"HTML& CSS Quick start Guide",** Clyde Bank Media**, First Edition.**

WEB RESOURCES:

- **https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf**
- **https://www.w3schools.com/html/default.asp**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED		ENTREPRENEURSHIP	✓
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		K LEVEL
On completion of this course, students will		
CO1	Know the basic concept in HTML and the concept of resources in HTML	K1 to K4
CO2	Knows the design concept of Meta Data, Understand the concept of save the files.	K1 to K4
CO3	Understand the concept of page formatting and list.	K1 to K4
CO4	Creating Links and know the concept of creating link to email address	K1 to K4
CO5	Concept of adding images and understands the table creation.	K1 to K4

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	S	-	S	M	S	-				
CO3	S	M	S	S	S	-				
CO4	S	M	S	S	S	S				
CO5	-	M	S	S	M	S				

S- STRONG M – MEDIUM L - LOW

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	3	3
CO 3	2	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	2	3	3
Weightage	14	15	14	14	15	15
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	93	100	93	93	100	100

LESSON PLAN:

UNIT	INTRODUCTION TO HTML	HRS	PEDAGOGY
1.	Create a web page	30	Laboratory Program
2.	Insert a image in the webpage		
3.	Create a link to a webpage		

4.	Create marquee in a webpage		
5.	Create a table within a web page.		
6.	Insert heading levels within a web page.		
7.	Insert ordered and unordered lists within a web page		

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CIAI	**CO1**	**K1**	**5**				
	CO2	**K2**		**5**			
	CO3	**K3**			**5**		
	CO4	**K3**				**5**	
	CO5	**K4**					**5**
Question Pattern CIA		**No. of Questions to be asked**	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**
		Total Marks for each section	**5**	**5**	**5**	**5**	**5**

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	**5**					**5**	**20**	**20**
	K2		**5**				**5**	**20**	**20**
	K3			**5**	**5**		**10**	**40**	**40**
	K4					**5**	**5**	**20**	**20**
	Marks						**25**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	**15**				
	CO2	**K2**		**15**			
	CO3	**K3**			**15**		
	CO4	**K3**				**15**	
	CO5	**K4**					**15**
Question Pattern		**No. of Questions to be asked**	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**
		Total Marks for each section	**15**	**15**	**15**	**15**	**15**

Distribution of Marks with K Level								
K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**15**					**15**	**20**	**20**
K2		**15**				**15**	**20**	**20**
K3			**15**	**15**		**30**	**40**	**40**
K4					**15**	**15**	**20**	**20**
Marks						**75**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

B.Sc., INFORMATION TECHNOLOGY

Syllabus

Program Code: UIT

2023 - Onwards

MANNAR THIRUMALAI NAICKER COLLEGE

(AUTONOMOUS)

Re-accredited with "A" Grade by NAAC

PASUMALAI, MADURAI – 625 004

MANNAR THIRUMALAI NAICKER COLLEGE (AUTONOMOUS), MADURAI – 625 004

B.SC INFORMATION TECHNOLOGY CURRICULUM

(For the students admitted from the academic year 2023-2024 onwards)

Course Code	Title of the Course	Hrs	Credits	Maximum Marks		
				Int	Ext	Total
THIRD SEMESTER						
Part – I	**Tamil / Alternative course**					
23UTAGT31	தமிழக வரலாறும் பண்பாடும்	6	3	25	75	100
Part – II	**English**					
23UENGE31	GENERAL ENGLISH - III	6	3	25	75	100
Part - III	**Core courses**					
23UITCC31	RELATIONAL DATABASE MANAGEMENT SYSTEM	5	5	25	75	100
23UITCP31	RDBMS - LAB	5	5	25	75	100
Part - III	**Elective course**					
23UELEA31	BASICS OF NANO TECHNOLOGY	4	3	25	75	100
Part - IV	**Skill Based courses**					
23UITSC31	ADVANCED EXCEL	1	1	25	75	100
23UITSP31	OFFICE AUTOMATION LAB	2	2	25	75	100
Part - IV	**Mandatory course**					
23UEVSG41	ENVIRONMENTAL STUDIES	1	-	-	-	-
	Total	30	22	175	525	700
FOURTH SEMESTER						
Part – I	**Tamil / Alternative course**					
23UTAGT41	தமிழும் அறிவியலும்	6	3	25	75	100
Part – II	**English**					
23UENGE41	GENERAL ENGLISH - IV	6	3	25	75	100
Part - III	**Core courses**					
23UITCC41	.NET PROGRAMMING	5	5	25	75	100
23UITCP41	.NET PROGRAMMING LAB	4	4	25	75	100
Part - III	**Elective course**					
23UMTEA42	OPTIMIZATION TECHNIQUES	4	3	25	75	100
Part - IV	**Skill Based courses**					
23UITSC41	WEB DESIGING	2	2	25	75	100
23UITSP41	MULTIMEDIA LAB	2	2	25	75	100
Part - IV	**Mandatory course**					
23UEVSG41	ENVIRONMENTAL STUDIES	1	2	25	75	100
	Total	30	24	200	600	800


THIRD SEMESTER

Course Name	RELATIONAL DATABASE MANAGEMENT SYSTEM			
Course Code	23UITCC31	L	P	C
Category	CORE	5	-	5

COURSE OBJECTIVES

- To understand the basic DBMS models and architecture.
- To enhance the knowledge of relational Models.
- To learn how to query and normalize the database.
- To study the data base design, transaction Processing and Management and Security Issues.
- To understand the concept of SQL & PL/SQL.

UNIT - I INTRODUCTION TO DATABASES: 15

Introduction – Characteristics of the Database Approach – Actors on the Scene – Workers behind the scene – Advantages of using DBMS Approach. Overview of database and Architectures: Data Models, Schemas, and Instances – Three-schema Architecture and Data Independence – Database languages & Interfaces – Database System Environment– Centralized & Client Server Architecture for DBMS - Classification of DBMS.

UNIT - II BASIC RELATIONAL MODEL: 15

Relational Model Concepts – Relational Model Constraints and Relational Database Schemas – Update Operations, Tractions, Dealing with Constraint Violations – Formal Relational Languages: Unary Relational Operations: SELECT and PROJECT – Relational Algebra Operations from Set Theory – Binary Relational Operations: JOIN and DIVISION – Examples of Queries in Relational Algebra.

UNIT - III CONCEPTUAL DATA MODELING USING THE ER MODEL: 15

Using High-Level Conceptual Data Models for Database Design – An example DB application – Entity Types, Entity Sets, Attributes, and Keys – Relationship Types, Relationship sets, Roles, and Structural Constraints – Weak entity types – Example- Mapping a Conceptual Design into Logical Design: Relational Database Design using ER- Relational Mapping – Mapping EER Model Constructs to Relations.

UNIT - IV FUNCTIONAL DEPENDENCIES AND NORMALIZATION FOR RELATIONAL DATABASE: 15

Functional Dependencies – Definition of Functional Dependency – Normal Forms based on Primary Keys – Normalization of Relations – First Normal Form – Second Normal Form – Third Normal Form – BCNF- Fourth Normal Form- Fifth Normal Form.

UNIT - V SQL & PL/SQL: 15

The Relational Database Standard: Data definition, Constraints, and schema changes in SQL – Basic Queries in SQL – More complex SQL Queries – Insert, delete and update statements in SQL – Views in SQL.

Introduction to PL/SQL – More on PL/SQL – Error Handling in PL/SQL – Oracle ‘s Named Exception Handlers – Stored Procedures and Functions – Execution of Procedures and Functions – Advantages – Procedures Vs. Functions – Syntax for Creating Procedures and Functions – Deleting a Stored Procedure or Function – Oracle Packages – Database Triggers – Types of Triggers – Deleting a Trigger – Raise-Application Error Procedure

Total Lecture Hours 75

BOOKS FOR STUDY:

- Ramez Elmasri, Shamkant B. Navathe (2014), ―Database Systems‖, Sixth edition, Pearson Education, New Delhi.
- Ivan Bayross (2003 Reprint), SQL, PL/SQL-The Programming Language of Oracle, Second Revised Edition, BPB Publications, New Delhi.

BOOKS FOR REFERENCES:

- Abraham Silberschatz, Henry F.Korth, S.Sudarshan, Database System Concepts, Tata McGraw Hill Publication, 4th Edition.

WEB RESOURCES:

- **http://srikanthtechnologies.com/books/orabook/ch1.pdf**
- **Http://www.tmv.edu.in/pdf/Distance_education/BCA%20Books/BCA%20IV%20SEM/BC A-428%20Oracle.pdf**
- **http://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm**
- **http://ecomputernotes.com/database-system/rdbms**
- **http://www.mithunashok.com/2011/04/basics-of-rdbms.html**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change	**35**	No Changes Made		New Course			

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Outline the fundamental RDBMS concepts and PL/SQL	**K1 to K4**
CO2	Apply database operations, mapping, normalization, SQL and PL/SQL	**K1 to K4**
CO3	Analyze the requirements to implement relational database concepts	**K1 to K4**
CO4	Evaluate the database based on various models and normalization.	**K1 to K4**
CO5	Design and construct normalized tables and manipulate it effectively using SQL and PL/SQL database objects	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				

CO5	-	M	S	S	M	S				

S- STRONG M – MEDIUM L - LOW

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	2	3	3	3
CO 2	3	3	2	3	3	3
CO 3	3	3	3	3	3	2
CO 4	3	3	2	3	3	3
CO 5	3	3	2	3	3	2
WEIGHTAGE	15	14	11	15	15	13
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	100	93.33	73.33	100	100	86.66

LESSON PLAN:

UNIT	RELATIONAL DATABASE MANAGEMENT SYSTEM	HRS	PEDAGOGY
I	Introduction to Databases: Introduction – Characteristics of the Database Approach – Actors on the Scene – Workers behind the scene – Advantages of using DBMS Approach. Overview of database and Architectures: Data Models, Schemas, and Instances – Three-schema Architecture and Data Independence – Database languages & Interfaces – Database System Environment– Centralized & Client Server Architecture for DBMS - Classification of DBMS.	15	ICT, CHALK & TALK
II	Basic Relational Model: Relational Model Concepts – Relational Model Constraints and Relational Database Schemas – Update Operations, Tractions, Dealing with Constraint Violations – Formal Relational Languages: Unary Relational Operations: SELECT and PROJECT – Relational Algebra Operations from Set Theory – Binary Relational Operations: JOIN and DIVISION – Examples of Queries in Relational Algebra.	15	ICT, CHALK & TALK
III	Conceptual Data Modeling using the ER Model: Using High-Level Conceptual Data Models for Database Design – An example DB application – Entity Types, Entity Sets, Attributes, and Keys – Relationship Types, Relationship sets, Roles, and Structural Constraints – Weak entity types – Example- Mapping a Conceptual Design into Logical Design: Relational Database Design using ER-Relational Mapping – Mapping EER Model Constructs to Relations.	15	ICT, CHALK & TALK
IV	Functional Dependencies and Normalization for Relational Database: Functional Dependencies – Definition of Functional Dependency – Normal Forms based on Primary Keys – Normalization of Relations –	15	ICT, CHALK & TALK

	First Normal Form – Second Normal Form – Third Normal Form – BCNF- Fourth Normal Form- Fifth Normal Form.		
V	SQL: The Relational Database Standard: Data definition, Constraints, and schema changes in SQL – Basic Queries in SQL – More complex SQL Queries – Insert, delete and update statements in SQL – Views in SQL. PL/SQL: Introduction to PL/SQL – More on PL/SQL – Error Handling in PL/SQL – Oracle 's Named Exception Handlers – Stored Procedures and Functions – Execution of Procedures and Functions – Advantages – Procedures Vs. Functions – Syntax for Creating Procedures and Functions – Deleting a Stored Procedure or Function – Oracle Packages – Database Triggers – Types Of Triggers – Deleting a Trigger – Raise-Application Error Procedure	**15**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	**Cos**	**K Level**	**Section A**		**Section B Either or Choice**	**Section C Either or Choice**
			MCQs			
			No. of. Questions	**K - Level**		
CI AI	**CO1**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO2	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
CI AII	**CO3**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO4	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		**No. of Questions to be asked**	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	Section A (Multiple Choice Questions)	Section B (Either / Or Choice)	Section C (Either / Or Choice)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100
CIA II	K1	2			2	3.6	7.2
	K2	2			2	3.6	
	K3		20		20	35.7	35.7
	K4			32	32	57.1	57.1
	Marks	4	20	32	56	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	**Section A (Multiple Choice Questions)**	**Section B (Either or Choice**	**Section C (Either/ or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**5**			**5**	**3.6**	**3.6**
K2	**5**			**5**	**3.6**	**3.6**
K3		**50**		**50**	**35.7**	**35.7**
K4			**80**	**80**	**57.1**	**57.1**
Marks	**10**	**50**	**80**	**140**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	**Unit**	**CO**	**K-level**		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions		**PART – B**		**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions		**PART – C**		**(5 x 8 = 40 Marks)**
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	RDBMS - LAB			
Course Code	23UITCP31	L	P	C
Category	CORE	-	5	5

COURSE OBJECTIVES

- To master the basics of SQL and construct queries using SQL.
- To understand the relational database design principles.
- To familiarize with the basic issues of transaction processing and concurrency control.
- To Familiarize with database storage structures and access techniques
- To learn and implement SQL & PL/SQL.

CONTENTS **75**

SQL:

1. DDL Commands
2. DML Commands
3. DCL Commands
4. SQL Built-in functions
5. Using Sub Queries

PL/SQL:

6. Simple programs using PL/SQL
7. Procedures
8. User-defined functions
9. Exception Handling
10. Triggers

BOOKS FOR STUDY:

- Ramez Elmasri, Shamkant B. Navathe (2014), ―Database Systems‖, Sixth edition, Pearson Education, New Delhi.
- Ivan Bayross (2003 Reprint), SQL, PL/SQL-The Programming Language of Oracle, Second Revised Edition, BPB Publications, New Delhi.

BOOKS FOR REFERENCES:

- Abraham Silberschatz, Henry F.Korth, S.Sudarshan, Database System Concepts, Tata McGraw Hill Publication, 4th Edition.

WEB RESOURCES:

- **Http://www.tmv.edu.in/pdf/Distance_education/BCA%20Books/BCA%20IV%20SEM/BC A-428%20Oracle.pdf**
- **http://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm**
- **http://ecomputernotes.com/database-system/rdbms**
- http://www.mithunashok.com/2011/04/basics-of-rdbms.html

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made	✓	New Course			
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Choose appropriate SQL queries and PL/SQL blocks for the database.	**K1 to K4**
CO2	Implement SQL and PL/SQL blocks for the given problem effectively.	**K1 to K4**
CO3	Analyse the problem and Exceptions using queries and PL/SQL blocks.	**K1 to K4**
CO4	Validate the database for normalization using SQL and PL/SQL blocks.	**K1 to K4**
CO5	Design Database tables, create Procedures, user-defined functions and Triggers.	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				
CO5	-	M	S	S	M	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	2	2	2	3	3	2
CO 2	3	3	2	3	2	3
CO 3	2	3	3	3	2	3
CO 4	2	3	2	3	3	3
CO 5	2	2	2	3	3	2
WEIGHTAGE	11	13	11	15	13	13
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	73	93	73	100	73	73

LESSON PLAN:			
S. NO	**LIST OF PROGRAMS**	**HRS**	**PEDAGOGY**
1	DDL Commands	**75**	**Laboratory Experiments**
2	DML Commands		
3	DCL Commands		
4	SQL Built-in functions		
5	Using Sub Queries		
6	Simple programs using PL/SQL		
7	Procedures		
8	User-defined functions		
9	Exception Handling		
10	Triggers		

Learning Outcome Based Education & Assessment (LOBE)
Formative Examination - Blue Print
Articulation Mapping – K Levels with Course Outcomes (COs)

Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	5				
	CO2	**K2**		5			
	CO3	**K3**			5		
	CO4	**K3**				5	
	CO5	**K4**					5
Question Pattern CIA		No. of Questions to be asked	2	2	2	2	2
		No. of Questions to be answered	2	2	2	2	2
		Marks for each question	2.5	2.5	2.5	2.5	2.5
		Total Marks for each section	5	5	5	5	5

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	5					**5**	**20**	**20**
	K2		5				**5**	**20**	**20**
	K3			5	5		10	40	40
	K4					5	5	20	20
	Marks						**25**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CIAI	**CO1**	**K1**	**15**				
	CO2	**K2**		**15**			
	CO3	**K3**			**15**		
	CO4	**K3**				**15**	
	CO5	**K4**					**15**
Question Pattern		No. of Questions to be asked	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**
		Total Marks for each section	**15**	**15**	**15**	**15**	**15**

Distribution of Marks with K Level								
K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	15					**15**	**20**	**20**
K2		15				**15**	**20**	**20**
K3			15	15		30	40	40
K4					15	15	20	20
Marks						**75**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.

Course Name	BASICS OF NANO TECHNOLOGY			
Course Code	23UELEA31	**L**	**P**	**C**
Category	ALLIED	4	-	3

COURSE OBJECTIVES

- To impart the knowledge on Background to Nano Technology.
- To Gain the knowledge about the Nucleation.
- To understand the knowledge about the Nanostructures types.
- To enable the students to acquire the knowledge of Nanomaterial.
- To enable the students to acquire the knowledge of Applications of Nanomaterial

UNIT - I BACKGROUND OF NANOTECHNOLOGY 12

Scientific revolution: atomic structures, Molecular and atomic size, Bohr radius, emergency of Nano technology, Challenges in Nano technology, Carbon age: New form of Carbon (from grapheme sheet to CNT)

UNIT - II NUCLEATION 12

Influence of nucleation rate on the size of the crystals, Macroscopic to macroscopic crystals and Nano crystals, large surface to volume ratio, top - down and bottom - up approaches, self-assembly process, grain boundary volume in Nano crystals, defects in Nano crystals, surface effects on the properties.

UNIT - III TYPES OF NANO STRUCTURES 12

Definition of a Nano system, Types of Nano crystals: One dimensional (1D) two dimensional (2D), three Dimensional (3D), Nano structured materials, Quantum dots, Quantum wire, Quantum core/shell structures.

UNIT - IV NANO MATERIALS AND PROPERTIES 12

Carbon Nanotubes (CNT), metals (Au, Ag), Metal oxides (TiO2, CeO2, ZnO), Semiconductors (Si, Ge, cds, Znse), Ceramics and composites, Dilute magnetic semiconductor. Size dependent properties, Mechanical, Physical and Chemical properties.

UNIT - V APPLICATIONS OF NANOMATERIAL 12

Molecular electronics and Nano electronics, Quantum electronic devices, CNT based transistor and Field emission display, biological applications, Biochemical sensor, Membrane based water purification.

Total Lecture Hours 60

BOOKS FOR STUDY:

- M.Wilson, K.Kannangara, G.Smith, M.Simmons, B.Raguse, Nano technology: Basic Science and Emerging Technologies, Overseas press India Pvt.Ltd., New Delhi First Edition, 2005.
- C.N.R.Rao, A.Muller, A.K.Cheetham (Eds), The Chemistry of Nano materials Synthesis properties and applications
- Kenneth J.Klabunde(Eds), Nano Scale Materials Science, John Wiley & Sons, Inc, 2001

BOOKS FOR REFERENCES:

- W.Rainer ,Nano Electronics and information Technology,Wiley,2003.6.K.E.Drexler,Nano systems,Wiley,1992 . 7.G.Cao, Nao structures and nano materials: Synthesis, Properties and Applications, Imperical College Press,2004.

WEB RESOURCES:

- https://www.eolss.net/sample-chapters/C05/E6-152-01.pdf
- https://www.sciencedirect.com/science/article/pii/B978012813586000002X
- https://leverageedu.com/blog/applications-of-nanotechnology/

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Gain the knowledge on Background to Nano Technology.	**K1 to K4**
CO2	Gain the knowledge about the Nucleation.	**K1 to K4**
CO3	Understand the knowledge about the Nanostructures types.	**K1 to K4**
CO4	The students to acquire the knowledge of Nanomaterial.	**K1 to K4**
CO5	The students to acquire the knowledge of Applications of Nanomaterial	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	L	L	M	S	M	S	M	M	L
CO2	M	M	L	M	S	L	S	S	M	M
CO3	S	M	M	S	M	L	L	S	L	M
CO4	S	S	S	L	M	M	L	S	M	L
CO5	M	S	M	L	L	S	M	M	M	M

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:						
COS	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO 1	**3**	**3**	**2**	**2**	**2**	**3**
CO 2	**2**	**3**	**1**	**2**	**2**	**2**
CO 3	**3**	**3**	**1**	**2**	**2**	**3**
CO 4	**3**	**3**	**2**	**3**	**2**	**3**
CO 5	**2**	**3**	**2**	**2**	**2**	**2**
WEIGHTAGE	**13**	**15**	**8**	**11**	**10**	**13**
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	**87**	**100**	**53**	**73**	**67**	**87**

LESSON PLAN:

UNIT	BASICS OF NANO TECHNOLOGY	HRS	PEDAGOGY
I	Scientific revolution: atomic structures, Molecular and atomic size, Bohr radius, emergency of Nano technology, Challenges in Nano technology, Carbon age: New form of Carbon (from grapheme sheet to CNT)	**12**	**ICT, CHALK & TALK**
II	Influence of nucleation rate on the size of the crystals, Macroscopic to macroscopic crystals and Nano crystals, large surface to volume ratio, top - down and bottom - up approaches, self-assembly process, grain boundary volume in Nano crystals, defects in Nano crystals, surface effects on the properties.	**12**	**ICT, CHALK & TALK**
III	Definition of a Nano system, Types of Nano crystals: One dimensional (1D) two dimensional (2D), three Dimensional (3D), Nano structured materials, Quantum dots, Quantum wire, Quantum core/shell structures.	**12**	**ICT, CHALK & TALK**
IV	Carbon Nanotubes (CNT), metals (Au, Ag), Metal oxides (TiO2, CeO2, ZnO), Semiconductors (Si, Ge, cds, Znse), Ceramics and composites, Dilute magnetic semiconductor. Size dependent properties, Mechanical, Physical and Chemical properties	**12**	**ICT, CHALK & TALK**
V	Molecular electronics and Nano electronics, Quantum electronic devices, CNT based transistor and Field emission display, biological applications, Biochemical sensor, Membrane based water purification.	**12**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	**Cos**	**K Level**	**Section A**		**Section B Either or Choice**	**Section C Either or Choice**
			MCQs			
			No. of. Questions	**K - Level**		
CI AI	**CO1**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO2	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
CI AII	**CO3**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO4	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		**No. of Questions to be asked**	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	**Section A (Multiple Choice Questions)**	**Section B (Either / Or Choice)**	**Section C (Either / Or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**
CIA II	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	Section A (Multiple Choice Questions)	Section B (Either or Choice	Section C (Either/ or Choice)	Total Marks	% of (Marks without choice)	Consolidated %
K1	5			5	3.6	3.6
K2	5			5	3.6	3.6
K3		50		50	35.7	35.7
K4			80	80	57.1	57.1
Marks	10	50	80	140	100	100
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	Unit	CO	K-level		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions		**PART – B**		**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions		**PART – C**		**(5 x 8 = 40 Marks)**
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	ADVANCED EXCEL			
Course Code	23UITSC31	**L**	**P**	**C**
Category	SPECIFIC ELECTIVE	1	-	1

COURSE OBJECTIVES

- Handle large amounts of data
- Aggregate numeric data and summarize into categories and subcategories
- Filtering, sorting, and grouping data or subsets of data
- Create pivot tables to consolidate data from multiple files
- Presenting data in the form of charts and graphs

UNIT - I BASICS OF EXCEL - 3

Customizing common options- Absolute and relative cells- Protecting and un-protecting worksheets and cells- Working with Functions - Writing conditional expressions - logical functions - lookup and reference functions- VlookUP with Exact Match, Approximate Match- Nested VlookUP with Exact Match- VlookUP with Tables, Dynamic Ranges- Nested VlookUP with Exact Match- Using VLookUP to consolidate Data from Multiple Sheets.

UNIT - II DATA VALIDATIONS 3

- Specifying a valid range of values - Specifying a list of valid values- Specifying custom validations based on formula - Working with Templates Designing the structure of a template- templates for standardization of worksheets - Sorting and Filtering Data -Sorting tables- multiple-level sorting- custom sorting- Filtering data for selected view - advanced filter options- Working with Reports Creating subtotals- Multiple-level subtotal.

UNIT - III CREATING PIVOT TABLES FORMATTING AND CUSTOMIZING PIVOT TABLES 3

- advanced options of Pivot tables- Pivot charts- Consolidating data from multiple sheets and files using Pivot tables- external data sources- data consolidation feature to consolidate data- Show Value As % of Row, % of Column, Running Total, Compare with Specific Field- Viewing Subtotal under Pivot- Creating Slicers.

UNIT - IV MORE FUNCTIONS DATE AND TIME FUNCTIONS 3

- Text functions- Database functions- Power Functions - Formatting Using auto formatting option for worksheets- Using conditional formatting option for rows, columns and cells- WhatIf Analysis - Goal Seek- Data Tables- Scenario Manager.

UNIT - V CHARTS - FORMATTING CHARTS - 3

3D Graphs- Bar and Line Chart together- Secondary Axis in Graphs- Sharing Charts with PowerPoint / MS Word, Dynamically- New Features of Excel Sparklines, Inline Charts, data Charts- Overview of all the new features.

Total Lecture Hours 15

BOOKS FOR STUDY:

- Excel 2019 AllMicrosoft Excel 2019 Pivot Table Data Crunching.
- MS Office: Sanjay Saxena, Vikas Publishing House.

BOOKS FOR REFERENCES:

- Manisha Nigam, "Data Analysis with Excel", BPP publications.
- Microsoft Office Excel 2007 step by step: Frye, PHIMicrosoft Excel Data Analysis and Business Modeling Sth Edition.

WEB RESOURCES:

- **https://www.simplilearn.com**
- **https://www.javatpoint.com**
- **https://www.w3schools.com**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Work with big data tools and its analysis techniques.	**K1 & K2**
CO2	Analyze data by utilizing clustering and classification algorithms.	**K1 & K2**
CO3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	**K1 & K2**
CO4	Perform analytics on data streams.	**K1 & K2**
CO5	Learn NoSQL databases and management.	**K1 & K2**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S									
CO2	M	S								
CO3				S		S				
CO4				S	S	M				
CO5			S					S		

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	3	2
CO 3	3	3	3	3	2	3
CO 4	3	3	2	2	3	3
CO 5	3	3	2	3	3	2
WEIGHTAGE	15	15	12	14	14	13
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	100	100	80	93	93	87

LESSON PLAN:

UNIT	ADVANCED EXCEL	HRS	PEDAGOGY
I	Basics of Excel- Customizing common options- Absolute and relative cells- Protecting and un-protecting worksheets and cells- Working with Functions - Writing conditional expressions - logical functions - lookup and reference functions- VlookUP with Exact Match, Approximate Match- Nested VlookUP with Exact Match- VlookUP with Tables, Dynamic Ranges- Nested VlookUP with Exact Match- Using VLookUP to consolidate Data from Multiple Sheets	3	ICT, CHALK & TALK
II	Data Validations - Specifying a valid range of values - Specifying a list of valid values- Specifying custom validations based on formula - Working with Templates Designing the structure of a template- templates for standardization of worksheets - Sorting and Filtering Data -Sorting tables- multiple-level sorting- custom sorting- Filtering data for selected view - advanced filter options- Working with Reports Creating subtotals- Multiple-level subtotal.	3	ICT, CHALK & TALK
III	Creating Pivot tables Formatting and customizing Pivot tables- advanced options of Pivot tables- Pivot charts- Consolidating data from multiple sheets and files using Pivot tables- external data sources- data consolidation feature to consolidate data- Show Value As % of Row, % of Column, Running Total, Compare with Specific Field- Viewing Subtotal under Pivot- Creating Slicers.	3	ICT, CHALK & TALK
IV	More Functions Date and time functions- Text functions- Database functions- Power Functions - Formatting Using auto formatting option for worksheets- Using conditional formatting option for rows, columns and cells- WhatIf Analysis - Goal Seek- Data Tables- Scenario Manager.	3	ICT, CHALK & TALK
V	Charts - Formatting Charts- 3D Graphs- Bar and Line Chart together- Secondary Axis in Graphs- Sharing Charts with PowerPoint / MS Word, Dynamically- New Features Of Excel Sparklines, Inline Charts, data Charts- Overview of all the new features	3	ICT, CHALK & TALK

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)				
Internal	**Cos**	**K Level**	**Section A**	
			MCQs	
			No. of. Questions	**K - Level**
CI AI	**CO1**	**K1 – K2**	**25**	**K1,K2**
	CO2	**K1 – K2**	**25**	**K1,K2**
CI AII	**CO3**	**K1 – K2**	**25**	**K1,K2**
	CO4	**K1 – K2**	**25**	**K1,K2**
Question Pattern CIA I & II		**No. of Questions to be asked**	**50**	
		No. of Questions to be answered	**50**	
		Marks for each question	**1**	
		Total Marks for each section	**50**	

* Two Formative examinations will be conducted as a part of Continuous Internal Assessment under which, 50 MCQ's will be asked [50X1=50 marks] from any 4 CO's. (Ist Test-2 CO's & IInd Test-2 CO's) in equal weightage

Distribution of Marks with K Level CIA I & CIA II					
	K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**30**	**30**	**60**	**100**
	K2	**20**	**20**	**40**	
	K3				
	K4				
	Marks	**50**	**50**	**100**	**100**
CIA II	**K1**	**30**	**30**	**60**	**100**
	K2	**20**	**20**	**40**	
	K3				
	K4				
	Marks	**50**	**50**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)				
S. No	**COs**	**K - Level**	**Section A (MCQs)**	
			No. of Questions	**K – Level**
1	**CO1**	**K1-K2**	**15**	**K1,K2**
2	**CO2**	**K1-K2**	**15**	**K1,K2**
3	**CO3**	**K1-K2**	**15**	**K1,K2**
4	**CO4**	**K1-K2**	**15**	**K1,K2**
5	**CO5**	**K1-K2**	**15**	**K1,K2**
No. of Questions to be Asked			**75**	
No. of Questions to be answered			**75**	
Marks for each question			**1**	
Total Marks for each section			**75**	
(Figures in parenthesis denotes, questions should be asked with the given K level)				

In summative examinations, 75 MCQ's will be asked [75X1=75 marks] from all 5 CO's in equal weightage.

Distribution of Marks with K Level				
K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**40**	**40**	**53**	**100**
K2	**35**	**35**	**47**	
K3				
K4				
Marks		**75**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.				

Course Name	OFFICE AUTOMATION LAB			
Course Code	23UITSP31	**L**	**P**	**C**
Category	SKILL	-	2	2

COURSE OBJECTIVES

- To Understand the basics of computer systems and its components.
- To Understand and apply the basic concepts of a word processing package.
- To Understand and apply the basic concepts of electronic spreadsheet software.
- To Understand and apply the basic concepts of database management system.
- To Understand and create a presentation using PowerPoint tool.

CONTENTS **TOTAL HOURS** **30**

MS-WORD

1. Preparing a Govt. Order / Official Letter / Business Letter / Circular Letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, indenting paragraphs, spacing between lines and characters, tab settings etc.
2. Creating and using styles and templates from the word
3. To create a monthly calendar using cell editing operations like inserting, joining, deleting, splitting and merging cells
4. Creating numbered lists and bulleted lists

a. To create numbered list with different formats (with numbers, alphabets, roman letters)
b. To create a bulleted list with different bullet characters.

5. Printing envelopes and mail merge.
   a. To print envelopes with from addresses and to addresses
   b. To use mail merge facility for sending a circular letter to many persons

MS – EXCEL

1. Prepare a Statement for preparing Result of 10 students in 5 subjects (using formula to get Distinction, I Class, II Class and Fail under Result column against each student).
2. Sorting Data, Filtering Data and creation of Pivot tables.
3. Creating a Chart: To create a chart for comparing the monthly sales of a company in different branch offices.
4. Create a student mark statement with chart for each exam report in an academic year.
5. Create any table in the Spreadsheet and do the following
   a. Create the formula to make some calculation
   b. Make the sorting
   c. Apply the borders and shadow

MS – POWER POINT

1. Creating a new Presentation based on a template – using Auto content wizard, design template and Plain blank presentation.
2. Creating a Presentation with Slide Transition – Automatic and Manual with different effects.
3. Set animation to text and picture in a Slide show
4. Create a table and chart using MS-PowerPoint
5. Create a slide show presentation for any event in the university by using various tools in MS Power point.

BOOKS FOR STUDY:

- Peter Norton,"Introduction to Computers"–Tata Mc Graw-Hill.

BOOKS FOR REFERENCES:

- Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, "Microsoft 2003", Tata McGrawHill.

WEB RESOURCES:

- **https://www.udemy.com/course/office-automation-certificate-course/**
- **https://www.javatpoint.com/automation-tools**

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Possess the knowledge on the basics of computers and its components	**K1 to K4**
CO2	Gain knowledge on Creating Documents, spread sheet and presentation.	**K1 to K4**
CO3	Learn the concepts of Database and implement the Query in Database.	**K1 to K4**
CO4	Demonstrate the understanding of different automation tools.	**K1 to K4**
CO5	Utilize the automation tools for documentation, calculation and presentation purpose.	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	M			M		L		
CO2	S	M	S			M				
CO3		S	S		M		L			
CO4			S	L	M		M			
CO5				M		S	M	S		

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	2	2	3	3	3	
CO 2	3	1	3	3	3	
CO 3	2	3	3	2	3	

CO 4	**3**	**3**	**3**	**3**	**3**	
CO 5	**3**	**3**	**3**	**3**	**3**	
WEIGHTAGE	**13**	**12**	**15**	**14**	**15**	
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	**86**	**76**	**100**	**93**	**100**	

LESSON PLAN:

OFFICE AUTOMATION LAB	HRS	PEDAGOGY
1. Preparing a Govt. Order / Official Letter / Business Letter / Circular Letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, indenting paragraphs, spacing between lines and characters, tab settings etc. 2. Creating and using styles and templates from the word 3. To create a monthly calendar using cell editing operations like inserting, joining, deleting, splitting and merging cells 4. Creating numbered lists and bulleted lists a. To create numbered list with different formats (with numbers, alphabets, roman letters) b. To create a bulleted list with different bullet characters. 5. Printing envelopes and mail merge. a. To print envelopes with from addresses and to addresses b. To use mail merge facility for sending a circular letter to many persons 6. Prepare a Statement for preparing Result of 10 students in 5 subjects (using formula to get Distinction, I Class, II Class and Fail under Result column against each student). 7. Sorting Data, Filtering Data and creation of Pivot tables. 8. Creating a Chart: To create a chart for comparing the monthly sales of a company in different branch offices. 9. Create a student mark statement with chart for each exam report in an academic year. 10. Create any table in the Spreadsheet and do the following a. Create the formula to make some calculation b. Make the sorting c. Apply the borders and shadow 11. Creating a new Presentation based on a template – using Auto content wizard, design template and Plain blank presentation. 12. Creating a Presentation with Slide Transition – Automatic and Manual with different effects. 13. Set animation to text and picture in a Slide show 14. Create a table and chart using MS-PowerPoint 15. Create a slide show presentation for any event in the university by using various tools in MS Power point.	**30**	**LAB**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	5				
	CO2	**K2**		5			
	CO3	**K3**			5		
	CO4	**K3**				5	
	CO5	**K4**					5
Question Pattern CIA		No. of Questions to be asked	2	2	2	2	2
		No. of Questions to be answered	2	2	2	2	2
		Marks for each question	2.5	2.5	2.5	2.5	2.5
		Total Marks for each section	5	5	5	5	5

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	5					5	20	20
	K2		5				5	20	20
	K3			5	5		10	40	40
	K4					5	5	20	20
	Marks						25	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CIAI	**CO1**	**K1**	15				
	CO2	**K2**		15			
	CO3	**K3**			15		
	CO4	**K3**				15	
	CO5	**K4**					15
Question Pattern		No. of Questions to be asked	2	2	2	2	2
		No. of Questions to be answered	2	2	2	2	2
		Marks for each question	7.5	7.5	7.5	7.5	7.5
		Total Marks for each section	15	15	15	15	15

Distribution of Marks with K Level								
K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	15					15	20	20
K2		15				15	20	20
K3			15	15		30	40	40
K4					15	15	20	20
Marks						75	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.


FOURTH SEMESTER

Course Name	.NET PROGRAMMING			
Course Code	23UITCC41	**L**	**P**	**C**
Category	CORE	5	-	5

COURSE OBJECTIVES

- To provide sufficient knowledge in developing web applications using C# and ASP.NET.
- To manipulate data from SQL Server using Microsoft ADO.NET.
- To learn about basic features of ASP.NET and its controls
- To create an ASP.NET application using standard .NET Controls.
- To learn about connecting data sources using ADO.NET and managing them.

UNIT - I INTRODUCTION-OVERVIEW OF C#: 15

The Creation of C#: C# Relates to the .Net Framework - CommonLanguageRuntime -Managedvs unmanagedcode-**AnOverviewofC#:** Object-Oriented Programming - FirstSimple Program-HandlingSyntax errors -Using codeblocks-semicolon, positioning andIndentation-TheC#Keywords-Identifiers-The.NetFramework ClassLibrary-DataTypes, LiteralsandVariables-Operators.

UNIT - II PROGRAMCONTROLSTATEMENTS, CLASSESANDOBJECTS: 15

Program Control Statements:IfStatement-switchStatement-ForLoop- While loop do-while loop- for each loop-using break to exit a loop-usingcontinue-goto.**IntroducingClassesandobjects**:ClassFundamentals-objects creation-Methods-constructors-GarbageCollection and Destructors-Exception Handling.

UNIT - III ARRAYS AND STRINGS: 15

Arrays and Strings: Arrays-Multidimensional Arrays-Jagged Arrays-for each loop Strings- Methods and classes: Method overloading- MainMethod- Recursion-staticClassesDelegates, EventsandLambda Expressions:Delegates-LambdaExpressions-LINQ.

UNIT - IV Developing ASP.NET Applications: 15

Developing ASP.NET Applications: Visual Studio: Creating Websites-The Anatomy ofa Web Form – Web Form Fundamentals: ConvertingHTML Page to an ASP.Net Page – PageClass – Web Controls. StateManagement**:**ViewState-TransferringInformationbetweenPages–Cookies–SessionState–ApplicationState.

UNIT - V ValidationControls: 15

ValidationControl: AdRotatorControl.WorkingwithData**:**ADO.NETFundamentals: –DirectDataAccess–DisconnectedDataAccess- Data Binding:Data Bindingwith ADO.NET –DataSourceControls-TheDataControls:TheGridView–FormattingtheGridView–SelectingGridViewRow–Editing,SortingandPagingtheGridView-GeneratingCrystalReports.

Total Lecture Hours 75

BOOKS FOR STUDY:

- Herbert Schildt (2010), C# 4.0 The Complete Reference, Tata McGraw-Hill Pvt Ltd
- Mathew MacDonald, (2010), Beginning ASP.NET 4 in C# 2010, Second Edition,Apress

BOOKS FOR REFERENCES:

- Greg Buczek (2002), ―ASP.NET – Developer_s guide‖, Tata MaGraw Hill Publication
- Jesse Liberty, (2002), ―Programming C#, 3.0‖, O_Reilly Press
- J.Sharp (2009), ―Microsoft Visual C# 2008 Step by Step‖, PHI Learning Private Ltd.
- Christian Nagel et al. , ―Professional C# 2005 with .NET 3.0‖, Wiley India, 2007

WEB RESOURCES:

- http://ssw.jku.at/Teaching/Lectures/CSharp/Tutorial/
- http://www.csharpkey.com/csharp/
- http://www.w3schools.com/aspnet/default.asp

Nature of Course	EMPLOYABILITY	✓	SKILL ORIENTED		ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Outlinethefeatures ofC#programminglanguage andASP.NETapplications.	**K1 to K4**
CO2	DemonstratethesalientpropertiesofC#andASP.NETapplications.	**K1 to K4**
CO3	Identifythe various stages indevelopingaweb forms.	**K1 to K4**
CO4	Selecttheappropriatecontrolstocreateawebform.	**K1 to K4**
CO5	Recommendadata driven webapplication byconnectingtothedatasources.	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				
CO5	-	M	S	S	M	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:						
COS	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO 1	**3**	**2**	**2**	**3**	**3**	**3**
CO 2	**3**	**3**	**2**	**3**	**3**	**3**
CO 3	**3**	**3**	**3**	**3**	**3**	**3**
CO 4	**3**	**3**	**2**	**3**	**3**	**3**
CO 5	**3**	**3**	**2**	**3**	**3**	**3**
WEIGHTAGE	**15**	**14**	**11**	**15**	**15**	**15**
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	**100**	**93.33**	**73.33**	**100**	**100**	**100**

LESSON PLAN:

UNIT	.NET PROGRAMMING	HRS	PEDAGOGY
I	**The Creation of C#**: C# Relates to the .Net Framework - CommonLanguageRuntime -Managedvs unmanagedcode- **AnOverviewofC#:** Object-Oriented Programming - FirstSimple Program-HandlingSyntax errors -Using codeblocks-semicolon, positioning andIndentation-TheC#Keywords-Identifiers-The.NetFramework ClassLibrary-DataTypes, LiteralsandVariables-Operators.	**15**	**ICT, CHALK & TALK**
II	**ProgramControlStatements**:IfStatement-switchStatement-ForLoop- While loop do-while loop- foreach loop-using break to exit a loop-usingcontinue-goto.**IntroducingClassesandobjects**:ClassFundamentals-objects creation-Methods-constructors-GarbageCollectionand Destructors-ExceptionHandling.	**15**	**ICT, CHALK & TALK**
III	**Arrays and Strings**: Arrays-Multidimensional Arrays-Jagged Arrays-for each loop Strings- Methods and classes: Method overloading- MainMethod- Recursion-staticClassesDelegates, EventsandLambda Expressions:Delegates-LambdaExpressions-LINQ.	**15**	**ICT, CHALK & TALK**
IV	**Developing ASP.NET Applications:**Visual Studio: Creating Websites-The Anatomy ofa Web Form – Web Form Fundamentals: ConvertingHTML Page to an ASP.Net Page – PageClass – Web Controls. StateManagement**:**ViewState-TransferringInformationbetweenPages–Cookies–SessionState–ApplicationState.	**15**	**ICT, CHALK & TALK**
V	**ValidationControls**:AdRotatorControl.WorkingwithData-	**15**	**ICT, CHALK & TALK**

	ADO.NETFundamentals–DirectDataAccess–DisconnectedDataAccess- Data Binding:Data Bindingwith ADO.NET –Data SourceControls-TheDataControls:TheGridView–FormattingtheGridView–SelectingGridViewRow–Editing,SortingandPagingtheGridView-GeneratingCrystalReports		

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	**Cos**	**K Level**	**Section A**		**Section B Either or Choice**	**Section C Either or Choice**
			MCQs			
			No. of. Questions	**K - Level**		
CI AI	**CO1**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO2	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
CI AII	**CO3**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO4	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		**No. of Questions to be asked**	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	**Section A (Multiple Choice Questions)**	**Section B (Either / Or Choice)**	**Section C (Either / Or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**
CIA II	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	Section A (Multiple Choice Questions)	Section B (Either or Choice	Section C (Either/ or Choice)	Total Marks	% of (Marks without choice)	Consolidated %
K1	5			5	3.6	3.6
K2	5			5	3.6	3.6
K3		50		50	35.7	35.7
K4			80	80	57.1	57.1
Marks	10	50	80	140	100	100
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	Unit	CO	K-level		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions		**PART – B**		**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions		**PART – C**		**(5 x 8 = 40 Marks)**
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	.NET PROGRAMMING LAB			
Course Code	23UITCP41	**L**	**P**	**C**
Category	CORE	-	4	4

COURSE OBJECTIVES

- Introduce to .Net IDE Component Framework.
- Programming concepts in .Net Framework.
- To provide sufficient knowledge in developing web applications using C#.
- To Perform Database operations for Windows Form and web applications.
- To display proficiency in C# by building stand-alone applications in the .NET framework using C#.

CONTENTS

1. C# Basics
2. Looping Constructs
3. Arrays & Jagged Array
4. Strings
5. Classes and Objects
6. Method overloading
7. Delegates
8. LINQ
9. Lambda Expressions

75

WEB RESOURCES:

- Http://www.tmv.edu.in/pdf/Distance_education/BCA%20Books/BCA%20IV%20SEM/BC A-428%20Oracle.pdf
- http://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm
- http://ecomputernotes.com/database-system/rdbms
- http://www.mithunashok.com/2011/04/basics-of-rdbms.html

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Demonstrate MS Visual Studio.NET IDE to Create applications.	**K1 to K4**
CO2	Apply C# concepts to design applications.	**K1 to K4**
CO3	Simplify the functionality of the web application in accordance to the user requirement.	**K1 to K4**
CO4	Evaluate the web application to fix the errors.	**K1 to K4**
CO5	Build a web application using C# concepts to solve the problem	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	-	-	-				
CO2	M	-	S	M	S	-				
CO3	M	M	S	S	S	-				
CO4	M	M	S	S	S	M				
CO5	-	M	S	S	M	S				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	2	2	3	3	3
CO 2	3	3	2	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	2	3	3	3
CO 5	3	3	2	3	3	3
WEIGHTAGE	15	14	11	15	15	15
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	100	93	73	100	100	100

LESSON PLAN:			
S. No	**.NET PROGRAMMING LAB**	**HRS**	**PEDAGOGY**
1.	C# Basics	**75**	**Laboratory Experiments**
2.	Looping Constructs		
3.	Arrays & Jagged Array		
4.	Strings		
5.	Classes and Objects		
6.	Method overloading		
7.	Delegates		
8.	LINQ		
9.	Lambda Expressions		

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CIA	**CO1**	**K1**	5				
	CO2	**K2**		5			
	CO3	**K3**			5		
	CO4	**K3**				5	
	CO5	**K4**					5
Question Pattern CIA		No. of Questions to be asked	2	2	2	2	2
		No. of Questions to be answered	2	2	2	2	2
		Marks for each question	2.5	2.5	2.5	2.5	2.5
		Total Marks for each section	5	5	5	5	5

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	5					**5**	**20**	**20**
	K2		5				**5**	**20**	**20**
	K3			5	5		10	40	40
	K4					5	5	20	20
	Marks						**25**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CIAI	**CO1**	**K1**	15				
	CO2	**K2**		15			
	CO3	**K3**			15		
	CO4	**K3**				15	
	CO5	**K4**					15
Question Pattern		No. of Questions to be asked	2	2	2	2	2
		No. of Questions to be answered	2	2	2	2	2
		Marks for each question	7.5	7.5	7.5	7.5	7.5
		Total Marks for each section	15	15	15	15	15

Distribution of Marks with K Level								
K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	15					**15**	**20**	**20**
K2		15				**15**	**20**	**20**
K3			15	15		30	40	40
K4					15	15	20	20
Marks						**75**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Course Name	OPTIMIZATION TECHNIQUES			
Course Code	23UMTEA42	L	P	C
Category	ELECTIVE ALLIED	4	-	3

COURSE OBJECTIVES

- To introduce the concepts of OR
- To explain the Linear Programming Problem
- To illustrate the Simplex Method
- To know the Duality Theorems
- To understanding the Methods for finding IBFS for the Transportation Problems

UNIT - I SET THEORY	**15**
Development of OR: Definition of OR – Modeling - Characteristics and Phases - Tools, Techniques & Methods - scope of OR.	
UNIT - II LINEAR PROGRAMMING PROBLEM	**15**
Linear Programming Problem: Formulation - Slack & surplus variables - Graphical solution of LPP.	
UNIT - III NUMBER THEORY	**15**
Simplex Method: Computational Procedure - Big-M method - Concept of duality in LPP - Definition of primal dual problems - General rules for converting any primal into its dual.	
UNIT - IV COMBINATORICS:	**15**
Duality Theorems: (without proof) Primal dual correspondence - Duality and Simplex method - Mathematical formulation of assignment problem - Method for solving assignment problem.	
UNIT - V RELATIONS	**15**
Mathematical formulation of Transportation Problem: Methods for finding IBFS for the Transportation Problems.	
Total Lecture Hours	**75**

BOOKS FOR STUDY:

- Operations Research, S.D.Sharma, KedarNath Ram Nath& Co
- Unit I : Chapter-1(1.1, 1.2, 1.4,1.,1.8,1.9,1.10,1.11)
- Unit II : Chapter-3 (3.1, 3.2, 3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.4,3.5)
- Unit III : Chapter-5 (5.1, 5.2, 5.2.1, 5.3,5.4,5.5.4) Chapter- 7 (7.1,7.2,7.3,7.4)
- Unit IV : Chapter-7 (7.5) (Statements only); 7.6, 7.7 Chapter 11(11.2,11.3,11.4)
- Unit V : Chapter-12 (12.2 to 12.8)

BOOKS FOR REFERENCES:

- Operation Research, Nita H.Shah, Ravi M.Gor and Hardiksoni,PrenticeHall of India Pvt. Ltd., New Delhi 2008.
- Operation Research, R.Sivarethinamohan, Tata McGraw Hill, 2005.
- Operations Research – An Introduction by HamdyA.Taha. Ninth Edition, Dorling Kindersley Pvt. Ltd., Noida, India, 2012

WEB RESOURCES:

- Web resources from NDL Library, E-content from open-source libraries

Nature of Course	EMPLOYABILITY			SKILL ORIENTED		✓	ENTREPRENEURSHIP				
Curriculum Relevance	LOCAL		REGIONAL		✓	NATIONAL			GLOBAL		
Changes Made in the Course	Percentage of Change			No Changes Made			New Course	✓			
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**											

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	To understanding the concepts of Development of OR	**K1 to K4**
CO2	Develop linear programming (LP) models for shortest path, maximum flow, minimal spanning tree, critical path, minimum cost flow, and transshipment problems	**K1 to K4**
CO3	Solve the problems of Simplex Method	**K1 to K4**
CO4	To study the Duality Theorems	**K1 to K4**
CO5	Finding initial basic feasible and optimal solution of the Transportation problems	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:										
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	L	S	M	S	S	S	S		
CO2	M	M	L	L	L	M	L	M		
CO3	S	L	S	M	S	S	L	L		
CO4	L	L	S	M	L	M	S	M		
CO5	M	M	L	M	M	S	L	S		
S- STRONG				M – MEDIUM					L - LOW	

CO / PO MAPPING:						
COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	3	3	3	3	3	
CO 2	3	3	3	2	3	
CO 3	3	3	3	3	3	
CO 4	3	2	3	3	23	
CO 5	3	3	2	3	3	
WEIGHTAGE	14	15	14	15	14	
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	100	93.3	93.3	100	100	

LESSON PLAN:			
UNIT	Resource Management Techniques	HRS	PEDAGOGY
I	Development of OR: Definition of OR – Modeling - Characteristics and Phases - Tools, Techniques & Methods - scope of OR.	12	ICT, CHALK & TALK
II	Linear Programming Problem: Formulation - Slack & surplus variables - Graphical solution of LPP.	12	ICT, CHALK & TALK
III	Simplex Method: Computational Procedure - Big-M method - Concept of duality in LPP - Definition of primal dual problems - General rules for converting any primal into its dual.	12	ICT, CHALK & TALK
IV	Duality Theorems: (without proof) Primal dual correspondence - Duality and Simplex method - Mathematical formulation of assignment problem - Method for solving assignment problem.	12	ICT, CHALK & TALK
V	Mathematical formulation of Transportation Problem: Methods for finding IBFS for the Transportation Problems.	12	ICT, CHALK & TALK

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	**Cos**	**K Level**	**Section A**		**Section B Either or Choice**	**Section C Either or Choice**
			MCQs			
			No. of. Questions	**K - Level**		
CI AI	**CO1**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO2	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
CI AII	**CO3**	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
	CO4	**K1 – K4**	2	K1,K2	2(K3)	2(K4)
Question Pattern CIA I & II		**No. of Questions to be asked**	4		4	4
		No. of Questions to be answered	4		2	2
		Marks for each question	1		5	8
		Total Marks for each section	4		10	16

Distribution of Marks with K Level CIA I & CIA II							
	K Level	**Section A (Multiple Choice Questions)**	**Section B (Either / Or Choice)**	**Section C (Either / Or Choice)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**
CIA II	**K1**	**2**			**2**	**3.6**	**7.2**
	K2	**2**			**2**	**3.6**	
	K3		**20**		**20**	**35.7**	**35.7**
	K4			**32**	**32**	**57.1**	**57.1**
	Marks	**4**	**20**	**32**	**56**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)						
S. No	COs	K - Level	Section A (MCQs)		Section B (Either / or Choice) With K - LEVEL	Section C (Either / or Choice) With K - LEVEL
			No. of Questions	K – Level		
1	CO1	K1-K4	2	K1,K2	2 (K3)	2(K4)
2	CO2	K1-K4	2	K1,K2	2 (K3)	2(K4)
3	CO3	K1-K4	2	K1,K2	2 (K3)	2(K4)
4	CO4	K1-K4	2	K1,K2	2 (K3)	2(K4)
5	CO5	K1-K4	2	K1,K2	2 (K3)	2(K4)
No. of Questions to be Asked			10		10	10
No. of Questions to be answered			10		5	5
Marks for each question			1		5	8
Total Marks for each section			10		25	40
(Figures in parenthesis denotes, questions should be asked with the given K level)						

Distribution of Marks with K Level						
K Level	Section A (Multiple Choice Questions)	Section B (Either or Choice	Section C (Either/ or Choice)	Total Marks	% of (Marks without choice)	Consolidated %
K1	5			5	3.6	3.6
K2	5			5	3.6	3.6
K3		50		50	35.7	35.7
K4			80	80	57.1	57.1
Marks	10	50	80	140	100	100
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.						

Summative Examinations - Question Paper – Format

Q. No.	Unit	CO	K-level		
Answer **ALL** the questions				**PART – A**	**(10 x 1 = 10 Marks)**
1.	**Unit - I**	**CO1**	**K1**		
				a)	b)
				c)	d)
2.	**Unit - I**	**CO1**	**K 2**		
				a)	b)
				c)	d)
3.	**Unit - II**	**CO2**	**K 1**		
				a)	b)
				c)	d)
4.	**Unit - II**	**CO2**	**K 2**		
				a)	b)
				c)	d)
5.	**Unit - III**	**CO3**	**K 1**		
				a)	b)
				c)	d)
6.	**Unit - III**	**CO3**	**K 2**		
				a)	b)
				c)	d)
7.	**Unit - IV**	**CO4**	**K 1**		
				a)	b)
				c)	d)
8.	**Unit - IV**	**CO4**	**K 2**		
				a)	b)
				c)	d)
9.	**Unit - V**	**CO5**	**K 1**		
				a)	b)
				c)	d)
10.	**Unit - V**	**CO**	**K 2**		
				a)	b)
				c)	d)

Answer **ALL** the questions		**PART – B**		**(5 x 5 = 25 Marks)**
11. a)	**Unit - I**	**CO1**	**K 3**	
		OR		
11. b)	**Unit - I**	**CO 1**	**K 3**	
12. a)	**Unit - II**	**CO 2**	**K 3**	
		OR		
12. b)	**Unit - II**	**CO 2**	**K 3**	
13. a)	**Unit - III**	**CO 3**	**K 3**	
		OR		
13. b)	**Unit - III**	**CO 3**	**K 3**	
14. a)	**Unit - IV**	**CO 4**	**K 3**	
		OR		
14. b)	**Unit - IV**	**CO 4**	**K 3**	
15. a)	**Unit - V**	**CO 5**	**K 3**	
		OR		
15. b)	**Unit - V**	**CO 5**	**K 3**	

Answer **ALL** the questions		**PART – C**		**(5 x 8 = 40 Marks)**
16. a)	**Unit - I**	**CO 1**	**K 4**	
		OR		
16. b)	**Unit - I**	**CO 1**	**K 4**	
17. a)	**Unit - II**	**CO 2**	**K 4**	
		OR		
17. b)	**Unit - II**	**CO 2**	**K 4**	
18. a)	**Unit - III**	**CO 3**	**K 4**	
		OR		
18. b)	**Unit - III**	**CO 3**	**K 4**	
19. a)	**Unit - IV**	**CO 4**	**K 4**	
		OR		
19. b)	**Unit - IV**	**CO 4**	**K 4**	
20. a)	**Unit - V**	**CO 5**	**K 4**	
		OR		
20. b)	**Unit - V**	**CO 5**	**K 4**	

Course Name	WEB DESIGING			
Course Code	23UITSC41	**L**	**P**	**C**
Category	SPECIFIC ELECTIVE	2	-	2

COURSE OBJECTIVES

- Understand the basics of HTML and its components
- To study about the Graphics in HTML
- Understand and apply the concepts of XML and DHTML
- Understand the concept of JavaScript
- To identify and understand the goals and objectives of the Ajax

UNIT - I HTML **6**

HTML-Introduction-tag basics- page structure-adding comments working with texts, paragraphs and line break. Emphasizing test- heading and horizontal rules-list-font size, face and color-alignment links-tables-frames.

UNIT - II FORMS & IMAGES USING HTML **6**

Graphics: Introduction-How to work efficiently with images in web pages, image maps, GIF animation, adding multimedia, data collection with html forms textbox, password, list box, combo box, text area, tools for building web page front page.

UNIT - III XML & DHTML: **6**

Cascading style sheet (CSS)-what is CSS Why we use CSS-adding CSS to your web pages-Grouping styles-extensible markup language (XML).

UNIT - IV DYNAMIC HTML: **6**

Document object model (DCOM)- Accessing HTML & CSS through DCOM Dynamic content styles & positioning-Event bubbling-data binding. JavaScript: Client-side scripting, What is JavaScript, How to develop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition,

UNIT - V ADVANCE SCRIPT **6**

Advance script, JavaScript and objects, JavaScript own objects, the DOM and web browser environments, forms and validations.

Total Lecture Hours **30**

BOOKS FOR STUDY:

- Pankaj Sharma, —Web Technology‖, SkKataria& Sons Bangalore 2011.
- Mike Mcgrath, —Java Script‖, Dream Tech Press 2006, 1st Edition.
- Achyut S Godbole&AtulKahate, —Web Technologies‖, 2002, 2nd Edition.

BOOKS FOR REFERENCES:

- Laura Lemay, RafeColburn , Jennifer Kyrnin, —Mastering HTML, CSS &Javascript Web Publishing‖, 2016.
- DT Editorial Services (Author), —HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)‖, Paperback 2016, 2nd Edition.

WEB RESOURCES:

- NPTEL & MOOC courses titled Web Design and Development

Nature of Course	EMPLOYABILITY	✓	SKILL ORIENTED		ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		

***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Develop working knowledge of HTML	**K1 & K2**
CO2	Ability to Develop and publish Web pages using Hypertext Markup Language (HTML).	**K1 & K2**
CO3	Ability to optimize page styles and layout with Cascading Style Sheets (CSS).	**K1 & K2**
CO4	Ability to develop a java script.	**K1 & K2**
CO5	An ability to develop web application using Ajax.	**K1 & K2**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S		M			L		M		
CO2	S	M	L			M				
CO3			S		M					
CO4	S	M	M				L			
CO5	M				L	M				

S- STRONG **M – MEDIUM** **L - LOW**

CO / PO MAPPING:						
COS	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO 1	**3**	**3**	**3**	**3**	**3**	**3**
CO 2	**3**	**3**	**2**	**3**	**3**	**2**
CO 3	**3**	**3**	**3**	**3**	**2**	**3**
CO 4	**3**	**3**	**2**	**2**	**3**	**3**
CO 5	**3**	**3**	**2**	**3**	**3**	**2**
WEIGHTAGE	**15**	**15**	**12**	**14**	**14**	**13**
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	**100**	**100**	**80**	**93**	**93**	**87**

LESSON PLAN:

UNIT	WEB DESIGNING	HRS	PEDAGOGY
I	HTML-Introduction-tag basics- page structure-adding comments working with texts, paragraphs and line break. Emphasizing test-heading and horizontal rules-list-font size, face and color-alignment links-tables-frames.	**6**	**ICT, CHALK & TALK**
II	Graphics: Introduction-How to work efficiently with images in web pages, image maps, GIF animation, adding multimedia, data collection with html forms textbox, password, list box, combo box, text area, tools for building web page front page.	**6**	**ICT, CHALK & TALK**
III	Cascading style sheet (CSS)-what is CSS Why we use CSS-adding CSS to your web pages-Grouping styles-extensible markup language (XML).	**6**	**ICT, CHALK & TALK**
IV	Document object model (DCOM)- Accessing HTML & CSS through DCOM Dynamic content styles & positioning-Event bubbling-data binding. JavaScript: Client-side scripting, What is JavaScript, How to develop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition,	**6**	**ICT, CHALK & TALK**
V	Advance script, JavaScript and objects, JavaScript own objects, the DOM and web browser environments, forms and validations.	**6**	**ICT, CHALK & TALK**

Learning Outcome Based Education & Assessment (LOBE) Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)				
Internal	**Cos**	**K Level**	**Section A**	
			MCQs	
			No. of. Questions	**K - Level**
CI AI	**CO1**	**K1 – K2**	**25**	**K1,K2**
	CO2	**K1 – K2**	**25**	**K1,K2**
CI AII	**CO3**	**K1 – K2**	**25**	**K1,K2**
	CO4	**K1 – K2**	**25**	**K1,K2**
Question Pattern CIA I & II		**No. of Questions to be asked**	**50**	
		No. of Questions to be answered	**50**	
		Marks for each question	**1**	
		Total Marks for each section	**50**	

* Two Formative examinations will be conducted as a part of Continuous Internal Assessment under which, 50 MCQ's will be asked [50X1=50 marks] from any 4 CO's. (Ist Test-2 CO's & IInd Test-2 CO's) in equal weightage

Distribution of Marks with K Level CIA I & CIA II					
	K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidate of %**
CIA I	**K1**	**30**	**30**	**60**	**100**
	K2	**20**	**20**	**40**	
	K3				
	K4				
	Marks	**50**	**50**	**100**	**100**
CIA II	**K1**	**30**	**30**	**60**	**100**
	K2	**20**	**20**	**40**	
	K3				
	K4				
	Marks	**50**	**50**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)				
S. No	**COs**	**K - Level**	**Section A (MCQs)**	
			No. of Questions	**K – Level**
1	**CO1**	**K1-K2**	**15**	**K1,K2**
2	**CO2**	**K1-K2**	**15**	**K1,K2**
3	**CO3**	**K1-K2**	**15**	**K1,K2**
4	**CO4**	**K1-K2**	**15**	**K1,K2**
5	**CO5**	**K1-K2**	**15**	**K1,K2**
No. of Questions to be Asked			**75**	
No. of Questions to be answered			**75**	
Marks for each question			**1**	
Total Marks for each section			**75**	
(Figures in parenthesis denotes, questions should be asked with the given K level)				

In summative examinations, 75 MCQ's will be asked [75X1=75 marks] from all 5 CO's in equal weightage.

Distribution of Marks with K Level				
K Level	**Section A (Multiple Choice Questions)**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	**40**	**40**	**53**	**100**
K2	**35**	**35**	**47**	
K3				
K4				
Marks		**75**	**100**	**100**
NB: Higher level of performance of the students is to be assessed by attempting higher level of K levels.				

Course Name	MULTIMEDIA LAB			
Course Code	23UITSP41	L	P	C
Category	SKILLED	-	2	2

COURSE OBJECTIVES

- Understands the basics of multimedia
- Acquire knowledge of image editing and animation techniques.
- Apply multimedia concepts to real world projects
- Understands the Photo Editing, Video Editing and animation tools and select the appropriate tool based on the requirements
- To Design and develop Multimedia Projects

CONTENTS **30**

1. Moving a Ball using flash.
2. Bouncing a Ball using flash.
3. Moving a Car using flash.
4. Animating a Star using flash.
5. Photo masking using flash.

Photoshop Lab Program:

6. Design Birthday card using Photoshop.
7. Convert Picture into Text Background image.
8. Creating Brush tool and using a Jelly Beans
9. Clone the image using Photoshop.
10. Pass port size photo using Photoshop.

PHP Program

11. Write a PHP program to design Curriculum Vitae.
12. Create a PHP page for login page.
13. Write a PHP program to design personal information
14. Write a Mathematical calculator program.
15. Create a PHP page for College Website.

BOOKS FOR STUDY:

- **4x4 Photoshop and Flash - Time/Stasis,** Jeremy Tai Abbett, Arron Bleasdale , Karen Ingram. Francine Spiegel, friends of ED Ltd (1 January 2002)

BOOKS FOR REFERENCES:

- **PHP: A Beginner's Guide , Vikram Vaswani, McGraw-Hill Education,2008**

WEB RESOURCES:

- https://www.youtube.com/watch?v=Jz9WrbELGYA
- https://www.youtube.com/watch?v=T8NIK3RdoIc (Unit IV: Gimp Video Editing)

Nature of Course	EMPLOYABILITY		SKILL ORIENTED	✓	ENTREPRENEURSHIP			
Curriculum Relevance	LOCAL		REGIONAL		NATIONAL		GLOBAL	✓
Changes Made in the Course	Percentage of Change		No Changes Made		New Course	✓		
***Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.**								

COURSE OUTCOMES:		**K LEVEL**
After studying this course, the students will be able to:		
CO1	Demonstrate understanding and use of multimedia fundamentals	**K1 to K4**
CO2	Implement appropriate techniques required for editing images and designinganimated system	**K1 to K4**
CO3	Solve various design and implementation issues materialize on the development of multimedia systems	**K1 to K4**
CO4	Assess different Photo Editing, Video Editing and animation tools and select the appropriate tool based on the requirements	**K1 to K4**
CO5	Design and develop Multimedia Projects	**K1 to K4**

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	**M**	**S**	**M**			**M**		**L**		
CO2	**S**	**M**	**S**			**M**				
CO3		**S**	**S**		**M**		**L**			
CO4			**S**	**L**	**M**		**M**			
CO5				**M**		**S**	**M**	**S**		
S- STRONG				**M – MEDIUM**					**L - LOW**	

CO / PO MAPPING:

COS	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO 1	2	2	2	3	3	2
CO 2	3	2	2	2	3	3
CO 3	3	3	3	3	2	3
CO 4	3	3	3	2	3	3
CO 5	2	2	2	3	3	2
WEIGHTAGE	13	12	12	13	14	13
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	87	80	80	87	93	87

LESSON PLAN:

S. No	List of Programs	HRS	PEDAGOGY
1.	Moving a Ball using flash.	30	Laboratory Experiments
2.	Bouncing a Ball using flash.		
3.	Moving a Car using flash.		
4.	Animating a Star using flash.		
5.	Photo masking using flash.		
6.	Design Birthday card using Photoshop.		
7.	Convert Picture into Text Background image.		
8.	Creating Brush tool and using a Jelly Beans		
9.	Clone the image using Photoshop.		
10.	Pass port size photo using Photoshop.		
11.	Write a PHP program to design Curriculum Vitae.		
12.	Create a PHP page for login page.		
13.	Write a PHP program to design personal information		
14.	Write a Mathematical calculator program.		
15.	Create a PHP page for College Website.		

Formative Examination - Blue Print Articulation Mapping – K Levels with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CIA I	**CO1**	**K1**	**5**				
	CO2	**K2**		**5**			
	CO3	**K3**			**5**		
	CO4	**K3**				**5**	
	CO5	**K4**					**5**
Question Pattern CIA		No. of Questions to be asked	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**
		Total Marks for each section	**5**	**5**	**5**	**5**	**5**

Distribution of Marks with K Level CIA									
	K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
CIA	**K1**	5					**5**	**20**	**20**
	K2		5				**5**	**20**	**20**
	K3			5	5		10	40	40
	K4					5	5	20	20
	Marks						**25**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.

Summative Examination – Blue Print Articulation Mapping – K Level with Course Outcomes (COs)							
Internal	**Cos**	**K Level**	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding& Implementation**	**Debugging & Output**
CI AI	**CO1**	**K1**	**15**				
	CO2	**K2**		**15**			
	CO3	**K3**			**15**		
	CO4	**K3**				**15**	
	CO5	**K4**					**15**
Question Pattern		No. of Questions to be asked	**2**	**2**	**2**	**2**	**2**
		No. of Questions to be answered	**2**	**2**	**2**	**2**	**2**
		Marks for each question	**7.5**	**7.5**	**7.5**	**7.5**	**7.5**
		Total Marks for each section	**15**	**15**	**15**	**15**	**15**

Distribution of Marks with K Level								
K Level	**Syntax & Semantics**	**Programming principles**	**Concept Applications**	**Coding**	**Debugging & Output**	**Total Marks**	**% of (Marks without choice)**	**Consolidated %**
K1	15					**15**	**20**	**20**
K2		15				**15**	**20**	**20**
K3			15	15		30	40	40
K4					15	15	20	20
Marks						**75**	**100**	**100**

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO will be allotted for individual Assignment which carries five marks as part of CIA component.