

(An Autonomous Institution Affiliated to Madurai Kamaraj University) Re-Accredited with 'A' Grade by NAAC



## Thirty Eighth Academic Council Meeting

## Department of Computer Application & Information Technology

Dr. Rm. Murugappan Dean – Curriculum Development

# BCA (SF) Programme code : UCA

## THIAGARAJAR COLLEGE, MADURAI – 9. (Re-Accredited with 'A' Grade by NAAC) **Curriculum structure for** B.Sc., CS, IT & BCA BBA & B.Com

Course	No.of Courses	Credit	Hrs/ Week	Total
	/paper	Distribution		Credits
Tamil	2	3	-	06
English	2	3	-	06
	Sub To	tal		12
Core	-	-	-	84
Elective – Main	2	5	-	10
Elective – Generic	2+2	5	-	20
	Sub To	tal		114
AECC	I sem EVS	2	4	04
I &II Sem	II Sem .Prof.Skill			
	Development			
NME III & V Sem	2	2	8	08
Horizontal				
Migration				
	2			
SEC IV & VI Sem				
Vertical Migration				
Value Education	1	1	2	01
V Sem				
	Sub To	tal	14	13
	Total			139
NCC (Army &Navy)/		01		
Circle/ Library/ SSL/	Nature Club/Value E	ducation/		
YRC/WSC				
(	Grand Total			140
Self-Study P	aper (Optional)V	Sem	05	145
	Course Tamil English Core Elective –Main Elective – Generic AECC I &II Sem NME III & V Sem Horizontal Migration SEC IV & VI Sem Vertical Migration Value Education V Sem NCC (Army &Navy)/ Circle/ Library/ SSL/ YRC/WSC	CourseNo.of Courses /paperTamil2English2English2Core-Elective -Main2Elective -Generic2+2Sub TotAECCI sem EVSI &II SemII Sem .Prof.Skill DevelopmentNME III & V Sem Horizontal Migration2SEC IV & VI Sem Vertical Migration2Value Education V Sem1Vertical Migration1VSemSub TotNCC (Army &Navy)/ PE/ NSS / Rotaract/ C Circle/ Library/ SSL/ Nature Club/Value E YRC/WSCGrand Total Self-Study Paper (Optional)V	CourseNo.of Courses /paperCredit DistributionTamil23English23English23CoreElective – Main25Elective – Generic2+25Sub TotalSub TotalAECCI sem EVS I sem EVS2I &II SemDevelopment2NME III & V Sem Horizontal Migration22SEC IV & VI Sem Vertical Migration22Value Education V Sem11Value Education V Sem11NCC (Army &Navy)/ PE/ NSS / Rotaract/ Quality Circle/ Library/ SSL/ Nature Club/Value Education/ YRC/WSCSem	CourseNo.of Courses /paperCredit DistributionHrs/ WeekTamil23-English23-English23-CoreElective -Main25-Elective -Generic2+25-Elective -Generic2+25-Sub Total1Sub Total-AECCI sem EVS I Sem .Prof.Skill Development24NME III & V Sem Horizontal Migration228SEC IV & VI Sem Vertical Migration228Value Education V Sem112Value Education VSem11414Total NCC (Army &Navy)/ PE/ NSS / Rotaract/ Quality Circle/ Library/ SSL/Nature Club/Value Education/ YRC/WSC0505

## (For those who joined in 2019 and after)

Ability Enhancement Compulsory Course AECC –

SEC Skill Enhancement Course \_

NME – Non Major Elective

For Choice based credit system (CBCS)

- For NME every department offers two papers (one in each at III &V semester) •
- For SEC every department offer three papers for each course (Sem IV & VI) •
- For Major elective there may be an option for choice.

## THIAGARAJAR COLLEGE, MADURAI – 9. (Re-Accredited with 'A' Grade by NAAC) Curriculum structure for

BA Tamil, English & Economics

B.Sc., Maths, Physics, Chemistry, Botany, Biotechnology Microbiology and Psychology

## (For those who joined in 2019 and after)

Catergory	Course	No.of Courses	Credit Distribution	Hrs/ Week	Total Credits
		/paper			
Part I	Tamil	4	3	12+12	12
Part II	English	4	3	12+12	12
		Sub	Total	48	24
Part III	Core			72 + 12	72
	Elect – Main	2	5	10	10
	Elect – Generic	2+2	5	24	20
		Sub	Total	118	102
Part IV	AECC	I sem EVS	2	4	04
	I &II Sem	II Sem			
		.Prof.Skill			
		Development			
	NME III & V Sem	2	2	8	08
	Horizontal Migration				
	SEC IV & VI Sem				
	Vertical Migration	2			
	Value Education	1	1	2	1
	V Sem				
		Sub	Total	14	13
		Total			139
Part V	NCC (Army &Navy)/ P		1		
	Circle/ Library/ SSL/ N				
	YRC				
	G	rand Total			140
	Self-Study Pa	per (Optional)-	-V Sem	05	145

AECC – Ability Enhancement Compulsory Course

SEC – Skill Enhancement Course

NME – Non Major Elective

For Choice based credit system (CBCS)

- For NME every department offers two papers (one in each at III &V semester)
- For SEC every department offer three papers for each course (Sem IV & VI)
- For Major elective there may be an option for choice.

### **Knowledge:**

Able to understand and apply the fundamental principles, concepts and methods in diverse areas of computer applications, mathematics, statistics etc.,

#### **Problem analysis and Development of Solutions**

Identify, formulate, research literature and analyze real- time problems. Attain substantiated conclusions to solve the problems using fundamental principles of mathematics, computing sciences by adopting various tools and techniques.

#### **Ethics and Social Responsibility**

Understand and commit to professional ethics and cyber regulations, responsibilities and norms of professional computing practice.

## **Communication and Team Building**

Possess interpersonal skills and communicate effectively with the professionals and with society at large on system activities. Able to comprehend and write effective reports, design documentation, make effective presentations, and give/understand instructions.

#### **Life-long Learning:**

Recognize the need and have the ability, to engage in continuous reflective learning in the context of technological advancement. Create, select, adapt and apply appropriate techniques, resources, and computing tools to complex computing activities. Able to learn, adapt and apply emerging tools and technologies to meet the demand.

## Innovation, Employability and Entrepreneurial skills

Identify opportunity; pursue that opportunity to create value and wealth for the betterment of the individual and society at large. Develop the capacity to study and research independently that will help to develop skills for transition to employment in hardware/software companies.

## THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated to Madurai Kamaraj University (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

## Vision:

The Department of Computer Application & Information Technology foster competent and confident student community, enriched with soft skills inculcated with managerial skills and moral values.

## Mission:

- Empower groomed software professionals with robust knowledge base
- Achieve employability in Information Technology and non Information Technology sector
- Develop potential individuals
- Promote students to become a successful entrepreneur.

## **BCA - PROGRAM EDUCATIONAL OBJECTIVES (PEO):**

PEO1	Equip the students to meet corporate needs.
PEO2	Professionally educate the students for pursuing higher education.
PEO3	Nurture the students with skills required to become an entrepreneur.
PEO4	Adapt the students with better learning ability in the ever changing software industry.
PEO5	Manage cross culture environment and have peer recognition.

## **BCA - PROGRAM SPECIFIC OUTCOME (PSO):**

PSO1	Illustrate the key concepts in Computer Applications.
PSO2	Analyze latest technologies and apply them to solve the issues in
	Computer Applications.
PSO3	Clarity on both conceptual and application oriented skills in computer
	technologies with quantitative and qualitative techniques.
PSO4	Build technical, professional, practical and communicative skills to face
	the industrial with clarity.
PSO5	Develop practical skills to provide solutions for computer oriented
	problems.

## **THIAGARAJAR COLLEGE, MADURAI-9**

#### An autonomous institution affiliated by Madurai Kamaraj University (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY COURSE STRUCTURE- BCA (w.e.f. 2019 batch onwards)

<u>Semester – I</u>

Course	Code No	Subject	Contact Hrs/ Week	Credits	Total No of Hrs Allotted	Max Mar ks CA	Max Marks SE	Total
Part I	U19 TM11	Tamil	5	3	75	25	75	100
Part II	U19 EN11	English	4	3	60	25	75	100
Core 1	UCA19 C11	Digital Principles and Computer Organization	4	4	60	25	75	100
Core 2	UCA19 C12	Programming in C	4	4	60	25	75	100
Core Lab 1	UCA19 CL11	Programming in C Lab	3	2	45	40	60	100
Core Lab 2	UCA19 CL12	Multimedia Lab	3	2	45	40	60	100
Allied 1	UMA19 GE11CA	Mathematical foundation for CS	5	5	75	25	75	100
AECC	U19ES11	Environmental Studies	2	2	30	15	35	50
Total			30	25	450	220	530	750

#### Semester-II

Course	Code No	Subject	Contact Hrs/ Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Part I	U19 TM21	Tamil	5	3	75	25	75	100
Part II	U19 EN21	English	4	3	60	25	75	100
Core 3	UCA19 C21	Microprocessor and Assembly Language Programming	4	4	60	25	75	100
Core 4	UCA19 C22	Programming in C++	4	4	60	25	75	100
Core Lab 3	UCA19 CL21	Programming in C++ Lab	3	2	45	40	60	100
Core Lab 4	UCA19 CL22	MS Office Lab	3	2	45	40	60	100
Allied 2	UMA19 GE21CA	Operations Research	5	5	75	25	75	100
AECC	UCA19AC21	Effective Communicative English	2	2	30	15	35	50
TOTAL			30	25	450	220	530	750

Course	Code No	Subject	Hours	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core 5	UCA19 C31	Relational Database Management System	5	4	75	25	75	100
Core 6	UCA19 C32	Java Programming	5	5	75	25	75	100
Core Lab 5	UCA19 CL31	RDBMS Lab	4	2	60	40	60	100
Core Lab 6	UCA19 CL32	Java Programming Lab	4	2	60	40	60	100
Core Elective 1	UCA19CE (a/b/c/d/e/f/g)	Options given	5	5	75	25	75	100
Allied 3	UMA19GE31 (CA)	Computational Methods	5	5	75	25	75	100
NME-I	UCA19 NE31	Principles of Big Data	2	2	30	15	35	50
TOTAL			30	25	450	195	455	650

## <u>Semester – IV</u>

Course			Hours	Credits	Total	Max	Max	
	Code No	Subject			No of	Marks	Marks	Total
					Hrs	CA	SE	
Core 7		Software	5	5	75	25	75	100
	0CA19 C41	Engineering						
Core 8	UCA19 C42	Data Structures	5	4	75	25	75	100
Core Lab		Data Structures	4	2	60	40	60	100
7	UCAI9 CL41	Lab Using C						
Core Lab		Web Designing	4	2	60	40	60	100
8	UCA19 CL42	With PHP Lab						
Core		Options given	5	5	75	25	75	100
Elective	UCA19CE(a/b/c/d/e/f/g)							
2								
Allied 4		Quantitative	5	5	75	25	75	100
	UCA190E41	Aptitude						
SEC-1	UCA19	Options given	2	2	30	15	35	50
	SE(a/b/c/d/e/f/g/h/i/j)	-						
TOTAL			30	25	450	195	455	650

Semester	- V

Course	Code No	Subject	Hours	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core 9	UCA19 C51	Data Communication and Network	5	4	75	25	75	100
Core 10	UCA19 C52	.Net Programming	5	4	75	25	75	100
Core 11	UCA19 C53	Operating System	5	4	75	25	75	100
Core Lab 9	UCA19CL51	.Net Programming Lab	5	2	75	40	60	100
Project	UCA19PJ51	Project	6	3	90	25	75	100
NME-II	UCA19NE51	Digital Image Processing	2	2	30	15	35	50
VE	U19VE51	Value Education	2	1	30	15	35	50
TOTAL			30	20	450	170	430	600

<u>Semester – VI</u>

Course	Code No	Subject	Hours	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core 12	UCA19 C61	Data Mining	6	4	90	25	75	100
Core 13	UCA19 C62	Mobile Application Development	6	4	90	25	75	100
Core 14	UCA19C63	Python Programming	5	4	75	25	75	100
Core Lab 10	UCA19CL61	Mobile Application Development Lab	6	3	90	40	60	100
Core Lab 11	UCA19CL62	Python Programming Lab	5	2	75	40	60	100
SEC-II	UCA19 SE(a/b/c/d/e/f/ g/h/i/j)	Options given	2	2	30	30	15	35
Part _V		Part _V		1				
TOTAL			30	20	450	185	360	535
ΤΟΤΑ	AL CREDITS FO	OR SEMESTERS I to	VI	140				

SEC

- a) Latex Lab
- b) R-Tool Lab
- c) Programming with SCILAB
- d) Fundamentals of Big Data
- e) Data Mining Lab ( WEKA Tool )
- f) Advanced Java Programming
- g) Problem Solving using C
- h) Computer Hardware and Software Installation Principles of Big Data-NME I
  Digital Image Processing-NME II

#### **Core Electives**

- a) Cloud Computing
- b) Web Designing With PHP
- c) Virtual Reality
- d) Computer Algorithms
- e) Artificial Intelligence
- f) Logical Reasoning
- g) Ethics in Information Security

## **Certificate Course**

1) Software Testing

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course		Course Title			Category	L	Т	Р	Credit
Code									
<b>UCA190</b>	C11	Digital Principles and Cor	nputer Organi	zation	Core1	4	-	-	4
		L - Lecture	T - Tutoria	ıl	P – Pract	icals			
Year	Sen	nester		Interna	al Externa	ıl	Total		
1	Ι			25	75		100		

#### Preamble

Principles of digital design provides the basics of digital logic with universal gates, number system, data processing circuits like MUX, DMUX, arithmetic circuits, Flip-flops. In addition to it organization of computer offered the knowledge of memory system and arithmetic operations. **Course Outcomes** 

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO1	Identify the gates, Boolean laws and theorems, make use of K-Map and solve number system related problems	K1,K2,K3
CO2	Explain the function of data processing circuits, flip-flops and able to solve binary arithmetic.	K1,K2,K3
CO3	Discuss the computer types , bus structures, addressing modes and identify the procedure for an execution	K1,K2
<b>CO4</b>	Illustrate I/O device accessing , basic concepts of memories and its types	K1,K2
CO5	Demonstrate the design of fast adders, solve multiplication and division of integers and discuss the concept of pipelining and embedded systems	K1,K2,K3
	K1 - Knowledge K2 - Understand K3 - A	oply

K1 - Knowledge Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	S	L	Μ
CO2	Μ	S	S	Μ	Μ
CO3	S	L	Μ	Μ	Μ
CO4	S	L	Μ	Μ	Μ
CO5	S	Μ	S	S	S
S-Strong	Ν	A- Medium	L-Low		

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	52	52	140

#### Content

Unit-I: Digital Logic: The Basic Gates - Universal Logic Gates - AND-OR Invert Gates. Combinational Logic Circuits: Booleans Laws and Theorems - Sum-of-Products Method - Truth Table to Karnaugh Map - Pairs, Quads, and Octets - Karnaugh Simplifications - Don't care Conditions - Product of Sums Method - Product of sums Simplification. Number Systems and Codes: Binary Number System - Radix Representation of Numbers - Binary-to-decimal Conversion -Decimal-to-binary Conversion - Octal Numbers - Hexadecimal Numbers - The ASCII Code - The Excess-3 Code - The Gray Code.

#### **Unit-II:**

Data processing circuits: Multiplexers - Demultiplexers - 1-of-16 Decoder - BCD-todecimal Decoders - Seven-segment Decoders - Encoders - Exclusive-OR Gates - Parity Generators and Checkers. Arithmetic Circuits: Binary Addition - Binary Subtraction - Unsigned Binary Numbers - Sign-magnitude Numbers - 2's Complement Representation - 2's Complement Arithmetic -Arithmetic Building Blocks - The Adder - Subtracter. FLIP-FLOPs: RS FLIP-FLOPs - Edgetriggered RS FLIP-FLOPs - Edge-triggered D FLIP-FLOPs - Edge-triggered JK FLIP-FLOPs - JK Master-Slave FLIP-FLOPs.

#### Unit-III:

Basic Structure of Computers: Computer Types - Functional Units - Basic Operational Concepts - Bus Structures - Historical Perspective. Machine Instructions and Programs: Memory Locations and Addresses - Byte Addressability - Big-endian and Little-endian Assignments -Addressing Modes. Basic Processing Unit: Some Fundamental Concepts - Execution of a Complete Instruction -Hardwired Control - Micro programmed Control.

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

Input / Output Organization: Accessing I/O devices - Interrupts - Direct Memory Access. The Memory System: Some Basic concepts - Semiconductor RAM Memories - Read-Only Memories -Speed, Size, and Cost - Cache Memories - Virtual memories.

### Unit-V:

Text **B** 

Unit

Ι Π

III

IV

**Chapters / Sections** 

Arithmetic: Design of Fast Adders - Multiplication of Positive Numbers - Integer Division. Pipelining: Basic Concepts - Data Hazards - Instruction Hazards. Embedded Systems: Examples of Embedded Systems - Processor Chips for Embedded Applications.

Book 1: 2 (2.1 - 2.3), 3 (3.1-3.8),5 (5.1 - 5.3, 5.5-5.10)

Book 2: 1 (1.1-1.4, 1.8), 2 (2.2.1, 2.2.2, 2.5), 7 (7.1, 7.2, 7.4, 7.5)

Book 1: 4 (4.1-4.8), 6 (6.1-6.8), 8 (8.1, 8.3-8.5, 8.8)

Book 2: 4 (4.1, 4.2, 4.4), 5 (5.1-5.5, 5.7)

	V		Boo	эk	2:6 (6.2	2, 6.3,	6.6) ,8 (8.	1-8.3),9 (9	9.1, 9.2	)		
Books:												
Dona	ld P	Le	each		Albert	Paul	Malvino	Goutam	Saha	2014	Digital	Principles

- 1. and Applications, 8th edition, Tata McGraw – Hill Publication, New Delhi.
- 2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 2013, Computer Organization, 5<sup>th</sup> edition, Tata McGraw – Hill Publication, New Delhi.

## **10hours**

## 12hours

14hours

#### 11hours

13hours

#### **References:**

- 1. Morris Mano, 2012, Digital Logic & Computer Design, 5<sup>th</sup> edition, Prentice Hall of India publishing.
- 2. John D. Carpinelli, 2012, Computer System Organization and Architecture, Pearson Indian Education Service Private Limited, Chennai.
- 3. Morris Mano, 2011, Computer System Architecture, 4<sup>th</sup> edition, Prentice Hall of India publishing.

#### Web Resources:

1.https://courses.cs.washington.edu/courses/cse370/08wi/pdfs/lectures/04-Logic%20gates.pdf

- 2.http://www.ee.ncu.edu.tw/~jfli/computer/lecture/ch05.pdf
- 3.http://www.pvpsiddhartha.ac.in/dep\_it/lecturenotes/CSA/unit-4.pdf

#### **Course Designers:**

- 1. Mrs. R.Umamaheswari
- 2. Dr. S. Abirami

#### **Lecture Schedule**

	Торіс	No.of Lecture
		hrs
1.	Digital Logic:	10
1.1	Digital Logic: The Basic Gates - Universal Logic Gates - AND-OR Invert Gates.	2
1.2	Combinational Logic Circuits: Booleans Laws and Theorems - Sum-of-Products Method - Truth Table to Karnaugh Map - Pairs, Quads, and Octets	2
1.3	Karnaugh Simplifications - Don't care Conditions - Product of Sums Method - Product of sums Simplification	2
1.4	Number Systems and Codes: Binary Number System - Radix Representation of Numbers - Binary-to-decimal Conversion - Decimal-to-binary Conversion	2
1.5	Octal Numbers - Hexadecimal Numbers - The ASCII Code - The Excess-3 Code - The Gray Code.	2
2.	Data processing circuits:	12
2.1	Multiplexers - Demultiplexers - 1-of-16 Decoder - BCD-to- decimal Decoders - Seven-segment Decoders	4
2.2	Encoders - Exclusive-OR Gates - Parity Generators and Checkers. Arithmetic Circuits: Binary Addition - Binary Subtraction - Unsigned Binary Numbers - Sign-magnitude Numbers - 2's Complement Representation	3
2.3	2's Complement Arithmetic - Arithmetic Building Blocks - The Adder – Subtracter. FLIP-FLOPs: RS FLIP-FLOPs	3
2.4	Edge-triggered RS FLIP-FLOPs - Edge-triggered D FLIP- FLOPs - Edge-triggered JK FLIP-FLOPs - JK Master-Slave FLIP-FLOPs.	2
3.	Basic Structure of Computers:	14

3.1	Computer Types - Functional Units - Basic Operational	4
	Concepts - Bus Structures - Historical Perspective.	
3.2	Machine Instructions and Programs: Memory Locations and	3
	Addresses - Byte Addressability - Big-endian and Little-	
	endian Assignments	
3.3	Addressing Modes. Basic Processing Unit: Some	3
	Fundamental Concepts - Execution of a Complete Instruction	
3.4	Hardwired control – Micro programmed control	4
5.1	That a wind a control of the programmed control.	•
4.	Input/output Organization:	13
4.1	Accessing I/O devices - Interrupts - Direct Memory Access.	4
4.2	The Memory System: Some Basic concepts - Semiconductor	3
	RAM Memories	
4.3	Read-Only Memories -Speed, Size, and Cost	3
4.4	Cache Memories – Virtual memories	3
5.	Arithmetic:	11
5.1	Design of Fast Adders - Multiplication of Positive Numbers -	4
	Integer Division.	
5.2	Pipelining: Basic Concepts - Data Hazards - Instruction	4
	Hazards.	
5.3	Embedded Systems: Examples of Embedded Systems -	3
	Processor Chips for Embedded Applications	
	Total(10+12+14+13+11)	60

## THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC)

DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

Course		Course Title	•		Catego	ory	L	Τ		P	Credit
Code											
UCA19	C12	Programming in C			Core2		4	-		-	4
		L - Lecture	T - Tutoria	ıl	-	P –	Practic	cals			
Year	Sen	nester		Int	ernal	Ex	ternal		Tot	al	
1	Ι			25		75			100		

#### Preamble

C programming procure the core concepts in C language including control structures, arrays, structures, pointers and files.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
<b>CO1</b>	Discuss the data types, character set, symbolic constant and storage Class	K1,K2, K3
CO2	Apply control structures, branching, Conditional and looping statements	K1,K2, K3
<b>CO3</b>	Demonstrate the features of arrays and string handling functions	K1,K2, K3
<b>CO4</b>	Experiment with user defined functions and evaluate the various categories of functions with structures and union.	K2, K3
CO5	Make use of Pointers. Dynamic Memory Allocation and file management	K2, K3

K1 - KnowledgeK2 - UnderstandMapping of COs with POsK2 - Understand

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	Μ	S	S	
CO2	S	S	S	Μ	S	
CO3	S	S	S	S	S	
CO4	S	S	S	S	S	
CO5	S	Μ	Μ	S	S	
S-Strong	N	I- Medium	L-Low			

S-Strong

**Blooms taxonomy** 

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

K3 – Apply

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

**Overview of C:** History of C - Importance of C - Sample Programs 1,2,3,4 and 5-Basic Structure of C Programs - Programming Style - Executing a 'C' Program. Constants, Variables and Data types: Introduction - Character Set - C Tokens - Keywords and Identifiers - Constants - Variables - Data types - Declaration of Variables - Declaration of Storage Class - Assigning Values to Variables - Defining Symbolic Constants - Declaring a Variable as constant-Declaring variable as Volatile. Operators and Expression

#### Unit - II:

**Managing Input and Output Operations:** Introduction - Reading a Character - Writing a Character-Formatted Input-Formatted Output. Decision Making and Branching: Introduction-Decision making with if Statement - Simple if statement - The if...else Statement-Nesting of if...else Statements - The else if ladder - The Switch Statement - The ?: Operator - The goto Statement. Decision Making and Looping: Introduction- The while Statement-The do Statement-The for Statement-Jumps in Loops.

#### Unit-III

**Array:** Introduction - One-dimensional Arrays - Declaration of One-dimensional Arrays - Initialization of One-dimensional Arrays - Two-dimensional Arrays - Initializing Two-dimensional Arrays - Multi-dimensional Arrays - Dynamic Arrays. Character Arrays and Strings: Introduction - Declaring and Initializing String Variables - Reading Strings from Terminal - Writing Strings to Screen - Arithmetic Operation on Characters - Putting Strings Together – Comparison of Two Strings - String Handling Functions.

## Unit - IV:

**User-Defined Functions**: Introduction - Need for User Defined Functions - A Multi-Function Program - Elements of User-Defined Functions – Definition of functions- Returns Values and Their Types - Function Calls – Function Declaration - Category of Functions - No Arguments and No Return Values - Arguments but No Return Values - Argument with Return Values - No Argument but Returns a Value - Functions that Return Multiple Values - Nesting of Functions - Recursion- Passing Arrays to Functions - Passing Strings to Function - The Scope, Visibility and Lifetime of Variables .Structures and Union.

## Unit - V:

**Pointers:** Introduction - Understanding Pointers - Accessing the Address of a Variable - Declaring Pointer Variables - Initialization of Pointer Variables - Accessing a Variable through its Pointer - Chain of Pointers. Dynamic Memory Allocation and Linked List: Introduction - Dynamic Memory Allocation - Allocating a Block of Memory: malloc - Allocating Multiple Blocks of Memory: calloc, Releasing the Used Space:free, Altering the Size of a Block: realloc. File Management in C.

#### L - 16

## 12hours

#### 12hours

12hours

## 12hours

12hours

Unit	Chapters / Page Number
Ι	1(1-13),2(22-44),3(51-69)
II	4(81-94),5(111-133),6(149-172)
III	7(189-213),8(234-249)
IV	9(267-298),10(320-339)
V	11(353-361),12(391-409),13(415-420)

#### **Text Books:**

1. Balagurusamy E, 2017, Programming in ANSI C, 7<sup>th</sup> edition, Tata McGraw – Hill Education Private Limited, New Delhi.

#### **References:**

- 1. Yashwant Kanetkar, 2016. Let Us C, 14<sup>th</sup> edition, BPB Publications, New Delhi.
- 2. Byron S. Gottfried, 2010. Programming with C, 3<sup>rd</sup> edition, Tata McGraw Hill Publications, New Delhi.
- 3. Ananthi Sheshasaayee, 2009. Programming Language C with Practical, Margham Publication, Chennai.

#### Web Resources:

1.http://people.scs.carleton.ca/~mjhinek/W13/COMP2401/notes/Arrays\_and\_Pointers.pdf

- 2.https://www.tutorialspoint.com/cprogramming/c\_functions.htm
- 3.http://www.circuitstoday.com/control-structures-in-c-and-cpp

#### **Course Designers:**

- 1. Dr. V. T. Meenatchi
- 2. Mr. P. Muthumariappan

#### **Lecture Schedule**

	Торіс	No. of lecture
		hrs
1.	Overview of C:	12
1.1	History of C - Importance of C - Sample Programs 1,2,3,4 and	4
	5 - Basic Structure of C Programs - Programming Style	
1.2	Executing a 'C' Program: Introduction - Character Set - C	4
	Tokens - Keywords and Identifiers - Constants - Variables -	
	Data types - Declaration of Variables - Declaration of Storage	
	Class - Assigning Values to Variables - Defining Symbolic	
	Constant	
1.3	Declaring a Variable. Operators and Expressions	4
2.	Managing Input and Output Operations:	12
2.1	Introduction - Reading a Character - Writing a Character-	3
	Formatted Input-Formatted Output	
2.2	Decision Making and Branching: Introduction-Decision making	3
	with if Statement and ifelse Statement	
2.3	- The else if Ladder - The Switch Statement - The ?: Operator -	3
	The goto Statement	
2.4	Decision Making and Looping: Introduction- The while	3
	Statement-The do Statement- The for Statement-Jumps in	
	Loops.	
3.	Array:	12

3.1	Array: Introduction - One-dimensional Arrays - Declaration -	4
	Initialization - Two-dimensional Arrays - Initialization - Multi-	
	dimensional Arrays	
3.2	Dynamic Arrays. Character Arrays and Strings: Introduction -	4
	Declaring and Initializing String Variables - Reading Strings	
	from Terminal	
3.3	Writing Strings to Screen - Arithmetic Operation on Characters	4
	Putting Strings Together - Comparison of Two Strings - String	
	Handling Functions.	
4.	User-Defined Functions:	12
4.1	Introduction - Need for User Defined Functions - A Multi-	2
	Function Program - Elements of User-Defined Functions -	
	Returns Values and Their Types	
4.2	Function Calls – Function Declaration - Category of Functions	5
4.3	Functions that Return Multiple Values - Nesting of Functions -	3
	Recursion- Passing Arrays to Functions - Passing Strings to	
	Function - The Scope, Visibility and Lifetime of Variables -	
4.4	Structures and Union	2
5.	Pointers:	12
<b>F</b> 1		
5.1	Pointers: Introduction - Understanding Pointers - Accessing the	2
	Address of a Variable - Declaring Pointer Variables -	
	Initialization of Pointer Variables	
5.2	Accessing a Variable through its Pointer - Chain of Pointers.	3
	Dynamic Memory Allocation and Linked List: malloc	
5.3	calloc, Releasing the Used Space:free, Altering the Size of a	4
L	Block: realloc	
5.4	File Management in C	3
	Total(10+12+14+13+11)	60

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those ioined BCA on or after June 2019)

		(1 01 11000 J01				- )			
Course		Course Title		Category	y	L	Т	P	Credit
Code									
UCA19CL11		Programming in C Lab		Core Lab 1		-	-	3	2
		L - Lecture	T - Tutorial		P – P	ractica	ls		
Year	Seme	ester		Internal	Exte	ernal	To	tal	
1	Τ			40	60		100	)	

#### Preamble

Enable to identify and solve problems that require usage of Decision Making, Branching, Array, User-Defined Functions and pointers in C.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome						
<b>CO1</b>	Write C programs for the designed algorithm with simple problems and control						
	structures						
<b>CO2</b>	Implement programs with homogeneous data structures and functions						
<b>CO3</b>	Implement programs with heterogeneous data structures and pointers	K1,K2,K3					
<b>CO4</b>	Generate programs with file handling functions	K1,K2,K3					
	K1 - Knowledge K2 - Understand K3 – Apply						

#### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S
CO2	S	S	S	Μ	Μ
CO3	S	S	S	Μ	S
CO4	S	Μ	Μ	S	L

S-Strong

M- Medium

L-Low

#### **Simple Programs:**

- 1. Finding the largest, smallest among three numbers
- 2. Finding the roots of a quadratic equation
- 3. Generate the Fibonacci sequence
- 4. Convert a decimal number to its binary equivalent

#### **Control Structures:**

- 1. Reverse a number
- 2. Find whether a number is prime or not
- 3. Find whether a given number is a perfect or not
- 4. Find the factorial of a number

#### Arrays:

- 1. Program for Sorting
- 2. Program to search an element
- 3. Find whether given string is a palindrome or not
- 4. Perform the addition of two matrices
- 5. Perform subtraction of two matrices
- 6. Perform multiplication of two matrices

#### **Functions:**

- 1. Program to apply Recursion
- 2. Program for Call by Value

#### **Pointers:**

- 1. Program to perform addition
- 2. Program for Call by Reference

#### Structures:

- 1. Program to print student information using structures
- 2. Program for Array of structures

#### File:

- 1. Program for applying File operations
- 2. Program to get n numbers and find odd and even numbers using file.

#### Web Resources:

1.http://www.baburd.com.np/books/LabManual-ComputrProgramming.pdf

2.http://www.sitttrkerala.ac.in/misc/LabManual/2139.pdf

#### **Course Designers:**

- 1. Dr. V. T. Meenatchi
- 2. Mr. P. Muthumariappan

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		<b>Course Title</b>		Categor	·y	L	Т	P	Credit
Course				_	-				
Code									
UCA190	CL12	Multimedia Lab		Core La	b 2	-	-	3	2
_									
L - Lecture T			T - Tutorial	l	P – P	ractical	S		
Year Semester			Internal	nternal External		Tot	al		
1	Ι			40	60		100		

#### Preamble

Facilitates the students to be familiar with multimedia tools and provide ability to develop various multimedia presentations

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's
001	Illustrate multimedia technology and tools	K1 K2 K2
COI	mustrate multimedia technology and tools.	K1,K2,K3
CO2	Create effective audiovisual presentation.	K1,K2,K3
	r and r and r	
CO3	Prenare multimedia advertisement	K1 K2 K3
COS	riepare martimedia advertisement	111,112,113
<b>CO4</b>	Contribute in a student to develop a flash game.	K1,K2,K3
	K1 - Knowledge K2 - Understand K3 - Appl	V

#### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	S	S	S
CO2	Μ	S	Μ	Μ	S
CO3	S	S	S	S	Μ
CO4	S	Μ	S	Μ	S
S-Strong	Ν	/I- Medium	L-Low		

#### PHOTOSHOP

- 1. To Design a Photoshop using Various selection tools
- 2. To Create scenery using photo shop brushes
- 3. To Demonstrate the rules of layer effect
- 4. To Create text inside a picture
- 5. To Create a snapshot inside a photo
- 6. To Coloring a B\W picture
- 7. To Create photo mount template
- 8. To Create photo fill template
- 9. To Create 2D & 3D logos
- 10. To Animate text using image ready
- 11. To Create a Christmas tree with blinking lights
- 12. To Animate a candle flame using liquefy tool
- 13. To Create slide mount template
- 14. To Design a visiting card using Photoshop
- 15. To Design a marriage invitation using Photoshop
- 16. To create Rain effect using Photoshop
- 17. To Crop the image using Photoshop
- 18. To Design Front page of the book using Photoshop
- 19. To Design a license using Photoshop
- 20. To Design a ATM card using Photoshop
- 21. To Design a mark sheet using Photoshop

#### FLASH

- 1. To Create Animation using motion tween
- 2. To Create Animation using shape tween
- 3. To Create Animation using layer
- 4. To Create Animation of text in multiple layer
- 5. To Create Masking text by an object
- 6. To Masking two images
- 7. To Create Animation using movie clip object
- 8. To Create Text morphing using flash
- 9. To Design a car using flash
- 10. To Bouncing ball using flash

#### **VIDEO EDITING TOOL (After Effect CS 6)**

- 1. To Create Double acting using Video Editing Tool
- 2. To Create Motion poster using Video Editing Tool
- 3. To Create Video using Video Editing Tool

#### Web Resources:

1.https://www.geeksforgeeks.org/microprocessor-tutorials/

2.http://examradar.com/memories-io-interfacing/

#### **Course Designers:**

- 1. Mr. P. Muthumariappan
- 2. Dr. S. Abirami

#### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course		Course Title	-		Catego	ory	L	Т	]	P	Cred	it
Code												
UCA190	C <b>21</b>	Microprocessor and Assembly Language			Core 3		4	-		-	4	
		Programming										
_		L - Lecture	T - Tutorial	l		P –	Practic	als				
Year	Sen	nester		Int	ernal	Ex	ternal		Tota	al		
1	Π			25		75			100			

#### Preamble

Introduce basic concepts and principles of 8086 microprocessor, assembly language programming, memory & I/O Interfacing, 8051 micro controller and advanced processor.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

# CO1	Course Outcome Know the concepts of microcomputer and microprocessors and internal architecture of 8086 microprocessor.	Knowledge Level (according to Bloom's Taxonomy) K1,K2
CO2	Have a knowledge on structured assembly language programs to solve the problems using 8086 microprocessor.	K1,K2,K3
CO3	Describe memory organization of 8086, functionality of programmable peripheral interface and programmable interrupt controller.	K1,K2
<b>CO4</b>	Discuss the concept of micro controller and its working methodology	K1,K2
CO5	Analyze pins and signals of 8086 and advanced processors	K1,K2

## K1 - Knowledge K2 - Understand K3 – Apply

#### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	S	L	L
CO2	S	S	S	Μ	Μ
CO3	S	Μ	S	Μ	L
CO4	Μ	Μ	S	S	L
CO5	Μ	Μ	S	Μ	Μ
S-Strong	N	I- Medium	L-Low		

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

#### Thiagarajar College, Madurai - 38<sup>th</sup> Academic Council, June 2019

#### Content Unit-I:

The 8086 Microprocessor: Introduction to Microprocessors - Introduction to INTEL 8086 -Introduction to 8086 Instructions - Format of 8086 Instructions - Addressing Modes of the 8086 -Instructions Affecting Flags of 8086 - Classification of 8086 Instructions - Examples of 8086 Assembly Language Instructions - Modular programming - Byte and String Manipulation in 8086 -Interrupt and Interrupt Service Routine in 8086 - Classification of Interrupts of 8086 - Priorities of Interrupts of 8086 - Implementing the Interrupt Scheme in 8086.

#### **Unit-II:**

Introduction to Assembly-Language Programming: Levels of Programming - Flow Chart -Variables and Constants Used in Assemblers - Assembler Directives - Assembly-Language Program Development Tools - Editor - Assembler - Library Builder - Linker - Debugger - Simulator -Emulator - Hand Coding of Assembly-Language Programs - Examples of 8086-Assembly Language Programs

#### Unit-III:

Memory and IO Interfacing: Introduction to Memory - Memory Interfacing- IO Interfacing - Parallel Communication Interface- Programmable Peripheral Interface(INTEL 8255) -Programmable Timer(INTEL 8254): Pins-Signals-and Functional block diagram of 8254 - Interfacing 8254 with the 8086 processor - Programming 8254 - Operating modes of 8254 - Programmable Interrupt Controller(INTEL 8259): Pins-Signals and Functional block diagram of 8259 - Interfacing 8259 with 8086 processor - Processing of Interrupts by 8259 - Programming 8259. **Unit-IV:** 12hours

THE 8051 Microcontroller: Introduction to Microcontrollers - Introduction to the INTEL 8051 Microcontroller - Special Function Registers(SFR) of 8051- IO Ports and Circuits of 8051-Addressing Modes in 8051- Instructions Affecting Flags of 8051- Classification of 8051 Instructions - Assembly-Language Programming in 8051- Examples of Assembly Language Programs in 8051. Unit-V:

#### 13hours

The 8086 microprocessor based system and advanced processor: Pins and Signals of INTEL 8086 - System Design Using the 8086 Microprocessor - System Bus Structure - Basic Configurations of 8086 Microprocessor System - IO Programming - Introduction to Multiprogramming - Multiprocessor Configurations - Introduction to Advanced Processors.

Unit	Chapters/ Section
Ι	1(1.1-1.8, 1.11-1.16)
II	1(1.9,1.10,1.17,1.18)
III	3(3.1-3.3,3.5,3.9,3.11)
IV	4(4.1-4.9)
V	2(2.1-2.4,2.6-2.9)

#### **Text Books:**

Nagoor Kani, 2016, Microprocessor and Microcontroller, McGraw – Hill Education (India), Private Limited.

#### 12hours

10hours

13hours

#### **References:**

 Krishna Kant, 2016, Microprocessor and Microcontrollers Architecture, Programming and System Design 8085,8086,8051,8096, 2<sup>nd</sup> edition, PHI Learning Private Limited, New Delhi.
Douglas V Hall, SSSP Rao, 2016(8<sup>th</sup> Reprint), Microprocessor and Interfacing, Hill Education (India), Private Limited.

3. Ramesh S. Gaonkar, 2013, Microprocessor Architecture, Programming and Application with the 8085.

#### Web Resources:

1.https://www.tutorialspoint.com/assembly\_programming/assembly\_variables.htm 2.https://www.geeksforgeeks.org/microprocessor-tutorials/

3.http://examradar.com/memories-io-interfacing/

#### **Course Designers:**

- 1. Mrs. R. Umamaheswari
- 2. Dr. V.T. Meenatchi

#### **Lecture Schedule**

	Торіс	No.of
	L.	Lecture hrs
1.	The 8086 Microprocessor:	12
1.1	Introduction to Microprocessors - Introduction to INTEL 8086	3
	-Introduction to 8086 Instructions - Format of 8086 Instructions	
1.2	Addressing Modes of the 8086 -Instructions Affecting Flags of	3
	8086 - Classification of 8086 Instructions - Examples of 8086	
	Assembly-Language Instructions	
1.3	Modular programming - Byte and String Manipulation in 8086	3
	- Interrupt and Interrupt Service Routine in 8086	
1.4	Classification of Interrupts of 8086-Priorities of Interrupts of	3
	8086-Implementing the Interrupt Scheme in 8086.	
2.	Assembly-Language Programming:	10
2.1	Levels of Programming - Flow Chart - Variables and Constants	4
	Used in Assemblers - Assembler Directives - Assembly-	
	Language Program Development Tools	
2.2	Editor - Assembler - Library Builder - Linker - Debugger -	3
	Simulator – Emulator	
2.3	Hand Coding Of Assembly-Language Programs- Examples Of	3
	8086-Assembly Language Programs	
3.	Memory and IO Interfacing:	13
3.1	Introduction to Memory - Memory Interfacing- IO Interfacing -	3
	Parallel Communication Interface- Programmable Peripheral	
	Interface(INTEL 8255)	

3.2	Programmable Timer(INTEL 8254): Pins-Signals-and	4
	Functional block diagram of 8254 - Interfacing 8254 with the	
	8086 processor - Programming 8254	
3.3	Operating modes of 8254 - Programmable Interrupt	3
	Controller(INTEL 8259): Pins-Signals and Functional block	
	diagram of 8259	
3.4	Interfacing 8259 with 8086 processor - Processing of Interrupts	3
	by 8259 - Programming 8259.	
4.	The 8051 Microcontroller:	12
4.1	Introduction to Microcontroller- Introduction to the INTEL	4
	8051 Microcontroller- Special Function Registers(SFR) of 8051	
4.2	IO Ports and Circuits of 8051- Addressing Modes in 8051-	4
	Instructions Affecting Flags of 8051	
4.3	Classification of 8051 Instruction- Assembly-Language	4
	Programming in 8051- Examples of assembly language	
	programs in 8051.	
5.	The 8086 microprocessor based system and advanced	13
	processor:	
5.1	Pins and Signals of INTEL 8086 - System Design Using the	4
	8086 Microprocessor - System Bus Structure	
5.2	Basic Configurations of 8086 Microprocessor System - IO	3
	Programming	
5.3	Introduction to Multiprogramming - Multiprocessor	3
	Configurations	
5.4	Introduction to Advanced Processors	3
	Total(12+10+13+12+13)	60

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(For those joined BCA on or after June 2019)

Course		Course Title			Catego	ory	L	Τ	']	P	Cree	lit
Code					_	-						
UCA19	C22	Programming in C++			Core -3	3	4	0	(	0	4	
		L - Lecture	T - Tutoria	ıl		P –	Practic	cals				
Year	Sen	nester		Int	ernal	Ex	ternal	l	Tota	al		
1	Π			25		75			100			

#### Preamble

To procure the techniques of software development in C++ Programming Language and to demonstrate techniques by implementing the solution for variety of problems spanning the breadth of the language.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

# CO1	Course Outcome Demonstrate the basics of oops concepts and illustrate classes and objects.	knowledge Level (according to Bloom's Taxonomy) K1,K2
CO2	Experiment with constructor and destructors and make use of polymorphism	K1,K2,K3
CO3	Examine inheritance and its types, experiment with the usage of virtual	K1,K2,K3
	functions	
<b>CO4</b>	Classify the methods of file streams	K1,K2,K3
<b>CO5</b>	Apply C++ stream categories and construct templates based programs	K1,K2
_	K1 - Knowledge K2 - Understand K3 - Apply	

K2 - Understand K1 - Knowledge Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	Μ	S
CO2	S	Μ	S	Μ	S
CO3	S	Μ	S	S	S
CO4	S	S	Μ	Μ	S
CO5	S	L	Μ	Μ	S
C Ctuona			T T arri	·	-

M- Medium S-Strong L-Low

#### **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

#### Thiagarajar College, Madurai - 38<sup>th</sup> Academic Council, June 2019

#### Content Unit-I:

## 15hours

Principles of Object Oriented Programming: Software Crisis-Software Evolution-A look at Procedure -Oriented Programming- Object Oriented programming Paradigm-Basic concepts of Object -Oriented Programming-Benefits of Oops-Object-oriented languages-Applications of Oops. Tokens, Expressions and Control Structures: Introduction-Tokens-Keywords-Identifiers and Constants-Basic data types-user Defined data types-Storage classes-Derived Data types-Symbolic Constants-Type compatibility-Declaration of variables-Dynamic initialization of variables-Reference variables-Operators in C++ -Scope Resolution Operator. Classes and objects: Introduction- C Structures Revisited-Specifying a Class-Defining Member Functions-A C++ Program with Class-Making an outside function inline-Nesting of Member Functions-Private Member Functions-Arrays with in a Class-Memory Allocation for objects-Static data member- Static member functions-Array of objects-Object as function argument-Friendly functions-Returning objects-Const member functions.

#### Unit-II:

Constructors and Destructors: Introduction-Constructors-Parameterized constructors-Multiple Constructors in a class -Constructors with default Arguments-Dynamic Initialization of objects-Copy Constructor-Dynamic Constructor-Destructors. Operator Overloading and Type Conversions: Introduction- Defining Operator Overloading-Overloading unary operators -Overloading Binary Operators-Overloading Binary operators using friends – Manipulation of strings using operators -Some other operator overloading examples- Rules for overloading operators. Unit-III: 15hours

Inheritance: Extending Classes: Introduction-Defining Derived Classes-Single Inheritance-Making a Private Member Inheritable-Multilevel inheritance-Multiple inheritance-Hierarchical inheritance-Hybrid inheritance-Virtual Base Classes- Abstract Classes-Constructors in Derived Classes-Member classes: Nesting of classes. Pointers, Virtual Functions and Polymorphism: Introduction-Pointers-Pointers to Objects-this pointer- Pointers to Derived Classes-Virtual Functions-Pure Virtual Functions-Virtual Constructor and Destructor. **Unit-IV:** 

#### 15hours

Working with Files: Introduction-Classes for File Stream Operations-Opening and closing a File-Detecting End-of-File-More about Open()-File Modes-File Pointers and their Manipulations-Sequential Input and output Operations-Updating a File-Random Access-Error Handling During File **Operations-Command Line Arguments.** Unit-V:

#### 15hours

Managing Console I/O Operations: Introduction-C++ Streams-C++ Stream Classes-Unformatted I/O Operations- Formatted Console I/O Operations-Managing output with Manipulators. Templates-Introduction-Class Templates- Class Templates with multiple Parameters-Function Templates- Function Templates with Multiple Parameters-Overloading of Template Functions-Member Function Templates-Non Type Template Arguments.

#### **Text Books:**

1. Balagurusamy. E, 2013, Object Oriented Programming with C++, 6<sup>th</sup> edition, Tata McGraw – Hill Publications.

#### **References:**

- 1. Well Dale, Jones, 2015, C++ Plus Data structures, 6<sup>th</sup> edition, Bartlett.
- 2. Yashavant Kanetkar, 2012, Let us C++, Second edition, BPB Publications.
- 3. Robert Lafore, 2008, Object Oriented Programming in C++, 4<sup>th</sup> edition, Pearson Education.

#### 15hours

#### Web Resources:

- 1. https://www.tutorialspoint.com/assembly\_programming/assembly\_variables.htm
- 2. https://www.w3schools.in/cplusplus-tutorial/constructors-destructors/
- 3. http://ee.usc.edu/~redekopp/cs104/slides/L10\_Inheritance.pdf
- 4. https://www.geeksforgeeks.org/templates-cpp/

#### **Course Designers:**

- 1. Dr. S.Abirami
- 2. Mrs. R. Umamaheswari

#### **Lecture Schedule**

	Торіс	No.of
		Lecture
		hours
1	Principles of Object Oriented Programming:	12
1.1	Software Crisis – Software Evolution – Basic Concepts of Oops	2
1.2	Tokens -Basic Data Types –Types Compatibility – Declaration of	
	Variables – Type Cast Operator – Expressions and Implicit Conversions	3
1.3	Specifying a class – Defining Member functions – Marking an outside	3
	function Inline – Nesting of Member functions – Private member	
	functions	
1.4	Arrays within a Class – memory Allocation for objects -Static Data &	4
	Function Members-Arrays of objects – Objects as function argument	
	and as return type Friendly functions-Returning objects-Const member	
	functions.	
2	Constructor and Destructors:	12
2.1	Constructors in a Class and types of Constructor	3
2.2	Destructor	2
2.3	Defining Operator Overloading – Overloading unary operators –	3
	overloading Binary Operators Overloading Binary operator	
2.4	Overloading binary operators using friends – manipulation of strings	4
	using operators - rules for overloading operators.	
3	Inheritance :	12
3.1	Defining derived classes-single inheritance – multilevel inheritance –	4
2.2	multiple inheritance. Hierarchical inheritance.	
3.2	Virtual base classes – constructors in derived classes – member classes- Nesting of classes.	2
3.3	Pointers, Virtual Functions and Polymorphism: Introduction-Pointers-	4
	Pointers to Objects-this pointer- Pointers to Derived Classes-Virtual	
	Functions	
3.4	Pure Virtual Functions-Virtual Constructor and Destructor.	2
4.	Working with Files:	12
4.1	Introduction-Classes for File Stream Operations-Opening and closing a File-Detecting End-of-File-More about Open()	4
4.2	File Modes-File Pointers and their Manipulations-Sequential Input and	2
	output Operations	
4.3	Updating a File-Random Access-Error Handling During File	3
	Operations	

4.4	Command Line Arguments.	3
5	Managing Console I/O Operations:	12
5.1	Introduction-C++ Streams-C++ Stream Classes-Unformatted I/O	3
	Operations-	
5.2	Formatted Console I/O Operations-Managing output with	3
	Manipulators.	
5.3	Templates-Introduction-Class Templates- Class Templates with	3
	multiple Parameters-Function Templates- Function Templates with	
	Multiple Parameters	
5.4	Overloading of Template Functions-Member Function Templates-Non	3
	Type Template Arguments.	
	Total(12+12+12+12)	60

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Course Code		Course Title		Category	L	Т	Р	Credit
UCA190	C L21	Programming in C++ Lab		Core Lab 3	-	-	3	2
_		L - Lecture	T - Tutori	al	P - Pr	acticals	5	
Year	Seme	ster		Internal	Exter	mal	Tota	1
1	II			40	60		100	

#### Preamble

Enhance the knowledge in C++ programming concepts.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome			
<b>CO1</b>	Write simple C++ programs with the designed algorithms	K1,K2,K3		
<b>CO2</b>	Implement programs with classes and objects			
<b>CO3</b>	Apply the concept of polymorphism and inheritance in C++	K1,K2,K3		
<b>CO4</b>	Implement the concept of files	K1,K2,K3		
	K1 - Knowledge K2 - Understand K3 - Apply			

#### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	Μ	Μ	S
CO2	S	Μ	S	Μ	S
CO3	S	S	L	S	Μ
CO4	S	Μ	L	Μ	S
S-Strong	Ν	A- Medium	L-Low		

#### Content

#### **Simple Programs**

- 1. Write a c++ program for List of odd numbers
- 2. Write a c++ program for Sum of N numbers
- 3. Write a c++ program for List of factorial values
- 4. Write a c++ program to print individual Digit to words
- 5. Write a c++ program for Pascal triangle
- 6. Write a c++ program to check a given number is Prime or not
- 7. Write a c++ program for Sum of square of N numbers
- 8. Write a c++ program for calculating Power value
- 9. Write a c++ program for Demo for break & continue

#### **Classes &Object**

- 1. Write a c++ program for simple Pay bill preparation
- 2. Write a c++ program for Invoice bill generation
- 3. Write a c++ program for preparing Student mark statement
- 4. Write a c++ program for finding Cube value using inline function
- 5. Write a c++ program for deriving Multiplication table
- 6. Write a c++ program for the demo of Constructor & destructor
- 7. Write a c++ program for sum of two objects using Friend function

#### Polymorphism

- 1. Write a c++ program for Function overloading process
- 2. Write a c++ program for unary Operator overloading process
- 3. Write a c++ program for Binary operator overloading Process

#### Inheritance

- 1. Write a c++ program for Single inheritance
- 2. Write a c++ program for hybrid inheritance

#### Files

- 1. Write a c++ program for File creation and to list the file content
- 2. Write a c++ program for File manipulations- Append, Copy, Search

#### Web Resources:

1.http://www.srmuniv.ac.in/sites/default/files/files/Object%20Oriented%20Programming%20LAB.pdf 2.http://www.becbapatla.ac.in/ece/lab/EC%20362%20C++%20Lab%20Manual.pdf

#### **Course Designers:**

- 1. Dr. S. Abirami
- 2. Mrs. R. Umamaheswari

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course		Course Title		Category	L	Т	Р	Credit
Code								
UCA19	C L22	MS Office Lab		Core Lab 4	-	-	3	2
		L - Lecture	T - Tutori	al	P - Pr	acticals	5	
Year	Semes	ter		Internal	Exter	nal	Tota	l
1	II			40	60		100	

#### Preamble

Make the students to identify MS-Office terminologies, create technical documents, format and edit documents, use simple tools, utilities, and print documents.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Create, edit, and format a document	K1,K2,K3				
CO2	Make use of office package for documentation, presentation and visualization charts					
<b>CO3</b>	Create tables and reports	K1,K2,K3				
<b>CO4</b>	Develop various presentations	K1,K2,K3				
	K1 - Knowledge K2 - Understand K3 - Apply					

#### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	Μ	Μ	S
CO2	S	S	S	Μ	S
CO3	S	L	Μ	S	S
CO4	S	S	S	S	S

**S-Strong** 

M- Medium

L-Low

#### MS WORD

- 1. Paragraph formatting
- 2. Newspaper style Document
- 3. Table creation
- 4. Mail merge
- 5. Page formatting & printing

#### MS EXCEL

- 1. Worksheet including Formulas
- 2. Formatting cells
- 3. Chart creation
- 4. Functions

#### MS ACCESS

- 1. Creating a table
- 2. Set validation rules
- 3. Creating forms
- 4. Creating reports
- 5. Relationship and queries

#### **MS POWERPOINT**

- 1. Creating presentation
- 2. Animations
- 3. Sound
- 4. Inserting picture

#### Web Resources:

1.http://dte.kar.nic.in/STDNTS/CS%20IS/BCS%20LAB%20MANUAL.pdf 2.http://www.isc.ku.edu.kw/documents/Lab%20Manuals/ISC%20100%20Lab\_Manual.pdf

#### **Course Designers:**

- 1. Mrs. R. Umamaheswari
- 2. Dr. S. Abirami

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(For those joined BCA on or after June 2019)

Course Code		Course Title			Categ	gory	L	Τ	Р	Cred	lit
UCA19A	AC21	Effective Communication	ive English		AECO		2	-	-	2	
_		L - Lecture	T - Tutoria	1		P - I	Practica	als			
Year	Seme	ester		Inte	rnal	Ext	ernal	To	tal		
1	II			15		35		50			

#### Preamble

Provides the basic concepts and strategies of communication along with the importance of reading and writing.

**Course Outcomes** 

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO1	Describes communication theory, its type, barriers of communication and the strategies involved.	K1,K2
CO2	Develop group communication, speaking skills, group discussion, interview and public speech.	K1,K2
<b>CO3</b>	Analyze close reading, comprehension, summary paraphrasing and apply translation from Indian language to English and vice-versa	K2,K3
<b>CO4</b>	Build writing skills, documenting report, writing making notes and letter writing	K2,K3
	K1 - Knowledge K2 - Understand K3 - Apply	

**Mapping of COs with POs** 

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	Μ	S	Μ
CO2	S	L	S	Μ	L
CO3	S	L	Μ	S	L
CO4	S	L	Μ	S	S

S-Strong M- Medium L-Low

#### **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	10	10	20
Understand	13	13	25
Apply	10	10	20
Total Marks	30	30	65

#### Content

#### Unit-I:

#### 15hours

Introduction: Theory of Communication, Types and modes of Communication - Language of Communication: Verbal and Non-verbal (Spoken and Written) Personal-Social, Business Barriers and Strategies-Intra-personal-Inter-personal and Group communication - Speaking Skills: Monologue –Dialogue- Group Discussion- Effective Communication/ Mis-Communication- Interview -Public Speech

#### Unit-II:

#### 15hours

**Reading and Understanding** -Close Reading -Comprehension -Summary Paraphrasing-Analysis and Interpretation -Translation(from Indian language to English and vice-versa)-Literary/Knowledge Texts-Writing Skills -Documenting Report -Writing Making notes -Letter writing

#### **Text Books:**

1. Dr. Gauri Mishra, Dr. RanjanaKaul, Dr. BratiBiswas , 2016, Language through Literature , Primus Book

#### **References:**

1. Kumar S.P , 2013, Language Literature and Creativity, Orient Blackswan

#### Web Resources:

1.http://www.notesdesk.com/notes/business-communications/types-of-communication/

2.https://www.aqr.org.uk/glossary/analysis-and-interpretation

#### **Course Designers:**

#### 1. Dr. S.Abirami 2. Mrs. R. Umamaheswari

#### Lecture Schedule

	Торіс	Lecture hours				
1	Introduction:	15				
1.1	Theory of Communication, Types and modes of Communication	5				
1.2	Language of Communication: Verbal and Non-verbal (Spoken and Written) Personal-Social, Business Barriers and Strategies	5				
1.3	-Intra-personal-Inter-personal and Group communication - Speaking Skills: Monologue –Dialogue- Group Discussion- Effective Communication/ Mis- Communication- Interview -Public Speech	5				
2	Reading and Understanding	15				
2.1	Close Reading -Comprehension -Summary Paraphrasing- Analysis and Interpretation -Translation(from Indian language to English and vice-versa)-	8				
2.2	Literary/Knowledge Texts-Writing Skills -Documenting Report -Writing Making	7				
	Total(15+15)					
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(For those joined BCA on or after June 2019)

Course Course Title				Categor	y L	Т	Р	Credit
Code								
UCA19C 31 Relational Database Management				Core 5	4	1	-	4
System								
		L - Lecture	T - Tutorial		P-Pract	icals		
Year	Seme	ster	Ι	Internal	Externa	al	Total	
2	III	2	25	75		100		

#### Preamble

Walk through the basics of database concepts, data models, relational database design, transaction management, database system architectures, storage methods, querying and managing databases by using sql commands.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level
CO1	Explain the basic concepts of data model and types of keys in relational database system	K1,K2
CO2	Design good relational database based on a data model by considering normalization	K1,K2,K3
<b>CO3</b>	Analyze the requirements of transaction processing, concurrency control and the need for backup and recovery	K1,K2,K3
<b>CO4</b>	Demonstrate the client-server architecture, parallel database and query optimization	K1,K2
CO5	Apply sql commands, group and date functions, cursor ,triggers, procedures, functions and packages.	K1,K2,K3

	K1 - Knowledge		K2 - Uno	K2 - Understand		pply
Mapping o	of COs with	POs				
	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	Μ	Μ	S	S	
CO2	Μ	S	L	Μ	S	
CO3	Μ	S	Μ	Μ	Μ	
CO4	S	Μ	S	S	Μ	
CO5	S	Μ	S	S	S	
S-Strong	Ν	<b>1- Medium</b>	L-Low			

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

#### Content Unit-I:

Introduction: Database-System Applications - Purpose of Database Systems - View of Data -Database Languages - Relational Databases - Database Design - Data Storage and Querying Transaction Management-Database Architecture -Database Users and Administrators - History of Database Systems. Introduction to the Relational Model: Structure of Relational Databases - Database Schema - keys -Schema Diagrams. Formal Relational Query Languages: The Relational Algebra -Database Design and the E-R Model.

#### Unit-II:

Relational Database Design: Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional dependencies - Functional dependency Theory . Storage and File Structure.

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

Transactions: Transaction Concept - A Simple Transaction Model - Storage Structure -Transaction Atomicity and Durability - Transaction Isolation - Serializability. Recovery System: Failure Classification -Storage- Recovery and Atomicity - Recovery Algorithm - Buffer Management -Failure with Loss of Nonvolatile storage.

#### Unit-IV:

Database-System Architectures: Centralized and Client-Server Architectures -Server System Architectures -Parallel Systems - Distributed Systems -Cloud Based Databases- Parallel Databases: Introduction -I/O Parallelism - Interquery parallelism - Intraquery parallelism -Intraoperation parallelism – Interoperation parallelism- Query optimization. Unit-V:

#### 15hours

SQL and SQL\*PLUS: Getting Text Information and changing it-Searching for Regular Expressions-Playing the Numbers-Dates: Then, Now, and the Difference-Grouping Things Together-Changing Data: insert, update, merge, and delete-Creating and Managing Tables, Views, Indexes, Clusters, and Sequences-PL/SQL: An Introduction to PL/SQL-Triggers-Procedures, Functions, and Packages

Unit	Chapters/ Section
Ι	Book 1: 1(1.1-1.9,1.12,1.13),2(2.1-2.4), 6(6.1), 7
II	Book 1: 8(8.1-8.4), 10
III	Book 1: 14(14.1-14.6), 16(16.1-16.6)
IV	Book 1: 17(17.1-17.4),18(18.1-18.7),19.9
V	Book 2: 7,8,9,10,12, 15, 17,32,34,35

#### **Text Books:**

- 1. Abraham Silberschatz, Henry Korth, S.Sudarshan, 2013, Database System Concepts, 6<sup>th</sup> edition, McGraw Hill Education Private Limited, New Delhi.
- 2. Bob Bryla, Kevin Loney, 2014, Oracle Database 12c: The Complete Reference, McGraw Hill Education Private Limited, New York (https://www.amazon.com/Oracle-Database-12c-Complete-Reference-ebook/dp/BOODQSTPUE).

#### **References:**

#### 15hours

15 hours

15hours

15hours

- 1. Ramez Elmasri, Shamkant B. Navathe, 2013, Database Systems Models, Languages, Design and Application Programming, 6<sup>th</sup> edition, Pearson Education.
- 2. Date C.J, Kannan.A, Swamynathan.S, 2013, Introduction to Database Systems, 8<sup>th</sup> edition, , Pearson Education.
- Rajesh Narang, 2011, Database Management System, 2<sup>nd</sup> edition, PHI Learning Private Limited, New Delhi

#### Web Resources:

1.https://www.tutorialspoint.com/dbms/

2.https://cs.uwaterloo.ca/~tozsu/courses/CS338/lectures/14%20DB%20System.pdf

3.https://docs.oracle.com/cd/B19306\_01/server.102/b14357/qstart.htm

#### **Course Designers:**

- 1. Dr. V. T. Meenatchi
- 2. Mr. P. Muthumariappan

### Lecture Schedule

	Торіс	lecture hrs
1.	Introduction:	15
1.1	Database-System Applications - Purpose of Database Systems - View of Data - Database Languages - Relational Databases - Database Design - Data Storage and Querying Transaction Management.	3
1.2	Database Architecture –Database Users and Administrators - History of Database Systems. Introduction to the Relational Model: Structure of Relational Databases - Database Schema	5
1.3	keys -Schema Diagrams	2
1.4	Formal Relational Query Languages: The Relational Algebra - Database Design and the E-R Model.	5
2.	Relational Database Design:	15
2.1	Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional dependencies	5
2.2	Functional dependency Theory	5
2.3	Storage and File Structure.	5
3.	Transactions:	15
3.1	Transaction Concept - A Simple Transaction Model - Storage Structure - Transaction Atomicity and Durability	3
3.2	Transaction Isolation - Serializability. Recovery System: Failure Classification	4
3.3	Storage- Recovery and Atomicity - Recovery Algorithm -	4
3.4	Buffer Management -Failure with Loss of Non-volatile storage	4
4.	Database-System Architectures:	15
4.1	Centralized and Client-Server Architectures -Server System Architectures	5

4.2	Parallel Systems - Distributed Systems- Cloud Based	5
	Databases - Parallel Databases: Introduction -I/O	
	Parallelism	
4.3	Inter query parallelism - Intra query parallelism -	5
	Interoperation parallelism - Query optimization	
5.	SQL and SQL*PLUS:	15
5.1	Getting Text Information and changing it-Searching for	5
	Regular Expressions-Playing the Numbers-Dates: Then,	
	Now, and the Difference	
5.2	Grouping Things Together-Changing Data: insert, update,	5
	merge, and delete-Creating and Managing Tables, Views,	
	Indexes, Clusters, and Sequences	
5.3	PL/SQL: An Introduction to PL/SQL-Triggers-Procedures,	5
	Functions, and Packages	
	Total(15+15+15+15)	60

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Course		Course Title		Category	L	Т	Р	Credit
Code								
UCA19C32		Java Programming	Core 6	5	-	-	5	
		L - Lecture	T - Tutorial	]	P – Prae	cticals		·
Year Semester			]	Internal	Exteri	nal	Total	
2	III			25	75		100	

#### Preamble

Describes the basic features of java with application, applet and awt programming and inculcate the ability to develop projects in java

#### **Course Outcomes**

#### On the completion of the course the student will be able to

		Knowledge					
#	Course Outcome	(according to					
		Bloom's					
		Taxonomy)					
<b>CO1</b>	Identify the importance of java with its data types, control statements and class	K1,K2					
001	fundamentals.						
CO <sub>2</sub>	Make use of inheritance, method overriding and implement packages and	K2,K3					
	interfaces						
<b>CO3</b>	Experiment with exception handling and multithreading						
<b>CO4</b>	Apply string and string buffer handling functions and analyze the concept of	K1,K2,K3					
	interfaces and stream classes.						
<b>CO5</b>	Build applet programming through awt controls, layout managers and menus.						
	K1 - Knowledge K2 - Understand K3 – Apply						

Mapping of COs with POs								
	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	S	S	S	Μ	Μ			
CO2	S	S	Μ	Μ	Μ			
CO3	S	Μ	L	L	Μ			
CO4	S	Μ	Μ	S	L			
CO5	S	L	L	L	Μ			
S-Strong	Ν	/I- Medium	L-Low					

#### **Blooms taxonomy**

		CA	End of	
	First	Second	Semester	
Knowledge	20	20	44	
Understand	21	21	44	
Apply	11	11	22	
<b>Total Marks</b>	52	52	110	

#### Unit-I:

**The Genesis of Java**: Java's Lineage- The creation of java- Why Java is important to internet-Java's Magic: The Byte code-The Java buzzwords. Data types, Variables and Arrays. Operators. Control statements-Introducing classes: Class Fundamentals-Declaring objects-Assigning object reference variables-Introducing Methods-.Constructors-The this Keyword-Garbage Collection-finalize() Method.

#### Unit-II:

**Inheritance**: Inheritance Basics- Using super-Creating a multilevel Hierarchy-When constructors are called--Method overriding-Dynamic method dispatch-Using Abstract classes-using final with inheritance-The Object class. Packages and Interfaces: Packages- Access protection-Importing packages-interfaces.

#### Unit III:

**Exception Handling:** Exception Handling Fundamentals- Exception types-Uncaught Exceptions-using try and catch-user – Multiple catch Clauses-Nested try Statements-throw-throws-finally-Java's built in exceptions-Creating your own exception subclasses. Multithreaded Programming: The Java Thread Model-main thread-creating a Thread-Creating multiple threads-Using isAlive() and join()-Thread priorities-synchronization-Inter thread communication-Suspending, Resuming and stopping Threads.

#### Unit IV:

String handling: String constructor-Special String operations-character extraction-String comparison-Searching Strings-modifying a String-Date conversion using valueof()-String Buffer. Exploring java.lang: Simple type wrappers. Input/Output: Exploring java.io: File-Directory-Stream Classes-File Input Stream-File Output Stream-File Reader-Character Streams-File Reader-File Writer-BuferedReader-Writer. The Applet Class: Applet Basics-Architecture-An Applet skeleton-Simple Applet display methods- Requesting repainting- Using the status window-The Html applet Tag-passing parameter to applets-getDocumentBase() and getCodeBase(). Unit V: 17hours

### Using AWT Controls, Layout Managers and Menus: Control Fundamentals-Labels-Using Buttons-Applying CheckBoxes-CheckBoxGroup-Choice controls-Using Lists-Managing Scrollbars- Using a TextField- Using a TextArea-Understanding Layout Managers-Menu Bars and Menus. **Event Handling-**Event Class-Action Event-Adjustment Event-Source of Event-Event Listener Interface-Handling Mouse Event.

UNIT	Chapter /Sections
Ι	1,3,4,5,6
II	8,9
III	10,11
IV	13,14(Pg. 379-401),17(Pg. 537-551), 17(562-570), 19(Pg. 627-648)
V	22(Pg. 735-775), 20(654-675)

#### **Text Books:**

1.Herbert schildt, 2014, Java 2: The Complete Reference 5th edition, Tata McGraw Hill Education Private Limited.

#### 12hours

## 17hours

16hours

#### 13hours

#### **References:**

- 1. Adan Dodson, 2016, Java: Java programming for Beginners Teaching You Basic to Advance Java Programming Skills, Create space Independent Publishing Platform.
- 2. Balagurusamy, 2014, programming with Java, 5<sup>th</sup> edition, Tata McGraw Hill Education Private Limited.
- 3. Yashwant Kanetkar, 2012, Let Us Java 2<sup>nd</sup> edition, BPB publications.

#### Web Resources:

1.https://www.javatpoint.com/exception-handling-in-java

2.https://www.edureka.co/blog/java-string/

3.http://www2.gsu.edu/~matpxp/SwIG/talks/java\_applets.pdf

#### **Lecture Schedule**

	Торіс	No.of Lecture
		hrs
1.	The Genesis of Java:	12
1.1	Java's Lineage- The creation of java- Why Java is important to	3
	internet-Java's Magic: The Byte code-The Java buzzwords	
1.2	Data types, Variables and Arrays. Operators. control statements-	4
	Introducing classes: Class Fundamentals	
1.3	Declaring objects-Assigning object reference variables- Introducing Methods	2
1.4	Constructors-The This Key word-Garbage Collection-Finalize()	3
	Method	
2.	Inheritance:	16
2.1	Inheritance Basics- Using super-Creating a multilevel Hierarchy	5
2.1	When constructors are calledMethod overriding-Dynamic method dispatch	4
2.3	Using Abstract classes-using final with inheritance-The Object	3
	class	
2.4	Packages and Interfaces: Packages- Access protection-Importing	4
	packages-interfaces	
3.	Exception Handling:	17
3.1	Exception Handling Fundamentals- Exception types-Uncaught	4
	Exceptions-using try and catch-user	
3.2	Multiple catch Clauses-Nested try Statements-throw-throws-	4
	finally-Java's Built in exceptions-Creating your own exception	
	subclasses	
3.3	Multithreaded Programming: The Java Thread Model-main	4
	thread-creating a Thread-Creating multiple threads-Using is	
	Alive() and join()-	
3.4	Thread priorities-synchronization-Interthread communication-	5
	Suspending, Resuming and stopping Threads	
4.	String handling:	13
4.1	String constructor-Special String operations-character	3
	extraction-String comparison-Searching Strings	
4.2	Modifying a String-Date conversion using value of()-	3
	StringBuffer. Exploring	

4.3	java.lang: Simple type wrappers.Input/Output:Exploring java.io:The Java I/O Classes and Interfaces	4
4.4	File-The Stream classes-The Byte Streams-The Character streams	3
4.5	Applet Basics-Architecture-An Applet skeleton-Simple Applet display methods- Requesting repainting Using the status window-The Html applet Tag-passing parameter to applets-getDocumentBase() and getCodeBase() .Using AWT Controls	17
5	AWT & Event Handling	17
5.1	Layout Managers and Menus: Control Fundamentals-Labels- Using Buttons-Applying CheckBoxes-CheckBoxGroup-Choice controls-Using Lists	4
5.2	Managing Scrollbars- Using a TextField- Using a TextArea- UnderStanding Layout Managers-Menu Bars and Menus.	4
5.3	<b>Event Handling-</b> Event Class-Action Event-Adjustment Event-Source of Event	4
5.4	Event Listener Interface-Handling Mouse Event	5
	Total(12+16+17+13+17)	60

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		Course Title	5	Category	L	Τ	P	Credit
Course								
Code								
UCA19CL31		RDBMS Lab		Core Lab 5	-	-	4	2
L - Lecture T - Tutor			T - Tutoria	al	P - Pra	acticals		
Year	Semester		Internal	<b>External</b>		Tota	1	
2	III			40	60		100	

#### Preamble

Develop practical skills on SQL and PL/SQL

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)				
<b>CO1</b>	Create tables and implement DDL and DML commands	K1,K2,K3				
0.01						
<b>CO2</b>	Discuss the concept of join and sub queries					
CO3	Implement the concept of cursors, exception handling and triggers	K1,K2,K3				
<b>CO4</b>	Apply the concept of functions, procedures and packages					
	K1 - Knowledge K2 - Understand K3	- Apply				

Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	S	S	
CO2	S	S	S	S	S	
CO3	S	Μ	S	S	Μ	
CO4	S	Μ	L	Μ	S	
S-Strong	N	I- Medium	L-Low			

L-Low

#### SQL:

- 1. Queries on Student table
- 2. Queries on Employee table
- 3. Queries on Hospital table
- 4. Queries on Sports table
- 5. Queries on Export table
- 6. Join Queries
- 7. Sub queries

#### PL/SQL:

- 1. PL/SQL block to find factorial of a given number
- 2. PL/SQL block to generate Fibonacci series
- 3. PL / SQL block using Cursors
- 4. PL / SQL block using Exception handling
- 5. PL / SQL block using Triggers
- 6. PL / SQL block using Packages
- 7. PL / SQL block using Function
- 8. PL / SQL block using Procedures

#### Web Resources:

1.http://www.srmuniv.ac.in/sites/default/files/2017/cse-lab-manual-dbms.pdf

2.http://jnec.org/Lab-manuals/CSE/CSE1/TE-Part-1/DBMS-LM-Varsha.pdf

#### **Course Designers:**

- 1. Dr. V. T. Meenatchi
- 2. Dr. S. Abirami

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Course		Course Title		Category		L	Т	P	Credit	
Code										
UCA19CL32		Java Programming Lab			Core Lab 6 -		-	4	2	
_		L - Lecture	T - Tutoria	al		P – P	ractical	ls		
Year	Year Semester			Int	ternal Extern		ernal	Tot	al	
2	III			40		60		100		

#### Preamble

Provides insight into java through the core concepts and window programming

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO1	Develop simple java programs using control structures and arrays	K1,K2,K3
CO2	Write java code using strings	K1,K2,K3
<b>CO3</b>	Implement java programs through object oriented programming concepts	K1,K2,K3
<b>CO4</b>	Apply applet to develop window based applications	K1,K2,K3
	K1 - Knowledge K2 - Understand K3 – Apply	

### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	L
CO2	S	S	S	S	Μ
CO3	S	S	S	S	Μ
CO4	Μ	Μ	Μ	Μ	S
S-Strong	I	M- Medium	L-Low		

#### Web Resources:

1.http://www.atri.edu.in/images/pdf/departments/JAVA%20PROGRAMMING%20%20MANUAL.pdf 2.http://jnec.org/Lab-manuals/CSE/CSE1/TE-Part-1/Java-LM-SSD-March.pdf

#### **Course Designers:**

- 1. Dr. S. Abirami
- 2. Dr. V. T. Meenatchi

#### Content

#### **Simple Programs**

- 1. Write a Java program to print the result of the following operations:
  - i. -5a + 8 \* 6
  - ii. b(55+9) % 9
  - iii. 20 + (-3\*5 / 8)x
  - iv. 5 x+ (15 / 3 \* 2 )y- 8 % 3
- 2. Write a Java program to print the sum (addition), multiply, subtract, divide and remainder of two numbers.
- 3. Write a Java program to print the area and perimeter of a rectangle.
- 4. Write a Java program that reads a number in inches, converts it to meters.
- 5. Write a Java program that keeps a number from the user and generates an integer between 1 and 7 and displays the name of the weekday.
- 6. Write a Java program that reads a number and display the square, cube, and fourth power

#### **Control Structures**

- 1. Write a program in Java to make such a pattern like right angle triangle with a number which will repeat a number in a row.
- 2. Write a program in Java to make such a pattern like right angle triangle with number increased by 1.
- 3. Write a program in Java to print the Floyd's Triangle
- 4. Write a program in Java to print the Floyd's Triangle



#### Array

- 1. Write a Java program to calculate the average value of array elements.
- 2. Write a Java program to test if an array contains a specific value
- 3. Write a Java program to find the index of an array element.
- 4. Write a Java program to remove a specific element from an array.
- 5. Write a Java program to copy an array by iterating the array
- 6. Write a Java program to insert an element (specific position) into an array.
- 7. Write a Java program to find the maximum and minimum value of an array. Write a Java program to reverse an array of integer values.

#### String

- 1. Write a Java program to implement java String functions
- 2. Write a Java program to implement java String Buffer functions

#### Oops

- 1. Write a java program for simple banking system.
- 2. Write a java program for library management system.
- 3. Write a java program for inventory management using Array of objects.
- 4. Write a java program for Inheritance.
- 5. Write a java program for Function Overloading process.
- 6. Write a java program for User-Defined Package.
- 7. Write a java Multi-Threaded Program.

#### Applet

- 1. Write a java program for the demo of Applet Life Cycle
- 2. Write a java Applet Program for Graphic Images
- 3. Write a java program for Changing Layout of Applet

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course		Course Title			Catego	ory	L	Т	Р	Credit
Code										
UCA19C41		Software Engineering			Core7		5	-	-	5
		L - Lecture	T - Tutoria	al		P –	Practic	als		
Year	Year Semester			Int	ernal	Ex	ternal	]	<b>Fotal</b>	
2	IV			25		75		1	.00	

#### Preamble

Familiar with software engineering techniques and procedures and develop software projects by applying various software engineering concepts.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome						
<b>CO1</b>	Illustrate basic software engineering methods and practices, and their development process model.	K1,K2					
CO2	Discuss various software cost factor and cost estimation techniques.	K1,K2					
CO3	Demonstrate the basic concepts of Software requirement specification and various Languages and processors for requirements specification						
<b>CO4</b>	Make use of various software design techniques and notations						
CO5	Construct various software testing strategies and SCM Process.	K1,K2,K3					

	K1 - Knowledge		K1 - Knowledge K2 - Understand			K3 – Appl	ly
<b>Mapping</b> o	f COs with	POs					
	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	S	S	Μ	L	L		
CO2	S	Μ		L	L		
CO3	S	Μ	Μ	Μ	L		
CO4	S	Μ	Μ	S	Μ		
CO5	S	Μ	Μ	Μ	Μ		
S-Strong	Ν	<b>I- Medium</b>	L-Low				

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

#### Content Unit -1:

Introduction to Software Engineering: Introduction –Some definitions –Some size factors– Ouality and productivity factors – Managerial issues. Planning a Software Project: Introduction – Defining the problem– Developing a solution strategy – Planning the development process– Planning an organizational structure-Other planning activities. 13hours

#### Unit -II:

Software Cost Estimation: Introduction - Software cost factors- Software cost estimation Techniques- Staffing level estimation -Estimating software maintenance costs. Unit -III: 13hours

Software Requirements Definition: Introduction – The Software requirements specification - Formal specification techniques- Relational notations - State oriented notation -Languages and processors for requirements specification- PSL / PSA - RSL / REVS - Structured analysis and design technique (SADT) – Structured system analysis (SSA) – GIST. Unit -IV: 14hours

Software Design: Introduction – Fundamental design concepts– Modules and modularizing criteria – Design notations– Design techniques – Detailed design consideration – Real -Time and Distributed system design - Test plans - Milestones, Walkthroughs, and Inspections -Design guidelines.

#### Unit -V:

Software Testing Strategies: A Strategic approach to software testing- Strategic issues-Testing strategies for cconventional software- Validation testing - System testing. Testing Conventional Applications: Software testing fundamentals –Internal and External views of testing – White-box testing- Basis path testing - Control structure testing - Black-box testing. Software Configuration Management: Software configuration management - The SCM rrepository - The SCM process.

Unit	Chapters/Sections
Ι	Book1: 1(1.1-1.4), 2(2.1-2.5)
II	Book1: 3(3.1-3.4)
III	Book1: 4(4.1-4.3)
IV	Book1: 5(5.1-5.9)
V	Book2: 17(17.1-17.3,17.6,17.7), 18(18.1-18.6), 22(22.1-22.3)

#### **Text Books:**

1.Richard.E.Fairely, 2014 Reprint, Software Engineering Concepts, Tata McGraw - Hill Education Private Limited, New Delhi.

2.Roger S.Pressman, 2015, Software Engineering A Practitioner's Approach, 7<sup>th</sup> edition, Tata McGraw - Hill Education Private Limited, New Delhi.

#### **References:**

1. Ian Sommerville, 2015, Software Engineering, 9th edition, Pearson Indian Education Service Private Limited, Chennai.

2. Pankaj Jalote 2015, An Integrated Approach to Software Engineering, 3<sup>rd</sup> edition, Narosa Publishing House, New Delhi.

3.Aggarwal k.k, Yogeshsingh, 2005, Software Engineering, 2<sup>nd</sup> edition, New age international Private Limited, Publishers, New Delhi.

#### 17hours

18hours

#### Web Resources:

1. https://www.tutorialspoint.com/software\_engineering/software\_engineering\_quick

guide.htm

 $2.http://moodle.autolab.unipannon.hu/Mecha\_tananyag/szoftverfejlesztesi\_folyamatok\_angol/ch13.html$ 

3.https://www.tutorialspoint.com/software\_testing/software\_testing\_tutorial.pdf

## **Course Designers:**

1. Mr. P. Muthumariappan Mrs. R. Umamaheswari

#### **Lecture Schedule**

	Торіс	lecture hours
1	Introduction to Software Engineering	17
1.1	Introduction –Some Definitions –Some Size Factors	3
1.2	Quality and Productivity Factors – Managerial Issues	5
1.3	Planning a Software Project: Introduction –Defining the	4
	Problem– Developing a Solution Strategy	
1.4	Planning the Development Process– Planning an Organizational	5
	Structure–Other Planning Activities.	
2	Software Cost Estimation	13
2.1	Introduction – Software Cost Factors	5
2.2	Software Cost Estimation Techniques	5
2.3	Staffing level estimation -Estimative software maintenance costs	3
3	Software requirements definition	13
3.1	Introduction – The Software Requirements Specification.	3
3.2	Formal Specification Techniques– Relational Notations – State	5
	Oriented Notation	
3.3	Language and Processor for Requirements Specification – PSL /	5
	PSA – RSL / REVS – Structured Analysis and Design	
	Technique(SADT) – Structured System Analysis (SSA) – GIST.	
4	Software Design	14
4.1	Introduction – Fundamental Design Concepts– Modules and	2
	modularizing Criteria.	
4.2	Design Notations– Design Techniques	4
4.3	Detailed Design Consideration – Real -Time and Distributed	5
	System Design	
4.4	Test Plans – Milestones, Walkthroughs and Inspections – Design	3
	Guide lines.	
5.1	A Strategic Approach to Software Testing–Strategic Issues	3
5.2	Testing strategies for Conventional Software– Validation Testing	5
	– System Testing.	
5.3	Testing Conventional Applications: Software Testing	5
	Fundamental –Internal and External Views of Testing –White-	
	Box Testing – Basis Path Testing – Control Structure Testing –	
	Black-Box Testing.	
5.4	Software Configuration Management: Software Configuration	5
	Management – The SCM Repository – The SCM Process.	

#### **THIAGARAJAR COLLEGE, MADURAI-9**

#### An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course		Course Title	•		Catego	ory	L	Τ		Р	Credit
UCA19	C <b>42</b>	Data Structures			Core 8	5	4	1		-	4
		L - Lecture	T - Tutoria	ıl		P –	Practic	cals			
Year	Sen	nester		Int	ernal	Ex	ternal		Tot	tal	
2	IV			25		75			100	)	

#### Preamble

Bring around to understand the basic data structures and algorithms by experimental learning. **Course Outcomes** 

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level
<b>CO1</b>	Identify the types of data structures like arrays and linked list.	K1,K2,K3
CO2	Apply linear data structures which includes stacks and queues	K1,K2,K3
<b>CO3</b>	Demonstrate different representation of binary tree, operations on binary tree traversal and binary search tree.	K1,K2
<b>CO4</b>	Describe the basic of graph terminologies and the operations involved in graph.	K1,K2
<b>CO5</b>	Discuss and implement various sorting algorithms	K1,K2,K3
L	K1 - Knowledge K2 - Understand K3 – Apply	

#### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	L
CO2	S	S	Μ	L	S
CO3	S	Μ	S	L	Μ
CO4	S	Μ	Μ	Μ	L
CO5	S	Μ	Μ	L	L
S-Strong	Ν	A- Medium	L-Low		

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

#### Content

#### **Unit – I : Introduction**

Definitions – Concept of Data Structures – Overview of Data Structures –Implementation of Data Structures. Arrays: Definition – Terminology – One-Dimensional Array – Multi-Dimensional Arrays – Pointer Arrays. Linked Lists: Definition – Single Linked List –Circular Linked List – Double Linked List.

#### Unit – II : Stacks

Introduction – Definition – Representation of a Stack – Operations on Stacks. Queues: Introduction – Definition – Representation of Queues – Linear Searching Technique -Linear Search with array-Linear Search with linked List-Binary Search-Fibonacci Search.

#### Unit – III : Trees

Trees: Basic Terminologies-Definition and Concepts- Representation of Binary Trees – Operations on a Binary a Binary Tree-Insertion-Deletion-Traversal-Merging together Two Binary Trees.

#### Unit – IV : Graphs

Introduction – Graph Terminologies – Representation of Graphs-Set Representation- Linked Representation – Matrix Representation – Operations on Graphs.

#### **Unit – V : Sorting**

Preliminaries-Insertion Sort -Shell Sort -Merge Sort - Quick Sort-Bucket Sort

UNIT	Chapter /Sections
Ι	Book 1: 1,2, 3(3.1 to 3.5)
II	Book 1: 4(4.1 to 4.4),5 (5.1 to 5.4)
	Book 1: 11(11.2.1, 11.2.2, 11.2.4, 11.2.5)
III	Book 1: 7 (7.1 to 7.4)
IV	Book 1: 8 (8.1 to 8.4)
V	Book 2: 7(7.1 to 7.4, 7.6, 7.7)

#### **Text Books:**

1. Samanta.D , 2016, "Classic Data Structures", Prentice-Hall India Pvt Ltd.

2. Mark Allen Weiss, 2014 Seventeenth Impression, "Data Structures and Algorithm Analysis in C", Pearson Education, Second Edition.

#### **References:**

- 1. Well Dale, Jones, 2015, C++ Plus Data structures, 6<sup>th</sup> edition, Bartlett.
- 2. Varsha H.Patil, 2012, Data Structures using c++, Oxford University Press.

#### Web Resources:

 $1.https://www.tutorialspoint.com/data\_structures\_algorithms/stack\_algorithm.htm$ 

2.http://courses.cs.vt.edu/~cs3114/Summer13/Notes/T17.SortingAlgorithms.pdf

3.https://www.geeksforgeeks.org/binary-tree-data-structure/

#### **Course Designers:**

- 1. Dr. S.Abirami
- 2. Mrs. R.Umamaheswari

#### 15 hours

15 hours

#### 15 hours

15 hours

15 hours

	Торіс	No.of Lecture hrs
1.	Introduction :	15
1.1	Definitions – Concept of Data StructOures – Overview of Data Structures –Implementation of Data Structures	5
1.2	. Arrays: Definition – Terminology – One-Dimensional Array – Multi-Dimensional Arrays – Pointer Arrays.	5
1.3	Linked Lists: Definition – Single Linked List –Circular Linked List – Double Linked List – Circular Double Linked List.	5
2.	Stacks :	15
2.1	Introduction – Definition – Representation of a Stack – Operations on Stacks.	8
2.2	Queues: Introduction - Definition – Representation of Queues – Linear Searching Technique	7
3.	Trees:	15
3.1	Basic Terminologies-Definition and Concepts- Representation of Binary Trees .	7
3.2	Operations on a Binary a Binary Tree-Insertion-Deletion	5
3.3	Traversal-Merging together Two Binary Trees.	3
4.	Graphs :	15
4.1	Introduction – Graph Terminologies – Representation of Graphs	5
4.2	Set Representation- Linked Representation – Matrix Representation –	5
4.3	Operations on Graphs.	5
5.	Sorting :	15
5.1	Preliminaries-Insertion Sort -Shell Sort –Analysis	5
5.2	Merge Sort – Quick Sort	5
5.3	Sorting Large Structures – Bucket Sort.	5
	Total(15+15+15+15+15)	75

## Thiagarajar College (Autonomous):: Madurai – 625 009 **Department of COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course Code		Course Title		Categor	у	L	Т	P	Credit
UCA19	CL41	Data Structures Lab us	sing C	Core La	b 7	-	-	4	2
		L - Lecture	T - Tutorial	-	P - P	ractica	ls		
Year	Sem	ester	Ι	nternal	Exte	ernal	Tot	al	
2	IV		Δ	10	60		100		

#### Preamble

Gain knowledge in various data structures and its working principles with implementation

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's
		Taxonomy)
<b>CO1</b>	Develop programs using linear data structures and tree traversal	K1,K2,K3
<b>CO2</b>	Implement programs using doubly and circular linked list	K1,K2,K3
CO3	Construct programs using non linear data structures	K1,K2,K3
<b>CO4</b>	Apply various sorting algorithms	K1,K2,K3
	K1 - Knowledge K2 - Understand K3 – Apply	

#### Mapping of COs with POs

$\frac{003}{004}$	5 5		<u> </u>			
CO2	S	M	S	M	M	
CO1	S	Μ	S	L	Μ	
	PSO1	PSO2	PSO3	PSO4	PSO5	

S-Strong

#### L-Low

#### Content

#### **Data Structures**

#### Linear

- 1. Write a C program to implement operations of Stack.
- 2. Write a C program for implementing Queue operations.
- 3. Write a C program for Linked List creation, traversal, deletion of a node, insertion of node, sorting.
- 4. Write a C program for various operations on Circular Linked Lists

5. Write a C program for various operations on Doubly Linked Lists

#### Non-Linear

- 1. Write a C program to represent a graph using Array.
- 2. Write a C program to implement a graph using linked List.
- 3. Write a C program for graph searching operation.
- 4. Write a C program to implement binary tree.
- 5. Write a C program to implement operations on binary tree.

#### Sorting

- 1. Write a C program to implement quick sorting algorithm.
- 2. Write a C program to implement insertion sorting process.

#### Web Resources:

1.https://www.wctmgurgaon.com/wctm/dsa%20lab-it-labmanual.pdf

2.https://www.iare.ac.in/sites/default/files/lab2/DS%20LAB%20MANUAL\_0.pdf

#### **Course Designers:**

- 1. Dr. S.Abirami
- 2. Mrs. R. Umamaheswari

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course		Course Title		Catego	ory	L	Т	Р	Credit
UCA19	CL42	Web Designing With P	PHP Lab	Core L	ab 8	-	-	4	2
<u> </u>		L - Lecture	T - Tutorial	1	P – P	ractica	ls		
Year	Seme	ester	In	ternal	Exte	ernal	Tot	tal	
2	IV		40	)	60		100	)	

#### Preamble

Bring about the knowledge of design, develop and host a user friendly website with the usage of APIs.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Develop basic skills in website creation	K1,K2,K3				
CO2	Experiment with open source technologies such as HTML, CSS, JavaScript,	K1,K2,K3				
<b>CO3</b>	Implement static, dynamic and interactive web pages and web applications.	K1,K2,K3				
<b>CO4</b>	Build applications using PHP and MySQL.	K1,K2,K3				
	K1 - Knowledge K2 - Understand K3 – Apply					

#### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	Μ	S	
CO2	S	S	S	Μ	S	
CO3	S	S	S	Μ	S	
CO4	S	S	S	Μ	S	
S-Strong		M- Medium	L-Low			

#### HTML

- 1. To Create List tag in HTML
- 2. To Create Table tag in HTML
- 3. To Create Form tag in HTML
- 4. To Create Frame set in HTML

#### CSS

- 1. To implement Inline CSS
- 2. To implement Internal CSS
- 3. To implement External CSS
- 4. Implementation of css in web page

#### JAVA SCRIPT

- 1. Write a Java Script program for Control structure
- 2. Write a Java Script program for Looping structure
- 3. Write a Java Script program for Form validate
- 4. Write a Java Script program for Prompt box
- 5. Write a Java Script program for Alert box
- 6. Write a Java Script program for Using animation

#### XML

- 1. Write a XML to design the different document
- 2. Write a XML program for Schema structure
- 3. DTD to validate the XML document

#### PHP

- 1. Write a program for Basic structure of PHP
- 2. Write a PHP program for Conditional statement
- 3. Write a PHP program for Looping statement
- 4. Write a PHP program for Creating simple application
- 5. Write a PHP program for Database connectivity
- 6. Write a PHP program for Create website for our college
- 7. Write a PHP program for Array functions
- 8. Write a PHP program for Usage of session in PHP

#### Web Resources:

1.http://www.omgroup.edu.in/downloads/files/n53687d338c16b.pdf

2.http://www.srmuniv.ac.in/sites/default/files/files/IT0322-Web%20Systems%20LAB-manual.pdf

#### **Course Designers:**

- 1. Mr. P. Muthumariappan
- 2. Dr.V. T. Meenatchi

#### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course		Course Title			Category I		L	Т	P	Credit
Code										
UCA19GE41		Quantitative Aptitude			Allie	d 4	5	-	-	5
		L - Lecture	T - Tutoria	al		P - P	ractical	S		
Year	Year Semester		Inter	ernal External		Total				
2	IV			25		75		100		

#### Preamble

Facilitates to solve various quantitative and aptitude problems, along with the verbal, non verbal ability and promotes in placement.

#### **Course Outcomes**

-

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level
<b>CO1</b>	Recall and apply number system and problems on ages	K1,K2,K3
CO2	Solve problems in percentage, Ration & proportion ,Chain rule & problems on trains	K1,K2,K3
CO3	Analyze the issues in Time & Work ,Pipes & Cistern, Probability, Permutations & Combinations.	K1,K2,K3
CO4	Find the solutions for simple Interest, Compound Interest, Calendar, Odd man out & Series	K1,K2,K3
CO5	Discover facts from Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs	K1,K2,K3

_	K1 - Knowledge		K2 - Und	lerstand	K3 - Apply			
Mapping of COs with POs								
	PSO1	PSO2	PSO3	PSO4	PSO5			
CO1	S	S	S	Μ	Μ			
CO2	S	Μ	S	Μ	Μ			
CO3	S	S	S	Μ	Μ			
CO4	S	S	S	Μ	Μ			
CO5	S	S	S	Μ	Μ			
S-Strong	Ν	<b>I- Medium</b>	L-Low					

S-Strong

L-Low

#### **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

Content	
Unit I:	15 hours
Numbers, HCF & LCM of Numbers, Decimal Fractions, Simplification, Problems on Ag Unit II:	jes 15 hours
Percentage, Ratio & Proportion, Chain Rule, Problems on Trains Unit III:	15 hours
Time & Work ,Pipes & Cistern, Probability, Permutations & Combinations.	
Unit IV:	15 hours
Simple Interest, Compound Interest, Calendar, Odd man out & Series Unit V:	15 hours

Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs

Unit	Chapters/ Section
Ι	1, 2, 3, 4, 8
II	10, 12,14, 18
III	15,16, 30,31
IV	21, 22, 27,35
V	36, 37, 38, 39

#### **Text Books:**

Aggarwal R.S, 2016, Quantitative Aptitude For Competitive Examinations (Fully solved) As Per New Examination Pattern 7<sup>th</sup> Revised edition, S. Chand & Company Pvt Ltd, New Delhi.

#### **References:**

- 1. Abhijit Guha, 2014, Quantitative Aptitude for Competitive Examinations, 5<sup>th</sup> edition, Tata McGraw Hill Publications, New Delhi.
- 2. Sijwali BS, Indu Sijwali, 2014, A New Approach to Reasoning Verbal & Non-Verbal Paperback , Arihant Publication

#### Web Resources:

- 1. www.careerbless.com
- 2. https://www.indiabix.com/aptitude/profit-and-loss/
- 3. https://www.handakafunda.com/pipes-and-cisterns-concepts-properties-and-cat-questions/

#### **Course Designers:**

- 1. Mrs. R.Umamaheswari
- 2. Mr. P. Muthumariyappan

#### **Lecture Schedule**

	Торіс	No.of
		hrs
1.1	Numbers, HCF & LCM	4
1.2	Decimal Fractions	4
1.3	Simplifications	4
1.4	Problems on Ages	3
2.1	Percentage, Profit & Loss	5
2.2	Ratio & Proportion	5
2.3	Time & Distance, Time & Work, , Chain Rule	5
2.4	Problems on Trains	4
3.1	Pipes & Cisterns	4
3.3	Time & Work , Permutations & Combinations	9
3.4	Probability	3
4.1	Simple Interest, Compound Interest	5
4.2	Calendar	5
4.3	Odd man out Series	5
5.1	Data Interpretation: Tabulation	5
5.2	Bar Graphs, Pie Charts	5
5.3	Line Graphs	5
	Total(15+15+15+15+15)	75

#### **THIAGARAJAR COLLEGE, MADURAI-9**

#### An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC)

**DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY** 

(For those joined BCA on or after June 2019)

Course Code		Course Title			Catego	ory	L	Т	Р	Credit
UCA19C51		Data Communication and Network			Core 9		4	1	-	4
		L - Lecture	T - Tutoria	1		P –	Practic	als		
Year	Sen	nester		Int	ternal	Ex	ternal	,	Total	
3	V			25		75			100	

#### Preamble

Set in motion to understand the components of data communication, OSI model, various protocols in TCP / IP suite, the transmission media and transmission mode.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level
CO1	Discuss the basics of data communication components, network types, Internet history, the OSI model and TCP / IP protocol suite	K1,K2
CO2	Illustrate physical layer, its data and signals, transmission impairment, transmission media and the concepts of switching	K1,K2
CO3	Describe the data link layer, error detection correction mechanisms, the DLC services, the data link layer protocols and media access control(MAC)	K1,K2
<b>CO4</b>	Examine network layer services, network layer protocols, the routing Algorithms and transport layer protocols.	K1,K2
CO5	Survey standard client server protocols, electronic mail, TELNET, secure shell (SSH), cryptography, network security and firewalls.	K2,K3

	K1 - Knowledge		K2 - Understand		K3 - A	pply	
Mapping of COs with POs							
	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	S	S	S	Μ	L		
CO2	S	Μ	S	Μ	L		
CO3	S	S	S	Μ	L		
CO4	S	S	S	Μ	L		
CO5	S	S	S	Μ	L		
S-Strong	Ν	I- Medium	L-Low				

S-Strong

L-Low

#### **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

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

**Introduction:** Data Communications - Components – Data Representation – Data Flow-Networks – Network Types – Internet History. Network Models: Protocol Layering – TCP/IP Protocol Suite – The OSI Model

#### Unit-II:

**Physical Layer:** Data and Signals – Periodic Analog Signals – Digital Signals - Transmission Impairment – Data Rate Limits – Performance. Transmission Media: Introduction - Guided Media – Unguided Media:Wireless. Switching: Introduction – Circuit Switched Networks – Packet Switching

#### Unit-III:

**Data Link Layer:** Introduction – Link layer Addressing. Error Detection and Correction: Introduction – Block Coding – Cyclic Codes – Checksum. Data Link Control(DLC): DLC Services – Data Link Layer protocols – HDLC – Point to Point protocol(PPP). Media Access Control(MAC): Random Access.

#### Unit-IV:

**Network Layer**: Network Layer Services – Network Layer Performance – IPV4 Addresses. Network Layer Protocols: Internet Protocol(IP) – ICMPv4 – MobileIP. Unicast Routing: Introduction – Routing Algorithms- Unicasting Routing protocols. Transport Layer: Introduction – Transport Layer Protocols.

#### Unit-V:

**Application Layer:** Introduction. Standard Client Server protocols: World Wide Web and HTTP – FTP – Electronic Mail – TELNET – Secure Shell (SSH) – Domain Name System (DNS). Cryptography and Network Security: Introduction. Internet Security: Network Layer Security – Transport Layer Security – Application Layer Security – Firewalls.

Unit	Chapters/ Section
Ι	1(1.1-1.4), 2(2.1-2.3)
II	3(3.1-3.6), 7(7.1-7.3), 8(8.1-8.3)
III	9(9.1-9.2), 10(10.1-10.4), 11(11.1-11.4), 12(12.1)
IV	18(18.1,18.3,18.4), 19(19.1-19.3),20(20.1-20.3), 23(23.1,23.2)
V	25(25.1), 26(26.1-26.6), 31(31.1), 32(32.1-32.4)

#### **Text Books:**

Behrouz A. Forouzan, 2013, Data Communications and Networking , 5<sup>th</sup> edition, McGraw – Hill Education Private Limited, New Delhi

#### **References:**

- Achyut S Godbole, Atul Kahate, 2014(6<sup>th</sup> Reprint), Data Communications and Networks, McGraw – Hill Education Private Limited, New Delhi
- 2. Tannenbaum, 2011, Computer Networks, 5<sup>th</sup> edition, Pearson Education Inc., USA
- 3. Sarma C.R, 2006, Computer Networks, A Pragmatic Approach. Jaico Publishing house, NewDelhi

## 15 hours

#### 15 hours

17 hours

#### 12 hours

16 hours

#### Web Resources:

1.http://www.studytonight.com/computer-networks/complete-osi-model

2. https://www.cse.iitk.ac.in/users/dheeraj/cs425/lec01.html

3.https://www.tutorialride.com/computer-network/application-layer-protocols-in-computer-network.htm

#### **Course Designers:**

1. Dr. V. T. Meenatchi Mr. P. Muthumariappan

Lecture Schedule

	Торіс	Lecture hrs
1.	Introduction:	12
1.1	Data Communications - Components – Data Representation – Data Flow- Networks	3
1.2	Network Types – Internet History	2
1.3	Network Models: Protocol Layering – TCP/IP Protocol Suite	3
1.4	The OSI Model	4
2.	Physical Layer:	16
2.1	Data and Signals – Periodic Analog Signals – Digital Signals - Transmission Impairment	4
2.2	– Data Rate Limits – Performance. Transmission Media: Introduction	3
2.3	Guided Media – Unguided Media	4
2.4	Switching: Introduction – Circuit Switched Networks – Packet Switching	5
3.	Data Link Layer:	15
3.1	Introduction – Link layer Addressing	3
3.2	. Error Detection and Correction: Introduction – Block Coding	4
3.3	Cyclic Codes – Checksum. Data Link Control: DLC Services – Data Link Layer protocols	4
3.4	HDLC – Point to Point protocol(PPP). Media Access Control: Random Access	4
4.	Network Layer:	17
4.1	Network Layer Services – Network Layer Performance	4
4.2	IPV4 Addresses. Network Layer Protocols: Internet Protocol(IP) – ICMPv4 – MobileIP	3
4.3	Unicast Routing: Introduction – Routing Algorithms- Unicasting Routing protocols	5
4.4	Transport Layer: Introduction – Transport Layer Protocols	5
5.	Application Layer:	15
5.1	Introduction. Standard Client Server protocols: World Wide Web	3
5.2	HTTP – FTP – Electronic Mail – TELNET – Secure Shell (SSH) – Domain Name System (DNS)	4
5.3	Cryptography and Network Security: Introduction. Internet Security: Network Layer Security	4
5.4	Transport Layer Security – Application Layer Security – Firewalls	4

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

ARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOG (For those joined BCA on or after June 2019)

Course		Course Title			Catego	ory	L	Τ	Р	Credit
Code										
UCA19	C52	. Net Programming			Core 1	0	4	1	-	4
<u> </u>		L - Lecture	T - Tutoria	ıl		P –	Practio	cals		
Year	Ser	nester		Int	ternal	Ex	terna	L 7	Total	
3	V			25		75		-	100	

#### Preamble

Inculcates the knowledge in .Net framework through application creation and experiment with ADO.Net.

#### **Course Outcomes**

#### On the completion of the course the student will be able to

		Knowledge
		Level
#	Course Outcome	(according to
		Bloom's
		Taxonomy)
<b>CO1</b>	Discuss the introduction to .Net framework, creating a windows forms	K1,K2,K3
	application, arrays, the conditional and looping statement with procedures and	
	built in functions.	
CO2	Make Use of dialog boxes, error handling, classes and objects, overloading,	K2,K3
	overriding, constructors and destructors.	
<b>CO3</b>	Apply controls, delegates, system, windows and forms, control, properties and	K2,K3
	methods.	
<b>CO4</b>	Experiment with ADO .NET, data access in visual studio .NET: visual studio	K2,K3
	.Net database tools.	
<b>CO5</b>	Describe the introduction to ASP .NET, XHTML, browser sniffing, server	K2,K3
	controls versus web controls.	
	K1 - Knowledge K2 - Understand K3 - Apply	•

	KI - Knowledge		K2 - Understand		K3 - Apply	
Mapping o	f COs with	POs				
	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	Μ	Μ	
CO2	S	Μ	S	Μ	Μ	
CO3	S	S	Μ	Μ	Μ	
CO4	S	S	S	Μ	Μ	
CO5	S	S	S	Μ	Μ	
S-Strong	Ι	M- Medium	L-Low			

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

#### **Content** Unit –I:

**Introduction to .Net:**.Net Defined-The.Net Framework-VB .Net-Hello World: Creating a windows Forms application- Creating a Web Forms application. Data types, variables and operators: Data Types-and variables-Type Conversion-Structures-Numeric Parsing-System. String Class-Operators. Arrays: Introducing Arrays-Multi dimensional Arrays-Dynamic Arrays-The Array Class Members. Conditional Logic: The if then else Statement-The select case Statement-do..loop Statement-While..end while Statement-For ...next Statement-For each...next Statement-A Complete example. Procedures: Procedures Overview-types of procedures-built in functions.

#### Unit –II:

**Dialog Boxes:** Introduction to dialog boxes-The Message box class-common dialog class. Error Handling: Errors in Programming-Structured Exception Handling-On Error Statement-Classes and Objects: Introduction to classes-Creating class-Class Block-Inside-classes-Overloadingoverriding-Constructors-Destructors.

#### Unit-III:

**Controls:** Delegates-System. windows. forms. control-Properties-Methods. Specific controls: Base Controls-Derived controls-Display controls-Miscellaneous controls.

#### Unit-IV:

**ADO .NET:** Accessing ADO.NET Features and namespaces-Using ADO.NET-Data Access in Visual Studio .NET: Visual studio .Net Database tools-Visual Studio .NET and ADO .NET.

#### Unit-V:

**Introduction to ASP .NET-** Why Asp .NET? .Html Server controls: XHTML –Compliant Code-Common Tag Attributes-Over view of Html Server Controls-Descriptions of the HTML server Controls and How to Program Them. Web controls: Browser Sniffing-Html Server Controls versus Web Controls-Web Controls and How to Program for them.

UNIT	Chapter /Sections
Ι	1,4,5,6,7,8
II	9,12,14
III	26,27(Pg. 583-640,648-652)
IV	22,23
V	32,34,35

#### **Text Books:**

Bill Evjen, Jason Beres, 2014, VB . NET Programming Bible, Wiley publication.

#### **References:**

1.Matthew MacDonald, 2013(Reprint), The Complete Reference ASP.NET,McGraw Hill Education Private Limited,New Delhi.

2.Mary Delamater and Anne Boehm, 2013, Murach's ASP.NET 4.5 Web Programming with C#.

3.Jason Beres, 2003, Sams Teach Yourself Visual Studio .NET 2003 in 21 Days.

#### 13hours

#### 15hours

16hours

## 16hours

15hours

#### Web Resources:

1.https://www.c-sharpcorner.com/article/dialog-boxes-in-c-sharp/

 $2.https://www.tutorialspoint.com/asp.net/asp.net\_ado\_net.htm$ 

 $3.https://www.codeguru.com/csharp/.net/net_debugging/best-exception-handling-techniques-in-.net.html$ 

#### **Course Designers:**

1. Dr. S.Abirami Mr. P.Muthumariappan

Lec		· '
	Торіс	Lecture hrs
1	Introduction to .Net:	13
1.1	.Net DefinedNet Framework.VB .Net-Hello World: Creating a windows	3
	Forms application- Creating a Web Form application	
1.2	Data types, variables and operators: Data Types-and variables-Type	3
	Conversion-Structures-Numeric Parsing-System. String Class-Operators	
1.3	Arrays: Introducing Arrays-Multi dimensional Array-Dynamic Arrays-	3
	The Array Class Members. Conditional Logic: The if then else Statement-	
	The select case Statement	
1.4	doloop Statement-WhileEnd while Statement-For next Statement-For	4
	eachnext Statement-A Complete example. Procedures: Procedures	
	Overview-types of procedures-built in functions	
2	Dialog Boxes:	15
2.1	Introduction to dialog boxes-The Message box class-common dialog class	4
2.2	Error Handling: Error in Programming-Structured Exception Handling-	4
	On Error Statement	
2.3	Classes and Objects: Introduction to class-Creating class-Class Block-	4
	Inside-classes	
2.4	Overloading-overriding-Constructors-Destructors	3
3	Controls:	16
3.1	Delegates-System. windows. forms.	5
3.2	control-Properties-Methods. Specific controls: Base Controls	5
3.3	Derived controls-Display controls-Miscellaneous controls	6
4	ADO .NET:	15
4.1	Accessing ADO.NET Features and namespaces	5
4.2	Using ADO.NET-Data Access in Visual Studio .NET: Visual studio	5
4.3	.Net Database tools-Visual Studio .NET and ADO .NET	5
5	Introduction to ASP .NET-	16
5.1	Why Asp .NET? .Html Server controls: XHTML –Compliant Code	5
5.2	Common Tag Attributes-Over view of Html Server Controls-Descriptions	5
	of the HTML server Controls and How to Program Them	
5.3	Web controls: Browsing Sniffing-Html Server Controls versus Web	6
	Controls-Web Controls and How to Program for them.	
	Total(13+15+15+16+16)	75

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course Code		Course Title		Category	L	Τ	Р	Credit
UCA19C	53	Operating System		Core 11	4	1	-	4
		L - Lecture	T - Tutorial	P –	Practic	cals		
<b>T</b> 7	~		<b>-</b> .					

Year	Semester	Internal	External	Total
3	V	25	75	100

#### Preamble

Provoking the knowledge on the basics of operating system with process, memory management and distributed processing.

**Course Outcomes** 

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge
		Level
<b>CO1</b>	Illustrate the basics of computer system, architecture and operating system	K1,K2
	operations	
<b>CO2</b>	Explain the concept of process scheduling, scheduling criteria scheduling	K2,K3
	algorithms, deadlocks and its recovery	
<b>CO3</b>	Discuss the background of memory with segmentation and paging	K1,K2
<b>CO4</b>	Describe file management with file organization, access, b-trees, file system	K2,K3
	security and disk scheduling	
<b>CO5</b>	Compare distributed processing with client-server, clusters, computer	K1,K2
	security threats and computer security techniques	

K1 - Knowledge K2 - Understand K3 - Apply

#### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	Μ	L
CO2	S	Μ	S	Μ	L
CO3	S	Μ	Μ	Μ	L
CO4	S	Μ	Μ	Μ	L
CO5	S	Μ		Μ	L
S Strong	N	I Modium	IIow		

S-Strong

M- Medium

L-Low

#### **Blooms taxonomy**

		٩.	E J - C		
		A	End of		
	First	Second	Semester		
Knowledge	40%	40%	40%		
Understand	40%	40%	40%		
Apply	20%	20%	20%		
Total marks	52	52	140		

#### Content

#### Unit-I

Introduction: Computer-System Organization-Computer-System Architecture-Operating-System Structure- Operating-System Operations. Process Management- Kernel Data Structures -Computing Environments. System Structures: Operating-System Services-User and Operating-System Interface–System Calls– Types of System Calls–System Programs–Operating –System Design and Implementation- Operating-System Structure- Operating-System Debugging - Operating-System Generation-System Boot.

#### Unit – II:

Process Management: Process Concept- Process Scheduling - Operations on Processes-Inter Process Communication. Process Scheduling: Basic Concepts - Scheduling Criteria - Scheduling Algorithms. Deadlocks: System model - Deadlock Characterization - Methods for handling Deadlocks - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection- Recovery from Deadlock. 16hours

#### Unit – III

Memory Management: Background - Swapping - Contiguous Memory Allocation-Segmentation – Paging – Structure of the Page Table. Virtual Memory Management: Background – Demand Paging – Page Replacement.

#### Unit – IV

File Management: Overview- File Organization and Access- B-Trees- File Directories- File sharing-Record Blocking - Secondary storage Management-File System Security. Disk Scheduling: Disk Performance Parameters-Disk Scheduling Polices. Unit – V

#### 15hours

**16hours** 

Distributed Processing, Client-Server and Clusters: Client-Server Computing-Service Oriented Architecture-Distributed Message Passing-Remote Procedure Calls. Computer Security Threats: Computer Security Concepts- Threats, Attacks, and Assets-Intruders-Malicious Software Overview-Viruses, Worms, and Bots-Root kits. Computer Security Techniques: Authentication-Access Control-Intrusion Detection-Malware Defence

Unit	Chapters/ Section
Ι	Book 1: 1(1.2-1.5,1.10,1.11),2
II	Book 1: 3(3.1-3.4),5(5.1-5.3), 7
III	Book 1: 8(8.1-8.6), 9(9.1,9.2,9.4)
IV	Book 2: 10(Pg. no. 455-462) ,11(Pg.no.491-523)
V	Book2: 13(Pg. no. 577-604),14(Pg. no. 609-632) ,15(Pg. no. 649-
	670)

#### **Text Books:**

- 1. Abraham Silberschatz, Peter B Galvin, Gerg Gagne, 2016, Operating System Concepts, 9<sup>th</sup> edition, Wiley India Pvt . Ltd., New Delhi.
- 2. William Stallings, 2016, Operating Systems Internals and Design principles, 7<sup>th</sup> edition, Pearson Education Inc, Noida.

#### 3. **References:**

- 1. Stuart E.Madnick.John J.Donovan, 2016(Reprint), Operating Systems, Tata McGraw Hill Education, New Delhi.
- 2. <u>Andrew S. Tanenbaum</u>, 2015, Modern Operating Systems, 4<sup>th</sup>edition, Pearson Education.
- 3. Charles Crowlay, 2008, Operating System, A Design-Oriented Approach, Tata McGraw Hill Education, New Delhi

#### Web Resources:

#### 15hours

# 13hours

1.https://www.tutorialspoint.com/operating\_system/os\_process\_scheduling.htm 2.http://www.technologyuk.net/computing/operating-systems/process-management.shtml 3.https://web.cs.wpi.edu/~cs3013/c07/lectures/Section08-Memory\_Management.pdf 4.https://www.tutorialspoint.com/operating\_system/os\_file\_system.htm

#### **Course Designers:**

- 1. Mrs. R.Umamaheswari
- 2. Dr. V.T. Meenatchi

#### Lecture Schedule

	Торіс	No.of
		Lecture
		hrs
1.	Introduction:	15
1.1	Computer-System Organization–Computer-System Architecture–	4
	Operating-System Structure- Operating-System Operations. Process	
	Management-	
1.2	Kernel Data Structures –Computing Environments. System Structures:	4
	Operating–System Services	
1.3	User and Operating-System Interface-System Calls- Types of System	4
	Calls-System Programs-Operating -System Design and	
	Implementation	
1.4	Operating-System Structure- Operating-System Debugging - Operating-	3
	System Generation–System Boot.	
2.	Process Management:	13
2.1	Process Concept Process Scheduling Operation on Processes Inter	2
2.1	Process Communication	Ζ.
2.2	Process Communication Process Scheduling: Pasic Concepts Scheduling Criteria Scheduling	1
2.2	Algorithms	4
23	Augurumis Deadlocks: System model Deadlock Characterization Matheds for	1
2.5	handling Deadlocks	4
24	Deadlock Prevention – Deadlock Avoidance – Deadlock Detection–	3
2.1	Recovery from Deadlock.	5
3.	Memory Management:	16
3.1	Background – Swapping	4
3.2	Contiguous Memory Allocation– Segmentation	4
33	Paging – Structure of the Page Table	Δ
3.5	Virtual Memory Management: Background – Demand Paging – Page	
Э.т	Replacement	-
Δ	File Management:	16
т.	The Management.	10
4.1	Overview- File Organization and Access- B-Tress- File Directories-	5
	File sharing	
4.2	Record Blocking – Secondary storage Management– File System	5
	Security	
4.3	Disk Scheduling: Disk Performance Parameters–Disk Scheduling	6
	Polices	
5.	Distributed Processing, Client-Server and Clusters:	15
	······································	-

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5.1	Client-Server Computing-Service Oriented Architecture-Distributed	4	
	Message Passing		
5.2	Remote Procedure Calls. Computer Security Threats: Computer	4	
	Security Concepts– Threats, Attacks, and Assets–Intruders		
5.3 Malicious Software Overview–Viruses, Worms, and Bots–Root kits			
5.4	Computer Security Techniques: Authentication-Access Control-	3	
	Intrusion Detection–Malware Defense		
	Total(15+13+16+16+15)	75	

#### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course Code		Course Title		Category		L	Т	Р	Credit	
UCA19CL51		. Net Programming Lab		Core La	.b 9	-	-	5	2	
kan		L - Lecture	T - Tutoria	orial P – Practicals		•				
Year	ar Semester			In	Internal Ex		ternal	Т	otal	
3	V			40	)	60		1	00	

#### Preamble

This .Net programming lab provides practical knowledge in console and window based applications. **Course Outcomes** 

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
<b>CO1</b>	Write programs with console based applications like calculating power	K1,K2,K3
	values, list of factorial values, sum of square of two digit numbers in an array	
CO2	Develop programs using class, procedures, user defined functions and exception handling	K1,K2,K3
<b>CO3</b>	Implement programs using controls, design a GUI based game	K1,K2,K3
<b>CO4</b>	Generate programs for database manipulation (Insertion, selection) and	K1,K2,K3
	dynamic webpage creation using ADO .Net.	
	K1 - Knowledge K2 - Understand K3 – Apply	

#### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	Μ	Μ	S	S	
CO2	S	Μ	Μ	S	S	
CO3	S	Μ	Μ	S	S	
CO4	S	S	Μ	L	L	
S-Strong		M- Medium	L-Low			
**Console Applications:** 

- 1. Write a VB .Net program for calculating power values.
- 2. Write a VB .Net program for the list of factorial values.
- 3. Write a VB .Net program for an equation.
- 4. Write a VB .Net program for any one sorting algorithm
- 5. Write a VB .Net program for the sum of square of two digit numbers in an array.
- 6. Write a VB .Net program for procedures.
- 7. Write a VB .Net program for user defined functions.
- 8. Write a VB .Net program for Exception Handling.
- 9. Write a VB .Net program for student information management system using class.

### Window Based Applications:

- 1. Write a VB .Net program for dialog boxes.
- 2. Write a VB .Net program for the demo of ComboBox, RadioButton.
- 3. Write a VB .Net program for Miscellaneous control.
- 4. Write a VB .Net program for simple GUI based game.
- 5. Write a VB .Net program for database manipulation (Insertion, selection) using ADO .Net.
- 6. Write a VB .Net program for college bus maintenance system using ADO .Net.
- 7. Write a VB .Net program for login page creation using Asp.Net.
- 8. Write a VB .Net program for a dynamic webpage creation using Asp.Net, VB.NET

#### Web Resources:

1.http://www.becbapatla.ac.in/mca/Manuals/DOTNET%20LAB.pdf

2.https://mrgurpreetsingh.weebly.com/uploads/2/3/3/2/23321028/lab\_manual.pdf

- 1. Dr. S.Abirami
- 2. Mr. P.Muthumariappan

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC)

DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on o	or after June 2019)
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Course		Course Title	-		Catego	ory	L	Τ	Р	Credit
Code										
UCA19	C61	Data Mining			Core 1	2	4	2	-	4
_		L - Lecture	T - Tutoria	.1		P –	Practic	cals		
Year	Sen	nester		Int	ernal	Ex	ternal	l /	Total	
3	VI			25		75			100	

### Preamble

Ability to gain knowledge in various data mining tasks, techniques and data retrieval from large databases .

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Discuss the basic data mining tasks like classification, regression, prediction,	K1,K2,K3				
	clustering and association rules with OLTP and OLAP systems					
CO2	Analyze the statistical perspective on data mining, similarity measures, decision trees, neural networks and rule based algorithms					
<b>CO3</b>	3 Illustrate clustering, similarity and distance measures, outliers, hierarchical algorithms, association rules with apriori algorithms and sampling algorithms					
<b>CO4</b>	Describe web wining with web content mining, web structure mining, web usage mining and spatial mining	K2,K3				
CO5	Explain temporal mining, trend analysis, all-spade-generalization and temporal association rules with trend dependencies	K2,K3				
	K1 - Knowledge K2 - Understand K3 – Apply					

### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	Μ	L	
CO2	S	Μ	S	Μ	L	
CO3	S	Μ	L	Μ	L	
CO4	S	Μ	Μ	Μ	L	
CO5	S	Μ	Μ	Μ	L	
C Ctuona	N		T T arres			

### S-Strong

M- Medium

L-Low

### **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

Unit I:

**Introduction** : Basic Data Mining Tasks: Classification – Regression – Time Series Analysis - Prediction - Clustering - Summarization - Association Rules - Sequence Discovery - Data Mining Vs Knowledge Discovery in Databases - Data Mining Issues - Data Mining Metrics. Related Concepts: Database / OLTP Systems - Fuzzy Sets and Fuzzy Logic - Information Retrieval -Decision Support Systems - Dimensional Modelling- Data Warehousing - OLAP

### Unit II:

Data Mining Techniques :Introduction – A Statistical perspective on Data Mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms. Classification: Introduction - Statistical Based Algorithms - Distance Based Algorithms - Decision Tree Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms **Unit III:** 18 hours

Clustering: Introduction - Similarity and Distance Measures - Outliers - Hierarchical Algorithms - Partitional Algorithms. Association Rules: Introduction - Large Item sets- Basic Algorithms: Apriori Algorithms – Sampling Algorithms – Partitioning Unit IV:

### 18 hours

Web Mining : Introduction – Web Content Mining : Crawlers – Harvest System – Virtual Web View – Personalization – Web Structure Mining: Page Rank – Clever – Web Usage Mining: Pre-processing – Data Structures – Pattern Discovery – Pattern Analysis. Spatial Mining: Introduction - Spatial Data Overview: Spatial Queries - Spatial Data Structures - Thematic Maps -Image Databases- Spatial Data Mining Primitives- Spatial Classification Algorithms: ID3 Extension Unit V: 18hours

**Temporal Mining**: Introduction – Modelling Temporal Events – Time Series: Time Series Analysis - Trend Analysis - Transformation - Similarity - Prediction-Pattern Detection: String Matching-Sequences: Apriori All-SPADE-Generalization-Feature Extraction-Temporal Association Rules: Inter-transaction Rules-Episode Rules-Trend Dependencies

Unit	Chapters/ Section
Ι	1(1.1-1.4),2(2.1-2.7)
II	3(3.1-3.6),4(4.1-4.6)
III	5(5.1-5.5),6(6.1-6.3)
IV	7(7.1-7.4),8(8.1-8.3, 8.6: 8.6.1)
V	9(9.1-9.5, 9.6: 9.6.1-9.6.3)

### **Text Books:**

Margaret H. Dunham, 2013, Data Mining Introductory and Advanced Topics, Pearson Education Private Limited.

### **References:**

1.Alex Berson, Stephen J.Smith, 2016(Reprint), DataWarehousing, DataMining, & OLAP, Tata McGraw Hill Education, New Delhi.

2. Jiawei Han, Micheline Kamber, Jian Pei, 2015, Data Mining Concepts and Techniques, 3rd edition, Morgan Kaufmann Publishers.

3. Arun K Pujari, 2015(Reprint), Data Mining Techniques, University Press(India), Private Limited.

### 18 hours

18 hours

1.https://www.tutorialspoint.com/data\_mining/dm\_tasks.htm

2.http://www.iasri.res.in/ebook/expertsystem/datamining.pdf

3.https://www.scaleunlimited.com/about/web-mining/

### **Course Designers:**

1. Dr. V. T. Meenatchi

2. Mr. P. Muthumariappan

### Lecture Schedule

	Торіс	No. of
1.	Introduction :	13
1.1	Basic Data Mining Tasks: Classification – Regression – Time Series	3
	Analysis – Prediction – Clustering – Summarization – Association	
	Rules	
1.2	Sequence Discovery – Data Mining Vs Knowledge Discovery in	3
1.0	Databases – Data Mining Issues	
1.3	Data Mining Metrics. Related Concepts: Database / OLTP Systems –	4
	Fuzzy Sets and Fuzzy Logic – Information Retrieval	
1.4	Decision Support Systems –Dimensional Modeling- Data	3
2	Warehousing – OLAP	10
2.	Data Mining Techniques :	16
2.1	Introduction – A Statistical perspective on Data Mining – Similarity	4
2.2	CoNatio Algorithms Classification: Introduction Statistical Pagad	5
2.2	Algorithms	5
23	Distance Based Algorithms – Decision Tree Based Algorithms	3
2.3 2.4	Neural Network Based Algorithms – Rule Based Algorithms	4
3	Clustering	15
3.1	Introduction – Similarity and Distance Measures – Outliers –	5
0.12	Hierarchical Algorithms	C C
3.2	Partitional Algorithms. Association Rules: Introduction – Large Item	5
	sets	
3.3	Basic Algorithms: Apriori Algorithms - Sampling Algorithms -	5
	Partitioning	
4.	Web Mining :	16
<u> </u>	Introduction – Web Content Mining : Crawlers – Harvest System –	4
7.1	Virtual Web View – Personalization	
4.2	Web Structure Mining: Page Rank – Clever – Web Usage Mining:	4
	Preprocessing – Data Structures – Pattern Discovery – Pattern	
1.2	Analysis Spatial Minings Introduction - Spatial Data Overview Spatial Overview	1
4.3	Spatial Data Structures Thematic Many Image Databases	4
	Spatial Data Mining Primitives - Spatial Classification Algorithms: ID2	Δ
+.4	Extension	+
5	Temporal Mining ·	15
5.	Tomportur mining .	1.5

5.1	Introduction – Modeling Temporal Events – Time Series: Time Series	5
	Analysis	
5.2	Trend Analysis – Transformation – Similarity – Prediction-Pattern	
	Detection: String Matching-Sequences: AprioriAll-SPADE	5
5.3	Generalization-Feature Extraction-Temporal Association Rules: Inter-	5
	transaction Rules-Episode Rules-Trend Dependencies	
	Total(13+16+15+16+15)	75

### **THIAGARAJAR COLLEGE, MADURAI-9**

An autonomous institution affiliated by Madurai kamaraj university

(Re-Accredited with 'A' Grade by NAAC)

### **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course		<b>Course Title</b>			Catego	ory	L	Т	Р	Cr	edit
Code					_	-					
<b>UCA190</b>	C <b>62</b>	Mobile Application	Development		Core 13	3	4	2	-	4	
		L - Lecture	T - Tutoria	ı1		P –	Practic	cals			_
Year	Sen	nester		Inte	ernal	Ex	ternal	l	Total		
3	VI			25		75			100		]

### Preamble

Acquire the concepts of android with the programming practise in android and able to develop simple android applications.

#### **Course Outcomes**

On the	completion of the course the student will be able to					
#	Course Outcome	Knowledge				
		Level				
<b>CO1</b>	Discuss the introduction of Android, the manifest file, downloading with	K1,K2,K3				
	Installation of Android and executing the First Android Application.					
CO <sub>2</sub>	Illustrate the use of activities, fragments and intents in Android, working with	K1,K2,K3				
	user interface using views and view groups, and binding data with the adapter					
	view class.					
CO3	Make use of user interface using views and view groups, designing the	K1 K2 K3				
COJ	AutoText Complete View handling nictures and menus with views	111,112,113				
	embedding web browser in an activity					
COA	Explain data storage options using the internal and external storage the	K1 K2 K3				
CU4	SOL ite database, graphics and animations	<b>K1,K2,K3</b>				
005	SQLite database, graphics and animations					
CO5	Analyze the working of graphics and animations, the concept of Hardware	K1,K2,K3				
	Acceleration and audio, video and camera					
	K1 - Knowledge K2 - Understand K3 - Apply					

KI - Knowledge

Mapping of COs with POs							
	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	S	Μ	S	Μ	S		
CO2	S	Μ	S	Μ	S		
CO3	S	Μ	S	S	S		
CO4	S	Μ	S	Μ	S		
CO5	S	Μ	S	L	L		
S-Strong		M- Medium	L-Low				

# **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

### Unit-I

Getting an Overview of Android: Introducing Android - Discussing about Android Applications - The Manifest File - Downloading and Installing Android - Exploring the Development Environment – Developing and Executing the First Android Application. 18hours

### Unit-II

Using Activities, Fragments and Intents in Android: Working with Activities - Using Intents - Fragments - Using the Intent Object to Invoke Built-in Application. Working with User Interface Using Views and View Groups : Working with View Groups - Working with Views -Binding Data with the Adapter View Class.

### Unit-III

Working with User Interface Using Views and View Groups: Designing the AutoText Complete View - Implementing Screen Orientation - Designing the Views Programmatically -Handling UI Events - Specialized Fragments - Creating Menus. Handling Pictures and Menus with Views : Working with Image Views - Designing Context Menu for Image View - Using the Analog Clock and Digital Clock Views – Embedding Web Browser in an Activity – Notifying the User. 18hours

### **Unit-IV**

**Storing the Data Persistently :** Introducing the Data Storage Options – Using the Internal Storage - Using the External Storage - Using the SQLite Database - Working with Content Providers -

Working with Graphics and Animations : Working with Graphics - Using the Draw able Object -Using the Shape Draw able Object.

### **Unit-V**

Working with Graphics and Animations: Working with the Nine Patch Draw able Graphics - Understanding the concept of Hardware Acceleration - Working with Animations. Audio, Video and Camera : Role of Media Play Back – Using Media Player – Recording and Playing Sound.

Unit	Chapter /Sections
Ι	2
II	3,4 (Pg. 135-172)
III	4(Pg. 178-198), 5
IV	6, 9(Pg. 330-340)
V	9 (Pg. 343-351),10(Pg. 362-375)

### **Text Books:**

Pradeep Kothari, 2016, Android Application Development Black book, dreamTech

### **References:**

1. Lauren Darcey, Shane Conder, 2013, Sams Teach Yourself, Android Application Development, 2<sup>nd</sup> edition, Pearson India Education Services Private Limited. 2. Zigurd Mednieks, Laird Dornin, G. Blake Meike, Masumi Nakamura, 2012, Programming Android, 2nd edition, O'Reilly Media 3. Darwin Ian F, 2012, Android Cookbook, O'Reilly Media

### 18hours

### 18hours

### 18hours

### Web Resources:

1.https://en.wikipedia.org/wiki/Android\_(operating\_system)

2.https://developer.android.com/guide/components/fragments

3.https://www.tutorialride.com/android/android-graphics.htm

### **Course Designers:**

- 1. Dr. S.Abirami
- 2. Mrs R.Umamaheswari

### Lecture Schedule

	Торіс	No.of						
1	Catting on Overview of Andreid	hours						
<b>I</b> 1 1	Introducing Android Discussing about Android Applications	13						
1.1	The Manifest File Downloading and Installing Android	3						
1.2	Exploring the Development Environment	4						
1.3	Developing and Executing the First Android Application	3						
2	Using Activities Fragments and Intents in Android	16						
21	Working with Activities – Using Intents – Fragments	3						
2.1	Using the Intent Object to Invoke Built-in Application	<u> </u>						
2.3	Working with User Interface Using Views and ViewGroups	4						
2.4	Binding Data with the AdapterView Class.	5						
3	Working with User Interface Using Views and	16						
•	ViewGroups							
3.1	Designing the AutoText CompleteView – Implementing	4						
	Screen Orientation – Designing the Views Programmatically							
3.2	Handling UI Events – Specialized Fragments – Creating	4						
	Menus. Handling Pictures and Menus with Views : Working							
	with Image Views							
3.3	Designing Context Menu for Image View – Using the Analog	4						
	Clock and DigitalClock Views							
3.4	Embedding Web Browser in an Activity – Notifying the User.	4						
4	Storing the Data Persistently	15						
4.1	Introducing the Data Storage Options – Using the Internal	3						
	Storage. –							
4.2	Using the External Storage – Using the SQLite Database -	4						
4.2	Working with Content Providers	4						
4.3	Working with Graphics and Animations : Working with	4						
1 1	Using the Dreweble Object Using the Shape Dreweble	1						
4.4	Object	+						
5	Working with Graphics and Animation	15						
5 1	Working with the Nine Petch Dreweble Graphics	10						
5.1	Understanding the concept of Hardware Acceleration	4						
5.4	Working with Animations	4						
53	Audio Video and Camera – Role of Media Play Back –	Δ						
5.5	Using Madia Player Becording and Playing Sound	2						
5.4	Using media riayer – Recording and riaying Sound.							
	Total(13+16+16+15+15)	75						

### **THIAGARAJAR COLLEGE, MADURAI-9**

#### An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course Code		Course Title			Catego	ory	L	T	]	P	Credit
UCA19C63		Python Programming			Core 14 4 1		-	•	4		
L - Lecture T -			T - Tutoria	ıl		P –	Practic	cals			
Year	Semester			Int	ternal External		l	Tota	al		
3	VI			25		75			100		

### Preamble

Facilitates to learn the programming concepts of python using various controls.

### **Course Outcomes**

### On the completion of the course the student will be able to

		Knowledge							
		Level							
#	Course Outcome								
		Taxonomy)							
<b>CO1</b>	Discuss about the way of the program using variables, expressions, statements	K1,K2,K3							
	and functions with conditionals and recursion.								
<b>CO2</b>	Explain iteration, strings, lists with traversal, operations, methods and	K1,K2							
	dictionaries	-							
CO3	Describe tuples, dictionaries, sequences of sequences and files, catching	K1,K2							
	exceptions ,databases, pickling, pipes and writing modules.								
<b>CO4</b>	Illustrate classes and objects, object-oriented features, printing objects	K1,K2							
	,operator overloading and interface								
<b>CO5</b>	Apply inheritance, card objects, class attribute, class diagrams, canvas and	K2,K3							
	widgets with binding.	-							
	K1 - Knowledge K2 - Understand K3 - Apply								

**Mapping of COs with POs** 

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	S	Μ	
CO2	S	Μ	Μ	S	Μ	
CO3	S	Μ	Μ	S	Μ	
CO4	S	Μ	Μ	Μ	L	
CO5	S	Μ	Μ	Μ	L	
S-Strong	N	1- Medium	L-Low			

S-Strong

L-Low

### **Blooms taxonomy**

		CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

### Unit-II:

Content Unit-I:

Fruitful functions - Iteration-Strings-Lists: A list is a sequence -Lists are mutable-Traversing a list - List operations -List Methods-List arguments-Dictionaries: Dictionary as a set of counters - Looping and dictionaries-Global Variable. 15hours

interface design: Turtle World -Simple repetition- Exercises- Encapsulation - Generalization-

Interface design- Refactoring - A development plan - docstring -Conditionals and recursion.

The way of the program- Variables, expressions and statements-Functions-Case study:

### **Unit-III:**

Tuples: Tuples are immutable - Tuple assignment - Tuples as return values- Variable-length argument tuples - Lists and tuples - Dictionaries and tuples - Comparing tuples - Sequences of sequences. Files: Persistence- Reading and writing -Format operator- Filenames and paths-Catching exceptions - Databases-Pickling -Pipes-Writing modules.

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

Classes and objects: User-defined types- Attributes- Rectangles -Instances as return values-Objects are mutable- Copying. Classes and functions: Time -Pure functions – Modifiers- Prototyping versus planning .Classes and methods: Object-oriented features - Printing objects -Another example -Operator Overloading-Interface and Implementation.

### Unit-V:

Inheritance: Card Objects-Class Attribute-Inheritance-Class Diagrams-case Study: GUI-Buttons and Call back-canvas and Widgets-Coordinate Sequences-more Widgets-Binding.

UNIT	Chapter /Sections
Ι	1,2,3,4,5
II	6,7,8,10
III	12,14
IV	15,16,17
V	18,19

### **Text Books:**

Allen Downey, 2012, Think Python, Green Tea Press

### **References:**

1.Paul Gries, Jennifer Campbell, Jason Montojo, 2014, Practical Programming: An Introduction to Computer Science Using Python, Pragmatic Bookshelf.

2. Guttag john v, 2014, Introduction To Computation And Programming Using Python, PHI 3.Luke Sneeringer, 2016(Reprint), Professional Python, Beekam Print & Pack pyt.Ltd, NewDelhi

### 15hours

15hours

15hours

15hours

### Web Resources:

1.https://www.tutorialspoint.com/python/python\_tuples.htm

2.https://www.learnpython.org/en/Classes\_and\_Objects

3.http://openbookproject.net/thinkcs/python/english3e/fruitful\_functions.html

### **Course Designers:**

- 1. Dr. S. Abirami
- 2. Dr. V.T Meenatchi

### Lecture Schedule

	Торіс	Lecture
		hours
1	The way of the program	12
1.1	Variables, expressions and statements-Functions-Case study:	3
	interface design: Turtle World -Simple repetition- Exercises.	
1.2	Encapsulation – Generalization.	3
1.3	Interface design- Refactoring - A development plan –docstring.	3
1.4	Conditionals and recursion.	3
2	Fruitful functions	15
2.1	Iteration-Strings-Lists: A list is a sequence -Lists are mutable.	3
2.1	Traversing a list - List operations –List Methods-List arguments-	4
2.3	Dictionaries: Dictionary as a set of counters.	4
2.4	Looping and dictionaries-Global Variable.	4
3	Tuples	16
3.1	Tuples are immutable - Tuple assignment -Tuples as return values-	4
	Variable-length argument tuples.	
3.2	Lists and tuples- Dictionaries and tuples -Comparing tuples - Sequences of sequences.	4
3.3	Files: Persistence- Reading and writing -Format operator- Filenames	4
	and paths.	
3.4	Catching exceptions – Databases-Pickling –Pipes-Writing modules.	4
4	Classes and objects	16
4.1	User-defined types- Attributes- Rectangles -Instances as return values- Objects are mutable- Copying	4
4.2	Classes and functions: Time -Pure functions – Modifiers-	5
	Prototyping versus planning	
4.3	Classes and methods: Object-oriented features - Printing objects Another example.	4
4.4	Operator Overloading-Interface and Implementation.	3
5	Inheritance	16
5.1	Card Objects-Class Attribute-Inheritance-Class Diagrams.	3
5.2	GUI-Buttons and Call back-canvas and Widgets.	5
5.3	Coordinate Sequences.	4
5.4	More Widgets-Binding.	4
	Total(12+15+16+16+16)	75

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

			Joined Derroll of	arter Juli	2017	)			
Course Title				Category		y L		P	Credit
Course									
Code									
UCA19CL61		Mobile Application De	Core Lab 10 -		-	-	6	3	
		L - Lecture	T - Tutorial		P - Pr	actical	s		
Year	Seme	oster	In	ternal	Exter	rnəl	To	tal	

### (For those joined BCA on or after June 2019)

### Preamble

3

This programming lab course provides knowledge in creation of mobile application using controls and event handling.

**40** 

60

100

#### **Course Outcomes**

VI

#### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level
#	Course Outcome	Bloom's Taxonomy)
<b>CO1</b>	Write simple program like Hello world application, sum of two numbers and toggle button checking	K1,K2,K3
CO2	Develop programs using controls	K1,K2,K3
<b>CO3</b>	Implement programs using event handling	K1,K2,K3
<b>CO4</b>	Apply menu in application creation	K1,K2,K3

K1 - KnowledgeK2 - UnderstandK3 - ApplyMapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	Μ	Μ	
CO2	S	S	S	Μ	Μ	
CO3	S	S	S	S	Μ	
CO4	S	S	S	Μ	Μ	
S-Strong		M- Medium	L-Low			

- 1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the green color with white background.
- 2. Write the code to display the sum of two numbers.
- 3. Write the code to check which toggle button is ON/OFF.
- 4. Write the code to display the rate of the selected food item by using check box.
- 5. Write the code to create and show the Alert Dialog.
- 6. Write the code to display item on the spinner and perform event handling.
- 7. Write the code for simple implicit intent that displays a web page.
- 8. Simple option menu example that contains three menu items.
- 9. Write the code to display the context menu on press of the list view.
- 10. Simple option menu example that
- 11. Create sample application with login module.(Check username and password)
- 12. On successful login, go to next screen. And on failing login, alert user using Toast. Also pass username to next screen.
- 13. Create an application that will change color of the screen, based on selected options from the menu

#### Web Resources:

1.http://www.jbiet.edu.in/coursefiles/Mobile-Application-Development.pdf 2.http://jnec.org/Lab-manuals/CSE/CSE1/TE-Part-2/SDL%20II%20android.pdf

- 1. Dr. S.Abirami
- 2. Mrs R.Umamaheswari

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course		Course Title			Category		L	Τ	Р	Credit
Code										
UCA19CL62		Pytho	n Programming Lab		Core Lab 11 -		-	-	5	2
		5	6 6							
L - Lecture			L - Lecture	T - Tutoria	ial P – Practicals					
Year Semester			Internal	Ex	ternal	Т	otal			
3	3 VI			40	60		1	00		

### Preamble

Provides ability to know the basic control structures and commands with various data structures in python

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Generate python programs using control structures	K1,K2,K3				
CO2	Implement programs using exception handling and regular expressions	K1,K2,K3				
CO3	Apply file concepts in python programming	K1,K2,K3				
<b>CO4</b>	Create GUI based application with shapes and controls	K1,K2,K3				
-						

### K1 - Knowledge K2 - Understand K3 - Apply

### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	Μ	L
CO2	S	S	S	Μ	L
CO3	S	S	S	Μ	L
CO4	S	S	S	Μ	S
~ ~	_				

S-Strong

M- Medium

L-Low

### Simple Programs

- 1. Write a Python program which accepts the radius of a circle from the user and compute the area.
- 2. Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them.
- 3. Write a Python program to display the first and last colors from the following list color\_list = ["Red","Green","White","Black"]
- 4. Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.
- 5. Write a Python program to calculate number of days between two dates.
- 6. Write a Python program to get the volume of a sphere with radius 6.
- 7. Write a Python program to test whether a number is within 100 of 1000 or 2000
- 8. Write a Python program to calculate the sum of three given numbers, if the values are equal then return thrice of their sum

### **Control Structures**

- 1. Create a Python program to print alphabet pattern 'A'.
- 2. Program for printing list of multiplication tables.

### **Files, Exception and Expressions**

- 1. Program to demonstrate exception handling.
- 2. Program to demonstrate the use of regular expressions.

### Functions

- 1. Write a Python function that takes a list of words and returns the length of the longest one.
- 2. Write a Python program to remove the n<sup>th</sup> index character from a nonempty string
- 3. Write a Python program to change a given string to a new string where the first and last chars have been exchanged.
- 4. Write a Python program to remove the characters which have odd index values of a given string.
- 5. Write a Python program to count the occurrences of each word in a given sentence.
- 6. Write a Python script that takes input from the user and displays that input back in upper and lower cases

### Files

- 1. Write a Python program to read an entire text file.
- 2. Write a Python program to read first n lines of a file.
- 3. Write a Python program to append text to a file and display the text
- 4. Write a Python program to read last n lines of a file.
- 5. Write a Python program to read a file line by line and store it into a list.
- 6. Write a Python program to read a file line by line store it into a variable
- 7. Write a Python program to read a file line by line store it into an array.
- 8. Write a python program to find the longest words.
- 9. Write a Python program to count the number of lines in a text file.

### **GUI Application**

- 1. Program to show draw shapes & GUI controls.
- 2. Program to change font color & size using radio, Check box
- 3. Program to receive personal data of a person.

### Web Resources:

### 1.https://lendi.org/CSE/labmanuals/PP.pdf

2.http://khitguntur.ac.in/csemat/PYTHON%20LAB%20MANUAL.pdf

- 1. Dr. S. Abirami
- 2. Dr. V.T Meenatchi

### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course Code		Course Title		Category	L	Т	Р	Credit
UCA19SE	(a/b/c/d/e/f/g/h)	Latex Lab		SEC I	-	-	2	2
	L - Lectu	re T - Tutori	al	P – Practi	cals			
Year	Semester		Internal	External	l 7	Fotal		
2/3	IV/ VI		15	35	4	50		

### Preamble

This course facilitates to have knowledge in Latex and prepare document using graphs and charts. **Course Outcomes** 

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
<b>CO1</b>	Generate program code with simple commands and mathematical equations	K1,K2,K3
<b>CO2</b>	Create document for Invitation and question paper with tables	K1,K2,K3
CO3	Make use of chart with paragraphs	K1,K2,K3
<b>CO4</b>	Prepare document with graph	K1,K2,K3
	K1 - Knowledge K2 - Understand K3 - Apply	

# Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	Μ	L
CO2	S	S	S	Μ	L
CO3	S	S	Μ	Μ	L
CO4	S	S	Μ	Μ	L
S-Strong	Ν	A- Medium	L-Low		

S-Strong

L-Low

- 1. Applying Simple Commands in Latex
- 2. Prepare a model Question paper
- 3. Create a document with mathematical equations
- 4. Prepare an Invitation for Welcome party
- 5. Create a document which includes Tables
- 6. Prepare a document which contain at least 2 paragraphs with chart
- 7. Prepare a document which contain 2 paragraphs with graph

### Web Resources:

1.http://www.rpi.edu/dept/arc/training/latex/class-slides-pc.pdf

2.http://people.brunel.ac.uk/~icsrsss/teaching/ma2730/latex/lab3.pdf

- 1. Dr. V. T. Meenatchi
- 2. Mrs. R. Umamaheswari

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course		<b>Course Title</b>			Category	L	Т	P	Credit
Code									
<b>UCA19</b> 8	SE(a/b/c/d/e/f/g/h)	R Tool Lab			SEC II	-	-	2	2
	L - Le	cture	T - Tutoria	al	P – Pract	cals			
Year	Semester			Internal	Externa	l '	Total		
2/3	IV/ VI			15	35		50		

### Preamble

This R tool lab course facilitates to apply simple commands in R and explore the data mining tasks with R.

**Course Outcomes** 

### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Apply simple commands using R	K1,K2,K3				
001						
<b>CO2</b>	Generate code using linear and logistic regression	K1,K2,K3				
<b>CO3</b>	Implement classification and clustering using R	K1,K2,K3				
<b>CO4</b>	Create code using association mining	K1,K2,K3				
	K1 - Knowledge K2 - Understand K3 - Apply					

### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	Μ	Μ	L
CO2	S	Μ	Μ	L	L
CO3	S	Μ	Μ	L	L
CO4	S		Μ	L	L
S-Strong		M- Medium	L-Low		

### I. Applying Simple Commands in R

### **II. Regression:**

- 1. How will you perform Logistic Regression
- 2. How will you perform Linear Regression

### **III. Classification:**

- 1. Build decision tree with C5.0 to classify the dataset
- 2. Use Naïve Bayes algorithm for classification

### **IV. Clustering:**

1. Apply K-Means clustering algorithm to cluster a dataset

### V. Association:

1. Use Apriori algorithm for association mining

### Web Resources:

- 1.http://gyan.fragnel.ac.in/lm/sem8/dwm.pdf
- 2.https://cran.r-project.org/doc/contrib/Paradis-rdebuts\_en.pdf
- 3.https://spia.uga.edu/faculty\_pages/rbakker/pols4150/RLabManual.pdf
- 4.https://www.westernsydney.edu.au/\_\_data/assets/pdf\_file/0011/830909/Rnotes\_20180905\_

web.pdf

5.http://www.iasri.res.in/ebook/TEFCPI\_sampling/OVERVIEW%200F%20R%20SOFTWA

RE%20AND%20PRACTICAL%20EXERCISE.pdf

- 1. Dr. V. T. Meenatchi
- 2. Dr. S. Abirami

### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY** (For those joined BCA on or after June 2019)

Course Code		Course Title		Category	L	Т	Р	Credit
UCA198	SE(a/b/c/d/e/f/g/h)	Programming with SCIL	AB	SEC III	2	-	-	2
	L - Le	cture T - Tutoria	al	P – Pract	icals			
Year	Semester		Internal	Externa	ıl	Total		
2/3	IV/ VI		15	35		50		

#### Preamble

This course facilitates the students to understand the basic concepts of SCILAB with the ability to plot 2D and 3D graphics output

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome						
CO1	Illustrate the main features and importance of the SCILAB mathematical programming environment.	K1,K2,K3					
CO2	Apply the working knowledge of SCILAB	K1,K2,K3					
<b>CO3</b>	Develop the Programming concept of SCILAB	K1,K2,K3					
<b>CO4</b>	<b>C4</b> Explain how to implement 3D plotting using SCILAB						
	K1 - Knowledge K2 - Understand K3 - Apply						

### **Mapping of COs with POs**

0.04			ττ			
<b>CO4</b>	S	Μ	Μ	L	L	
CO3	S	Μ	Μ	Μ	L	
CO2	S	S	Μ	Μ	L	
CO1	S	S	Μ	Μ	L	
	PSO1	PSO2	PSO3	PSO4	PSO5	

S-Strong

L-Low

#### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	30	30	65

### Unit- I:

**Introduction to SCILAB**-What is SCILAB?-Down Loading and Installation SCILAB-SCILAB Environment: Command Line- Working Directory- Comments-Variables in Memory-Recording Sessions-The Scilab MenuBar.Scalars and Vectors: Introduction- Initializing Vectors in Scilab. Mathematical Operations on Vectors: Arithmetic, relational, logical- Mathematical Functions.

### Unit- II:

### 15 hours

15hours

Programming in SCILAB: Introduction-Variables and Variable Names-Assignment Statements-Arithmetic, Relational and Logical Operators-Input & output-Function categories-Flow Control Statements-Break and Continue. The concepts of functions-User Defined functions- Graphics Output:2D Plotting- Function versions for Graphics Commands-3D plotting -other Graphic Primitives (Line, Rectangle, Arc, Strings).

UNIT	Chapter /Sections
Ι	1,2,3
II	5 (5.1 -5.7 and 5.10 – 5.11), 8 (8.1 – 8.5)

### **Text Books:**

- 1. H. Ramchandran, A.S. Nair, 2011, SCILAB, S.Chand Publishing.
- 2. http://www.amazon.in/Skylab-Free-Software-Matlab-Ramachandran/dp/8121939704

#### **References:**

1. M.Affouf, 2012, SCILAB by Example, CreateSpace Independent Publishing Platform 2.Vinu V. Das, 2008, Programming in Scilab 4.1, New Age International Publisher.

#### Web Resources:

1.https://www.scilab.org/resources/documentation/tutorials

2.https://www.cse.iitb.ac.in/~cs626-449/scilab.pdf

3.http://218.4.189.15:8090/download/08d67654-b71f-40b7-a9e3-c3dd7a968c66.pdf

4.https://x-engineer.org/graduate-engineering/programming-languages/scilab/basic-operators-in-scilab/

- 1. Dr. S. Abirami
- 2. Mrs. R.Umamaheswari

## Lecture Schedule

	Торіс	No.of Lecture hours	Mode of Teaching
1	Introduction to SCILAB	15	
1.1	SCILAB Environment, Command Line, Working Directory- Menu Bar	5	
1.2	Scalars and Vectors-Mathematical Operations: Arithmetic, relational, logical	5	
1.3	Mathematical Functions.	5	
2	SCILAB Programming and Graphics Output	15	
2.1	Variables-Input-output-Function categories- Control Statements: Conditional statements: If, Else, Else-if, Repetition statements: While, for loop	5	
2.2	2D Plotting- Functions for Graphics Commands	5	
2.3	3D plotting other Graphic Primitives :Line, Rectangle, Arc, Strings	5	
	Total(15+15)	30	

-

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course		<b>Course Title</b>			Ca	tegory	L	Т	Р	Credit
Code										
UCA19SE(a/b/c/d/e/f/g/h)		Fundamentals o	of Big Dat	a	SE	C IV	2	-	-	2
L - Le		cture '	T - Tutoria	ıl		P – Pra	cticals			
Year	Semester			Intern	al	Extern	nal	Tota	l	
2/3	IV/ VI			15		35		50		

### Preamble

This course provides the basics of big data, its evolution, data analytics and introduces HADOOP framework.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Classifies Digital data, characteristics and evolution of big data	K1,K2				
CO2	Discuss the challenges and the need of big data	K1,K2				
<b>CO3</b>	Explain big data analytics with its need for data science	K1,K2				
<b>CO4</b>	Describe the big data terminologies with the introduction to HADOOP framework	K1,K2				
	K1 - Knowledge K2 - Understand K3 - Apply					

**Mapping of COs with POs** 

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	Μ	Μ	L	
CO2	S	S	Μ	Μ	L	
CO3	S	S	Μ	Μ	L	
CO4	S	S	Μ	Μ	L	
S-Strong	]	M- Medium	L-Low			

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	30	30	65

### Unit I:

# **Types of Digital Data:** Classification of Digital Data. Introduction to Big Data: Characteristics of Data – Evolution of Big Data– Definition of Big Data – Challenges with Big Data– What is Big Data?-Why Big Data?

### Unit II:

### 15 hours

15 hours

**Big Data Analytics:**What is Big Data Analytics? – Classification of Analytics – Top Challenges Facing Big Data – Why is Big Data Analytics Important? – What Kind of Technologies are we Looking Toward to Help Meet the Challenges Posed by Big Data? - Data Science – Terminologies Used in Big Data Environments. Introduction to Hadoop:Introducing Hadoop - RDBMS versus Hadoop – HDFS(Hadoop Distributed File System).

Unit	Chapters/ Section
Ι	1(1.1),2(2.1-2.5,2.7)
II	3(3.2,3.5,3.7-3.10,3.12),5(5.1,5.4,5.10)

#### **Text Books:**

Seema Acharya, SubhashiniChellappan, 2015, Big Data and Analytics, 1<sup>st</sup> edition, Wiley India Private Limited, New Delhi.

#### **References:**

1.VigneshPrajapati, 2013, Big Data Analytics with R and Hadoop, 1<sup>st</sup> edition, Packet publishing Private Limited, United Kingdom.

2. TomWhite, 2016, Hadoop The Definitive Guide, 4<sup>th</sup> edition, O'Reilly.

### Web Resources:

1.https://www.techopedia.com/definition/24872/digital-data

2.https://www.sas.com/en\_us/insights/big-data/what-is-big-data.html

3.https://www.ethz.ch/content/dam/ethz/special-interest/gess/computational-social-science-

dam/documents/education/Spring2017/Data\_science/course4.pdf

- 1. Dr. V. T. Meenatchi
- 2. Mr. P. Muthumariappan

### Lecture Schedule

	Торіс	No.of
		Lecture hrs
1.1	Types of Digital Data: Classification of Digital Data. Introduction to	5
	Big Data: Characteristics of Data	
1.2	Evolution of Big Data– Definition of Big Data – Challenges with	5
	Big Data	
1.3	What is Big Data?-Why Big Data?	5
2.1	<b>Big Data Analytics:</b> What is Big Data Analytics? – Classification	5
	of Analytics – Top Challenges Facing Big Data – Why is Big Data	
	Analytics Important?	
2.1	What Kind of Technologies are we Looking Toward to Help Meet	5
	the Challenges Posed by Big Data? - Data Science – Terminologies	
	Used in Big Data Environments.	
2.3	Introduction to Hadoop: Introducing Hadoop - RDBMS versus	5
	Hadoop – HDFS(Hadoop Distributed File System)	
	Total(15+15)	30

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course		<b>Course Title</b>		Category	L	Т	P	Credit
Code								
UCA19SE(a/b/c/d/e/f/g/h)		Data Mining Lab	( WEKA	SEC V	-	-	2	2
		Tool)						
L - Lectur		e T - Tutoria	al	P – Practical	s			
Year	Semester		Internal	External	Τ	otal		
2/3	IV/ VI		15	35	5	)		

### Preamble

This course facilitates to have knowledge in WEKA tool by applying data mining techniques.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)			
<b>CO1</b>	Generate code to view data in ARFF viewer and create CSV file	K1,K2,K3			
CO2	Apply algorithms in explorer to perform preprocess, classification and clustering	K1,K2,K3			
<b>CO3</b>	Compare algorithms with Experimenter using cross validation and split maker	K1,K2,K3			
<b>CO4</b>	4 Implement data mining tasks using knowledge flow				
	K1 - Knowledge K2 - Understand K3 - Apply				

### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	Μ	Μ	Μ	L
CO2	S	Μ	Μ	Μ	L
CO3	S	Μ	Μ	Μ	L
CO4	S	Μ	Μ	Μ	L
S-Strong	I	M- Medium	L-Low		

### I. CSV file & ARFF Viewer:

- 1. Given an Excel file, how will you create a CSV file and view the file?
- 2. Given an Excel file, how will you create an ARFF file and view the file through ARFF Viewer?

### **II. Explorer:**

- 1. Use Explorer to perform Pre-process, for Replacing Missing Values
- 2. Use Explorer to perform Classification using J48 Algorithm
- 3. Use Explorer to perform Classification using Zero R Algorithm
- 4. Use Explorer to perform Classification using Ripper rule Algorithm
- 5. Use Explorer to perform Clustering using K-Means Algorithm
- 6. Use Explorer to perform Hierarchical Clustering
- 7. Use Explorer to perform Clustering using EM Algorithm
- 8. Use Explorer to perform Association using Apriori Algorithm
- 9. Use Explorer to perform Attribute Selection using Information Gain measure

### **III. Experimenter:**

- 1. Compare J48, Ripper and Zero R using Experimenter environment for any 1 dataset
- 2. Compare J48, Ripper and Zero R using Experimenter environment for any of the n datasets
- 3. Use Experimenter to analyse the given dataset for J48 Algorithm using Cross Validation
- 4. Use Experimenter to analyse the given dataset for J48 Algorithm using Train Test Split Maker

#### **IV. Knowledge Flow:**

- 1. Use Knowledge Flow to perform classification
- 2. Use Knowledge Flow to perform clustering
- 3. Use Knowledge Flow to perform Association

#### Web Resources:

1.https://sudhagarblog.files.wordpress.com/2016/11/it6711-data-mining-lab.pdf

2.https://nasirunnisabtech.files.wordpress.com/2013/10/dataminig\_lab\_manual\_softcopy\_.pdf

- 1. Dr. V. T. Meenatchi
- 2. Dr. S. Abirami

### THIAGARAJAR COLLEGE, MADURAI- 9

### An autonomous institution affiliated by Madurai kamaraj university

(Re-Accredited with 'A' Grade by NAAC)

**DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY** 

(For those joined BCA on or after June 2019)

		)			-			-
Course		Course Title		Category	L	Т	Р	Credit
Code								
UCA19SE(a/b/c/d/e/f/g/h)		Advanced Java Programming		SEC VI	2	-	-	2
L - Le		cture T - Tutoria	al	P – Pract	icals			
Year	Semester		Internal	Externa	ıl	Total		
2/3	IV/ VI		15	35		50		

### Preamble

This course facilitates programming in advanced java through JDBC, database connection with JNDI and networking concepts.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)				
<b>CO1</b>	Illustrate database access with JDBC and connecting to a database with driver	K1,K2,K3				
	manager.					
CO2	Examine the connection to a database using JNDI data source, statement interfaces, result sets and usage of metadata.	K2,K3				
<b>CO3</b>	Discuss the basics of networking, Java and TCP/IP Client Sockets.	K2,K3				
<b>CO4</b>	Make Use of URL-URL connection, TCP/IP server sockets and datagrams.					
	K1 - Knowledge K2 - Understand K3 - Apply					

Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	Μ	L	
CO2	S	S	S	Μ	L	
CO3	S	S	S	Μ	L	
CO4	S	S	S	Μ	L	
S-Strong	Ν	I- Medum	L-Low			

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	30	30	65

### Thiagarajar College, Madurai - 38<sup>th</sup> Academic Council, June 2019

### Content

### Unit –I:

**Database Access with JDBC:** Overview of JDBC-JDBC Drivers-Connecting to a Database with Driver Manager- Connecting to a Database using JNDI data source- Statement interfaces- Result sets- Using Metadata.

### Unit-II:

#### 15hours

15hours

**Networking :** Networking Basics-Java and the Net-InetAddress-TCP/IP Client Sockets, URL-URL Connection, TCP/IP Server Sockets- Datagrams.

UNIT	Chapter /Sections
Ι	Book 2: 15
II	Book 1: 18 (Pg. 587-599 & Pg. 623-624)

### **Text Books:**

- 1. Herbert schildt, 2014(Reprint), Java 2: The Complete Reference, 5<sup>th</sup> Edition, Tata McGraw Hill Education Private Limited.
- 2. Phillip Hanna, 2013(Reprint), The Complete Reference JSP 2.0, Tata McGraw Hill Education Private Limited.

### **References:**

1.Adan Dodson, 2016, Java:Java programming for Beginners Teaching You Basic to Advance Java Programming Skills,Createspace Independent Publishing Platform.

2.Balagurusamy, 2014, programming with Java, 5th edition, Tata McGraw Hill Education Private Limited

3.Yashavant Kanetkar, 2012, Let Us Java, 2<sup>nd</sup> edn, BPB publications

### Web Resources:

1.https://www.javatpoint.com/java-jdbc

2.https://www.tutorialspoint.com/java/java\_networking.htm

3.https://www.geeksforgeeks.org/datagrams-in-java/

- 1. Dr. S.Abirami
- 2. Mr. P.Muthumariappan

### Lecture Schedule

	Торіс	No. of lecture
		hours
1	Database Access with JDBC:	15
1.1	Overview of JDBC-JDBC Drivers-Connecting to a	8
	Database with Driver Manager	
1.2	Connecting to a Database using JNDI data source-	7
	Statement interfaces- Result sets- Using Metadata.	
2	Networking :	15
2.1	Networking Basics-Java and the Net	7
2.2	InetAddress-TCP/IP Client Sockets, URL-URL	8
	Connection, TCP/IP Server Sockets- Datagrams.	
	Total(15+15)	30

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

Course		Course Titl	e		Cate	gory	L	Т	Р	Credit
Code										
UCA19SE(a/b/c/d/e/f/g/h)		Problem Solving using C		SEC	-VII	Т	-	-	2	
							_			
	L - Le	cture	T - Tutoria	ıl		P – Pract	ticals			
Year	Semester			Inter	nal	Externa	ıl	Total		
2/3	IV/VI			15		35		50		

### Preamble

This course facilitates to get in depth knowledge in programming

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy )
CO1	Develop programs for simple logics	K1,K2,K3
CO2	Ability to write Menu driven programs	K1,K2,K3
CO3	Prepare for identifying the bugs in programs	K1,K2,K3
CO4	Ability to write programs for complicated logics	K1,K2,K3

### K1 - Knowledge K2 - Understand K3 - Apply

### Mapping of COs with POs

CO1 S S S M L   CO2 S S S M L   CO3 S S S M L   CO4 S S S M L	S-Strong	<u> </u>	I- Medium	L-Low			
CO1 S S S M L   CO2 S S S M L   CO3 S S S M L	CO4	S	S	S	Μ	L	
CO1 S S S M L   CO2 S S S M L	CO3	S	S	S	Μ	L	
CO1 S S S M L	CO2	S	S	S	Μ	L	
1501 1502 1505 1504 1505	CO1	S	S	S	Μ	L	
PSO1 $PSO2$ $PSO3$ $PSO4$ $PSO5$		PSO1	PSO2	PSO3	PSO4	PSO5	

### LIST OF Programs (30 hours)

- 1. Program for finding the perfect Numbers
- 2. Program for finding the Armstrong Number
- 3. Program for finding the Composite Number
- 4. Program for finding the HCF of two Number
- 5. Program for finding the LCM of two Number
- 6. Program for finding twin prime Numbers
- 7. Program for Decimal to Octal conversion
- 8. Programs for the concept of Array, Pointers
- 9. Programs for debugging.
- 10. Menu driven programs.

- 1. Dr. S.Abirami
- 2. Dr. V.T Meenatchi

### THIAGARAJAR COLLEGE, MADURAI- 9

### An autonomous institution affiliated by Madurai kamaraj university

### (Re-Accredited with 'A' Grade by NAAC)

DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course		Course Title		Cate	egory	L	Т	Р	Credit
Code									
UCA19	SE(a/b/c/d/e/f/g/h)	<b>Computer Hardware</b>	&	SEC	C -VIII	-	-	2	2
		Software Installation							
	L - Leo	cture T - Tutor	ıal		P – Pract	icals			
Year	Semester		Intern	al	Externa	ıl	Total		
2/3	IV/ VI		15		35		50		

### Preamble

This hardware lab course facilitates to identify and explore the components of computer hardware and software installation.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy )
CO1	Identify the building blocks of CPU	K1,K2,K3
CO2	Ability to install and configure the drivers	K1,K2,K3
CO3	Prepare for Formatting and Installation of Operating System	K1,K2,K3
<b>CO4</b>	Ability to Install & configure other software packages	K1,K2,K3

K1 - Knowledge K2 - Understand K3 - Apply

### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	Μ	L	
CO2	S	S	S	Μ	L	
CO3	S	S	S	Μ	L	
CO4	S	S	S	L	L	

S-Strong

M- Medium

L-Low

### LIST OF EXPERIMENTS (30 hours)

- 1. Study and identification of standard desktop personal computer
- 2. Understanding of Motherboard and its interfacing components
- 3. Install and configure computer drivers and system components.
- 4. Disk formatting, partitioning and Disk operating system commands
- 5. Install, upgrade and configure Windows operating systems.
- 6. Remote desktop connections and file sharing.
- Identify, install and manage network connections Configuring IP address and Domain name system.
- 8. Install, upgrade and configure Linux operating systems.
- 9. Installation Antivirus and configure the antivirus.
- 10. Installation of printer and scanner software.
- 11. Disassembly and Reassembly of hardware.

- 1. Mr. P. Muthumariappan
- 2. Dr. S.Abirami

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Course		Course Title		Category	L	Т	Р	Credit
Code								
UCA19NE31		Principles of Big Data		NME-I	2	-	-	2
		L - Lecture T - Tu	toria	1	P – Pra	acticals		
Year	Semester			Internal	Exter	nal	Tota	1
2/3	IV			15	35		50	

#### Preamble

This course provides the basics of big data, its evolution, data analytics and introduces HADOOP framework.

#### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome			
CO1	Classifies Digital data, characteristics and evolution of big data	K1,K2		
CO2	Discuss the challenges and the need of big data	K1,K2		
<b>CO3</b>	Explain big data analytics with its need for data science	K1,K2		
<b>CO4</b>	Describe the big data terminologies with the introduction to HADOOP framework	K1,K2		
<u> </u>	K1 Knowledge K2 Understand K2 Apply			

K1 - KnowledgeK2 - UnderstandK3 - ApplyMapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	Μ	L
CO2	S	S	S	Μ	L
CO3	S	S	S	Μ	L
CO4	S	S	S	Μ	L
S-Strong	Ν	A- Medium	L-Low		

### **Blooms taxonomy**

	CA		End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	30	30	65

Thiagarajar College, Madurai - 38<sup>th</sup> Academic Council, June 2019

#### Unit I:

#### 15 hours

**Types of Digital Data:** Classification of Digital Data. Introduction to Big Data: Characteristics of Data – Evolution of Big Data – Definition of Big Data – Challenges with Big Data – What is Big Data?-Why Big Data?

### Unit II:

### 15 hours

**Big Data Analytics:**What is Big Data Analytics?- Classification of Analytics – Top Challenges Facing Big Data – Why is Big Data Analytics Important? – What Kind of Technologies are we Looking Toward to Help Meet the Challenges Posed by Big Data? - Data Science – Terminologies Used in Big Data Environments. Introduction to Hadoop:Introducing Hadoop - RDBMS versus Hadoop – HDFS(Hadoop Distributed File System).

Unit	Chapters/ Section
Ι	1(1.1),2(2.1-2.5,2.7)
II	3(3.2,3.5,3.7-3.10,3.12),5(5.1,5.4,5.10)

### **Text Books:**

Seema Acharya, SubhashiniChellappan, 2015, Big Data and Analytics, 1<sup>st</sup> edition, Wiley India Private Limited, New Delhi.

### **References:**

1.VigneshPrajapati, 2013, Big Data Analytics with R and Hadoop, 1<sup>st</sup> edition, Packet publishing Private Limited, United Kingdom.

2. TomWhite, 2016, Hadoop The Definitive Guide, 4<sup>th</sup> edition, O'Reilly.

### Web Resources:

- 1.https://www.techopedia.com/definition/24872/digital-data
- 2.https://www.sas.com/en\_us/insights/big-data/what-is-big-data.html

3.https://www.ethz.ch/content/dam/ethz/special-interest/gess/computational-social-science-

dam/documents/education/Spring2017/Data\_science/course4.pdf

- 1. Dr. V. T. Meenatchi
- 2. Mr. P. Muthumariappa
### Lecture Schedule

	Торіс	No.of
	•	Lecture
		hrs
1.1	Types of Digital Data: Classification of Digital Data.	5
	Introduction to Big Data: Characteristics of Data	
1.2	Evolution of Big Data– Definition of Big Data – Challenges	5
	with Big Data	
1.3	What is Big Data?-Why Big Data?	5
2.1	Big Data Analytics: What is Big Data Analytics? –	5
	Classification of Analytics – Top Challenges Facing Big Data –	
	Why is Big Data Analytics Important?	
2.1	What Kind of Technologies are we Looking Toward to Help	5
	Meet the Challenges Posed by Big Data? - Data Science -	
	Terminologies Used in Big Data Environments.	
2.3	Introduction to Hadoop: Introducing Hadoop - RDBMS versus	5
	Hadoop – HDFS(Hadoop Distributed File System)	
	Total(15+15)	30

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### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined	BCA	on or	after	June	2019	<del>)</del> )
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Course Code		Cours	se Title		Category	L	Т	Р	Credit
UCA19	NE51	Digita	al Image Processing		NME-II	2	-	-	2
			L - Lecture	T - Tutoria	1	P – Pra	octicals		
Year	Seme	ester			Internal	Exter	nal	Tota	1
3	V				15	35		50	

### Preamble

This course facilitates the students to understand the basic concepts in Image Processing and able to apply image processing techniques for an image

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
<b>CO1</b>	Illustrate the fundamental concepts of digital image processing system.	K1,K2,K3
CO2	Categorize various applications of digital image processing in various fields.	K1,K2,K3
<b>CO3</b>	Discuss the various mathematical tools used in digital image processing.	K1,K2,K3
<b>CO4</b>	Interpret basic compression methods.	K1,K2,K3
_		

### K1 - Knowledge K2 - Understand K3 - Apply

### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	Μ	L	L	
CO2	S	S	Μ	L	L	
CO3	S	S	Μ	L	L	
CO4	S	S	Μ	L	L	
S-Strong	M-	Medium	L-Low			

S-Strong

**L-Low** 

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	30	30	65

### Unit -I:

### **15hours**

**Introduction**: What Is Digital Image Processing?-The Origins of Digital Image Processing -Examples of Fields that Use Digital Image Processing- Fundamental Steps in Digital Image Processing -Components of an Image Processing System .Digital Image Fundamentals: Elements of Visual Perception- Light and the Electro-magnetic Spectrum- Image Sensing and Acquisition- Image Sampling and Quantization.

### Unit-II:

### 15hours

**Digital Image Fundamentals**: Some Basic Relationships between Pixels- An Introduction to the Mathematical Tools Used in Digital Image Processing. Image Compression: Fundamentals- Some Basic Compression Methods.

Unit	Chapters/ Section
Ι	1, 2 (2.1-2.4)
II	2 (2.5, 2.6 (2.6.1 – 2.6.7)), 8(8.1, 8.2)

### **Text Books:**

R.C. Gonzalez, R.E.Woods, 2016, Digital Image processing, 3rd edition, Pearson Education.

### **References:**

- 1. Pratt. W.K., 2014, Digital Image Processing, 1<sup>st</sup> edition, John Wiley & Sons.
- 2. Annadurai, Shanmuga Lakshmi, 2007, Fundamentals of Digital Image Processing, Pearson Education.

### Web Resources:

1.https://www.tutorialspoint.com/dip/image\_processing\_introduction.htm

2.http://ultra.sdk.free.fr/docs/DxO/Digital%20Image%20Processing%20for%20Medical%20

Applications.pdf

3.http://ebooks.bharathuniv.ac.in/gdlc1/gdlc1/Digital%20Image%20Processing/Digital%20Im

age%20Processing%20-%20Mathematical%20Tools.pdf

### **Course Designers:**

- 1. Dr. S. Abirami
- 2. Dr. V. T. Meenatchi

### Lecture Schedule

	Торіс	No.of
		Lecture
		hours
1	Introduction	15
1.1	What Is Digital Image Processing?-The Origins of Digital	5
	Image Processing - Examples of Fields that Use Digital Image	
	Processing	
1.2	Fundamental Steps in Digital Image Processing -Components	5
	of an Image Processing System.	
1.3	Digital Image Fundamentals: Elements of Visual Perception-	5
	Light and the Electro-magnetic Spectrum- Image Sensing and	
	Acquisition- Image Sampling and Quantization.	
2	Digital Image Fundamentals:	15
2.1	Some Basic Relationships between Pixels- An Introduction to	8
	the Mathematical Tools Used in Digital Image Processing.	
2.2	Image Compression: Fundamentals- Some Basic Compression	7
	Methods.	
	Total(15+15)	30

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### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY** (For those joined BCA on or after June 2019)

Course		Course Title	Categor	у	L	Т	Р	Credit
Code								
<b>UCA190</b>	CE(a/b/c/d/e/f/g)	Cloud Computing	Core Ele	ctive I	5	-	-	5
	L - I	Lecture T - Tutori	al	P – Practi	cals			_
Year	Semester		Internal	Externa	1 ]	<b>Fotal</b>		
2	III / IV		25	75	1	100		

### Preamble

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

### **Course Outcomes**

### On the completion of the course the student will be able to

		Knowledge
		Level
#	Course Outcome	(according to
		Bloom's
		Taxonomy)
CO1	Analyze the broad perceptive of cloud architecture and model.	K1,K2
COL		7
CO2	Explain various Migration services	K1.K2
CO3	Illustrate the technologies and tools used for cloud computing	K1.K2
COS	indistrate the technologies and tools used for cloud computing	111,112
COA	Describe the performance, scalability, and availability of the underlying cloud	K1 K2
CU4	best to the performance, sealability, and availability of the underlying cloud	111,112
	technologies and software.	
COS	Identify security and privacy issues in cloud computing	K1 K2 K3
005	identify security and privacy issues in cloud computing.	111,112,113

K1 - Knowledge K2 - Understand K3 - Apply

### **Mapping of COs with POs**

M 2 M 2	M M	L L
M A	M M	L L
M	M	L
		T
M	Μ	L
S	Μ	L
2 <b>PSO3</b>	PSO4	PSO5
	2 PSO3 S M	2 PSO3 PSO4 S M M M

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	52	52	140

### Content

### Unit –I:

Introduction to Cloud Computing: Cloud computing in a nutshell- Roots of Cloud computing - Layers and Types of Clouds-Desired features of a cloud -Cloud infrastructure management- Infrastructure as a service providers - Platform as a service providers - Challenges and risks. Migrating into a Cloud: Introduction –Broad approaches to migrating into the cloud – The Seven -step model of migration into a cloud.

### **Unit-II:**

Virtual Machines Provisioning and Migration Services: Introduction and Inspirations -Background and related work – Virtual machines provisioning and manageability – Virtual machines migration services - VM provisioning and migration in action - Provisioning in the cloud context. On the Management of Virtual Machines for Cloud Infrastructure: The anatomy of cloud infrastructures - Distributed management of virtual infrastructures - Scheduling techniques for advanced reservation of capacity – Capacity management to meet SLA commitments.

### **Unit–III:**

Secure Distributed Data Storage in Cloud Computing: Introduction - Cloud Storage: from LANs to WANs - Technologies for data security in cloud computing. Aneka-Integration of Private and Public Clouds: Introduction– Technologies and tools for cloud computing – Aneka cloud platform - Aneka resource provisioning services – Hybrid cloud implementation.

### **Unit-IV:**

Work Flow Engine for Clouds: Introduction – Background – Workflow management system and clouds - Architecture of workflow management systems - Utilizing cloud for workflow execution. Understanding Scientific Applications for Cloud Environments: Introduction - A classification of scientific application and services in cloud - SAGA based scientific applications that utilize clouds.

### Unit –V:

Data Security in the Cloud: An Introduction to the Idea of data security – The current state of data security in the cloud – Homo sapiens and Digital information – Cloud computing and Data security risk - Cloud computing and Identity - The Cloud, Digital identity, and Data security -Content level security - Pros and Cons.

**Chapters/Sections** 

1(1.1-1.8), 2(2.1-2.3)

5(5.1-5.6),6(6.1-6.4)

8(8.1-8.3),9(9.1-9.5)

23(23.1-23.7)

12(12.1-12.5),13(13.1-13.3)

Text	<b>Books:</b>

Unit

Unit I

Unit II

Unit III

Unit IV

Unit V

Rajkumar Buvya, James Broberg and Andrzej M.goscinski, 2011, Cloud Computing: Principles and Paradigms, John Wiley & Sons, Inc, Hoboken, NewJersey.

### 14hours

### 16hours

### **16hours**

15hours

### 14hours

### **References:**

- 1. Rajkumar Buyya, Christian Vecchiola, S.ThamaraiSelvi, 2016(6th Reprint), Mastering Cloud Computing, Tata McGraw Hill Education, New Delhi.
- 2. Michael Miller, 2008, Cloud Computing: Web -Based Applications That change the way You Work and Collaborate Online, 1<sup>st</sup> edition, Pearson Education.
- 3. Richard Rodger,2012 Reprint, Beginning Mobile Application Development in the cloud,Wiley India Private Ltd,NewDelhi.

### Web Resources:

1.http://searchcloudcomputing.techtarget.com/definition/cloud-computing

2.https://azure.microsoft.com/en-in/overview/what-is-cloud-computing/

3.http://www.monitis.com/blog/3-types-of-cloud-computing-services/

4.https://pdfs.semanticscholar.org/0799/57e6fab0cccb46c871fbc29600fc76105d00.pdf

### **Course Designers:**

- 1. Mr. P. Muthumariappan
- 2. Dr.V. T. Meenatchi

### **Lecture Schedule**

	Торіс	No. hours	of S	lecture
1	Introduction to Cloud Computing	14		
1.1	Cloud Computing in a Nutshell– Roots of Cloud Computing – Layers and Type of Clouds–Desired Features of a Cloud	5		
1.2	Cloud Infrastructure Management– Infrastructure as a Service Providers – Platform as Service Providers –Challenges and Risks.	5		
1.3	Migrating into a Cloud: Introduction –Broad Approaches to Migrating into the Cloud – The Seven -Step Model of Migration into a Cloud.	4		
2	Virtual Machines Provisioning and Migration Services	16		
2.1	Introduction and Inspirations – Background and Related Work – Virtual Machines Provisioning And Manageability – Virtual Machines Migration Services	5		
2.2	VM Provisioning and Migration in Action – Provisioning in the Cloud Context. On the Management of Virtual Machines for Cloud Infrastructure: The Anatomy of Cloud Infrastructures	6		
2.3	Distributed Management of Virtual Infrastructures – Scheduling Techniques for Advanced Reservation of Capacity – Capacity Management to meet SLA commitments.	5		
3	Secure Distributed Data Storage in Cloud Computing	15		
3.1	Introduction – Cloud Storage: from LANs to WANs – Technologies for Data Security in Cloud Computing.	5		
3.2	Aneka-Integration of Private and Public Clouds: Technologies and Tools for Cloud Computing	5		
3.3	Aneka Cloud Platform - Aneka Resource Provisioning Services – Hybrid Cloud Implementation.	5		

4	Work Flow Engine for Cloud	16
4.1	Introduction – background – Workflow Management System and	5
	Clouds - Architecture of Workflow Management Systems -	
	Utilizing Cloud for Workflow Execution.	
4.2	Understanding Scientific Applications for Cloud Environments:	6
	Introduction – A Classification of Scientific Application And	
	Services In Cloud –	
4.3	SAGA based Scientific Applications that Utilize Cloud.	5
5	Data Security in the Cloud	14
5.1	An Introduction to the Idea of Data Security – The Current State	4
5.1	An Introduction to the Idea of Data Security – The Current State of Data Security in the Cloud	4
5.1 5.2	An Introduction to the Idea of Data Security – The Current State of Data Security in the Cloud Homo Sapiens and Digital Information – Cloud Computing and	4 5
5.1       5.2	<ul> <li>An Introduction to the Idea of Data Security – The Current State of Data Security in the Cloud</li> <li>Homo Sapiens and Digital Information – Cloud Computing and Data Security risk – Cloud Computing and Identity</li> </ul>	4 5
5.1 5.2 5.3	<ul> <li>An Introduction to the Idea of Data Security – The Current State of Data Security in the Cloud</li> <li>Homo Sapiens and Digital Information – Cloud Computing and Data Security risk – Cloud Computing and Identity</li> <li>– The Cloud, Digital Identity, and Data Security – Content Level</li> </ul>	4 5 5
5.1       5.2       5.3	<ul> <li>An Introduction to the Idea of Data Security – The Current State of Data Security in the Cloud</li> <li>Homo Sapiens and Digital Information – Cloud Computing and Data Security risk – Cloud Computing and Identity</li> <li>– The Cloud, Digital Identity, and Data Security – Content Level Security – Pros and Cons.</li> </ul>	4 5 5
5.1         5.2         5.3	An Introduction to the Idea of Data Security – The Current State of Data Security in the Cloud Homo Sapiens and Digital Information – Cloud Computing and Data Security risk – Cloud Computing and Identity – The Cloud, Digital Identity, and Data Security – Content Level Security – Pros and Cons. Total(14+16+15+16+14)	4 5 5 75

### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY**

(For those joined BCA on or after June 2019)

Course		<b>Course Title</b>		Catego	ry	L	Т	P	Credit
Code									
UCA19	CE(a/b/c/d/e/f/g)	Web Designing	g With PHP	Core El	ective II	5	-	-	5
	L - I	lecture	T - Tutorial		P – Practi	cals			
Year	Semester			Internal	External	I 1	<b>fotal</b>		
2	III / IV			25	75	1	.00		

### Preamble

This course provides knowledge about web designing tools like HTML, javascript and PHP. **Course Outcomes** 

### On the completion of the course the student will be able to

# CO1	Course Outcome Discuss the introduction of HTML document structure, java script and VBScript.	Knowledge Level (according to Bloom's Taxonomy) K1,K2,K3
CO2	Illustrate features of PHP, XHTML, advantages of PHP over other scripting languages running a PHP script	K1,K2,K3
CO3	Describe the user defined function in PHP, types of arrays, traversing arrays	K1,K2,K3
	using Loops and working with files and directories.	
<b>CO4</b>	Make Use of Relational Databases, SQL, PHP/MySQL Functions and Creating MySQL Databases with PHP	K1,K2,K3
CO5	Examine HTML and database tables, building forms from queries, basic form	K1,K2,K3
	Submission to a Database and editing data with an HTML form.	

K2 - Understand

K3 - Apply

K1 - Knowledge **Mapping of COs with POs** 

PSO1 PSO2 PSO3 PSO4 PSO5 **CO1** S S S S М **CO2** S S  $\mathbf{S}$ S Μ **CO3** S S S S Μ S S S S **CO4** Μ S **CO5** S S S Μ

**S-Strong** 

M- Medium

**L-Low** 

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%
Total marks	52	52	140

### Unit-I:

**HTML and JavaScript Programming:** HTML –Introducing HTML document structure – Creating headings on a webpage–Working with links–Creating a paragraph –Working with images– Working with tables–Working with frames–Introduction to forms & HTML controls – Introducing-CascadingStyleSheets–Inlinestyles–Externalstylesheets–Internalstyles–Styleclasses–Multiplestyles– Introducing DHTML–Introducing JavaScript–Client side benefits of using JavaScript over VBScript– Embedding JavaScript in an HTML page– Handling events– Using variables in JavaScript–Using array in JavaScript–Creating objects in JavaScript–Using Operators–Working With control flow statements–Working with functions.

### Unit-II:

Introducing PHP: Versions of PHP– Features of PHP– Introduction to HTML and XHTML– Advantages of PHP over other scripting languages– Creating a PHP script–Running a PHP script– Handling errors in a PHP script– Escape characters. Working With Variables and Constants: Using variables–Using constants– Exploring Data types in PHP–Exploring operators in PHP.Controlling Program Flow: Conditional statements–Looping statements–Break, Continue and Exit statements. Unit -III: 14hours

**Working With Functions, Arrays, Files and Directories:** Introduction–User Defined Function in PHP – Built-in Functions in PHP– Recursive, Variables, Callback Functions –Introducing arrays–Types of arrays –Traversing arrays using Loops and Array Iterator –Built in array functions–Exploring Cookies ,Sessions-Working with Cookies-creating Cookies-Working with Session-Differentiating Cookies & Session.

### **Unit-IV:**

**SQL Tutorial:** Relational Databases and SQL– SQL Standards – The Workhorses of SQL – Select – Insert – Update– Delete– Database Design– Privileges and Security. PHP/MySQL Functions – Connecting to MySQL – Making MySQL Queries – Fetching Data Sets – Getting Data about Data– Multiple Connections– Building in Error Checking – Creating MySQL Databases with PHP – MySQL data types – MySQL Functions.

### Unit-V:

### 14hours

**16hours** 

**Displaying Queries in Tables :** HTML Tables and Database Tables– One-to-one mapping – Example: A single-table displayer– The sample tables – Improving the displayer– Complex Mappings – Multiple queries versus complex printing– A multiple-query example – A complex printing example– Creating the Sample Tables. Building Forms from Queries : HTML Forms– Basic Form Submission to a Database – Self-Submission– Editing Data with an HTML Form.

Unit	Chapters/Sections
Ι	Book1:2
II	Book1:3,4,5
III	Book1:6(199-218), 8(Pg.262-270)
IV	Book2:13,15
V	Book2:16,17

### 16hours

15hours

### **Text Books:**

1. Web Technologies Black Book, 2015, Tata McGraw – Dream Tech Press, New Delhi.

2. Tim Converse and JoycePark with ClarkMorgan, 2004, PHP5 and MYSQL Bible,Wiley Publishing Inc,Indiana.

### **References:**

1. Steven Holzner, 2016 (21<sup>st</sup> Reprint), The Complete reference PHP complete reference, Tata McGraw – Hill Education Private Limited, New Delhi.

2. Padma Priya S., 2013 (Reprint), Web Technology, SCITECH Publication Chennai

3. Xavier C., 2012(Reprint), Web Technology and Design, New Age International Private Limited, Publishers, New Delhi.

### Web Resources:

1.https://www.tutorialspoint.com/html/

2.https://www.siteground.com/tutorials/php-mysql/

3.https://www.quackit.com/css/

### **Course Designers:**

- 1. Mr. P. Muthumariappan
- 2. Dr.V.T.Meenatchi

### **Lecture Schedule**

	Торіс	No.	of
		lecture	
		hours	
1	HTML and JavaScript Programming	16	
1.1	HTML –Introducing to HTML Document Structure – Creating	4	
	Headings on a Web page–Working With Links–Creating a Paragraph –		
	Working With Images–Working With Tables–Working With Frames–		
	Introduction to Forms & HTML Controls		
1.2	Introducing CascadingStyleSheet–InlineStyles–ExternalStyles–	4	
	InternalStyles–StyleClasses–MultipleStyles–Introducing DHTML		
1.3	Introducing JavaScript-Client Side Benefits of using Java Script over	4	
	VB Script- Embedding Java Script in an HTML Page- Handling		
	Events- Using Variables in Java Script-		
1.4	Using Array in Java Script-Creating Objects in Java Script-Using	4	
	Operators-Working With Control Flow Statements-Working with		
	Functions.		
2	Introducing PHP	15	
2.1	Versions of PHP- Features of PHP- Introducing to HTML and	5	
	XHTML- Advantage of PHP over Other Scripting languages-		
	Creating a PHP Script–Running a PHP Script–Handling Errors in a		
	PHP Script– Escape Characters.		
2.2	Working With Variables and Constants: Using Variables–Using	5	
	Constants- Exploring Data Types in PHP-Exploring Operators in		
	PHP.		
2.3	Controlling Program Flow: Conditional Statements-Looping	5	
	Statements-Break, Continue and Exit Statements		
3	Working With Functions, Arrays, Files and Directories	14	

3.1	Introduction–User Defined Function in PHP – Built-in Functions in	5
	PHP– Recursive, Variables, Call back Functions	
3.2	Introducing Arrays–Types of Arrays –Traversing Array Using Loops	5
	and Array Iterators –Built in Array Functions	
3.3	Working With Files and Directories- Working With Files -Working	4
	With Directories	
4	SQL Tutorial:	16
4.1	SQL Tutorial: Relational Databases and SQL–SQL Standards	5
4.2	The Workhorses of SQL –Select – Insert – Update– Delete– Database	3
	Design–Privileges and Security.	
4.3	PHP/MySQL Functions – Connecting to MySQL – Making MySQL	5
	Queries – Fetching Data Sets – Getting Data about Data	
4.4	Multiple Connections– Building in Error Checking – Creating MySQL	3
	Databases with PHP – MySQL data types – MySQL Functions.	
5.	Displaying Queries in Tables :	14
5.1	HTML Tables and Database Tables– One-to-one mapping – Example:	4
	A single-table displayer	
5.2	The sample tables – Improving the displayer– Complex Mappings –	3
	Multiple queries versus complex printing	
5.3	A multiple-query example – A complex printing example – Creating	4
	the Sample Tables.	
5.4	Building Forms from Queries : HTML Forms– Basic Form Submission	3
	to a Database – Self-Submission – Editing Data with an HTML.	
	Total(16+15+14+16+14)	75

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Course		Course Title		Catagony	,	т	т	D	Credit
Course		Course Thie		Category		L	I	r	Crean
Code									
<b>UCA190</b>	CE(a/b/c/d/e/f/g)	Virtual Reality		Core Elect	tive III	5	-	-	5
L - I		ecture	T - Tutoria	1	P – Practi	cals			
Year	Semester			Internal	Externa	1 ]	[otal		
2	III / IV			25	75	1	.00		

### Preamble

This course facilitates the students to understand geometric modeling and virtual environment and also study about virtual hardwares and softwares.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
COI	Design a virtual environment and compelling virtual reality experience.	K1,K2,K3
CO2	Describe a Geometric Modelling and perform geometric transformation.	K1,K2
CO3	Illustrate the concept of animating virtual environment.	K1,K2,K3
<b>CO4</b>	Discuss various human factor	K1,K2
<b>CO5</b>	Analyze the various virtual reality applications	K1,K2
	K1 - Knowledge K2 - Understand K3 - Apply	

### K1 - Knowledge Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	L	L
CO2	S	Μ	Μ	L	L
CO3	S	Μ	Μ	Μ	L
CO4	S	L	Μ	L	L
CO5	S	Μ	Μ	Μ	L
S-Strong		M- Medium	L-Low		

S-Strong

L-Low

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	52	52	140

K3 - Apply

Unit

Thiagarajar College, Madurai - 38<sup>th</sup> Academic Council, June 2019

### Unit -I:

Virtual Reality and Virtual Environment: Introduction – Computer graphics – Real time computer graphics -Flight simulation - Virtually environments -Virtually here-What is required-The benefits of virtual reality. 3D Computer Graphics: Introduction - The virtual world space – Positioning the virtual observer – The perspective projection – Human vision – Stereo perspective projection - 3D clipping - Colour theory - Simple 3D modeling - Illumination models -Reflection models - Shading algorithms- Radiosity - Hiddeny-Surface removal - Realism-Stereographic image.

### Unit –II:

Geometric Modeling: Introduction – From 2D to 3D – 3D Space curves – 3D Boundary representation- Other modeling strategies. Geometrical Transformations: Introduction - Frames of reference - Modeling transformations - Instances -Picking - Flying - Scaling the VE - Collision detection. A Generic VR System: Introduction - The virtual environment - the Computer environment - VR technology - Modes of interaction - VR systems. 16hours

### Unit -III :

Animating the Virtual Environment: Introduction – The dynamics of numbers – The animation of objects - Shape and object in betweening - Free-from deformation - Particle system. Physical Simulation : Introduction - Objects falling in a gravitational field - Rotating wheels -Elastic collisions - Projectiles - Simple pendulums - Springs - Flight dynamics of an aircraft. Unit -IV: 16hours

Human Factors: Introduction – The eye – The ear–The somatic senses – Equilibrium. Introduction: Sensor hardware - Head-coupled displays -Acoustic hardware - Integrated VR systems. Virtual Reality Software: Introduction -Modelling virtual worlds -Physical simulation-VR toolkits.

### Unit -V:

Virtual Reality Applications: Introduction – Engineering – Entertainment – Science – Training. The Future: Introduction – Virtual environments – Modes of interaction.

Ι	1(1.0-1.7),3(3.0-3.15)
II	4(4.0-4.4),5(5.0-5.7),6(6.0-6.5)
III	7(7.0-7.5),8(8.0-8.7)
IV	9(9.0-9.4),10(10.0-10.4), 11(11.0-11.3)
V	12(12.0-12.4),13(13.0-13.2)

**Chapters/Sections** 

### **Text Books:**

John Vince, 2013(7<sup>th</sup> Impression), Virtual Reality System, Pearsons Education, New Delhi

### **References:**

- 1. Tony Parisi, 2015, Learning Virtual Reality, 1st edition, O'Reilly Media.Inc.
- 2. Grigore C. Burdea, Philippe Coiffet, 2006, Virtual Reality Technology, 2<sup>nd</sup> edition, Wiley.

### 13hours

15hours

15hours

3. Alan B.Craig, William R.sherman, Jeffrey D, 2009, Developing Virtual Reality Applications ,1<sup>st</sup> edition ,Morgan Kaufmann Publisher.

### Web Resources:

1. www.vrs.org.uk/virtual-reality-applications

2.https://www.realitytechnologies.com/virtual-reality/

3.http://avrlab.it/wp-content/uploads/2015/03/lez-4\_1-modelling.pdf

4.https://www.vrs.org.uk/virtual-reality-applications/

### **Course Designers:**

1. Mr. P. Muthumariappan 2. Dr.V.T. Meenatchi

### Lecture Schedule

	Торіс	lecture
1	Virtual Paality and Virtual Environment	15
11	Introduction – Computer graphics – Real time computer	5
1.1	graphics –Flight Simulation – Virtually environments –Virtually	5
	here–What is required–The benefits of virtual reality.	
1.2	3D Computer Graphics: Introduction – The virtual world space –	5
	Positioning the virtual observer – the perspective projection –	
	Human vision – Stereo perspective projection – 3D clipping –	
	Colour theory – Simple 3D modelling	
1.3	Illumination models – Reflection models – Shading algorithms-	5
	Radiosity – Hidden-Surface removal – Realism-Stereographic	
	image.	
2	Geometric Modeling	15
2.1	Introduction – From 2D to 3D – 3D space curves – 3D boundary	5
	representation– Other modelling strategies.	
2.2	Geometrical Transformations: Introduction – Frames of	5
	reference – Modelling transformations – Instances –Picking –	
	Flying – Scaling the VE – Collision detection	
2.3	A Generic VR System: Introduction – The virtual environment –	5
	the Computer environment – VR technology – Modes of	
	interaction – VR Systems.	1.6
3	Animating the Virtual Environment	16
3.1	Introduction – The dynamics of numbers – The animation of	2
2.2	objects	~
3.2	Shape and object inbetweening – Free-from deformation –	5
2.2	Particle system	4
3.3	Physical Simulation: Introduction – Objects failing in a	4
2.4	Bravilational field	5
3.4	Rotating wheels – Elastic collisions – Projectiles – Simple	5
1	Juman Factors	16
4		10
4.1	Introduction – The eye – The ear-The somatic senses –	5
	Equilibrium.	
4.2	Introduction: Sensor hardware – Head-coupled displays –	6
	Acoustic hardware – Integrated VR systems.	
4.3	Virtual Reality Software: Introduction –Modelling virtual worlds	5

	–Physical simulation–VR toolkits.	
5	Virtual Reality Applications	13
5.1	Introduction – Engineering – Entertainment	5
5.2	Science – Training.	4
5.3	The Future: Introduction – Virtual environments – Modes of interaction.	4
	Total(15+15+16+16+13)	75

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY (For those joined BCA on or after June 2019)

		( J							
Course		<b>Course Title</b>		Categor	y	L	Т	Р	Credit
Code									
UCA19	CE(a/b/c/d/e/f/g)	Computer Algo	orithms	Core Ele	ective IV	5	-	-	5
_	L - L	.ecture	T - Tutorial		P – Practi	cals			
Year	Semester		I	Internal	External	1 ]	<b>Fotal</b>		
2	III / IV		2	25	75	1	.00		

### Preamble

This course facilitates the students to understand and analyze the concepts of various algorithm and provides ability to write algorithm for the real life problems.

### **Course Outcomes**

### On the completion of the course the student will be able to

		Knowledge
		Level
#	Course Outcome	(according to
		Bloom's
		Taxonomy)
CO1	Illustrate the basic concepts of algorithms and analyze the performance of	K1,K2,K3
COI	algorithms	, ,
	argonums	
CO2	Discuss various searching and graph traversal algorithms	K1.K2.K3
COL	2 iseass various searching and graph the orbit angoing inter-	,,
CO3	Summarize Greedy Methods and how to identify minimum cost	K1.K2.K3
COS	Summarize Greedy Methods and now to Rechtly minimum cost.	,,
COA	Understand the various concept of Dynamic Programming	K1 K2 K3
004	Cindensiand the various concept of Dynamic Programming	111,112,113
COS	Illustrate various sorting technique for given problem	K1 K2 K3
005	indutate various soluring teeninque for given problem.	111,112,113
L	K1 - Knowledge K2 - Understand K3 - Apply	1

### **Mapping of COs with POs**

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	Μ	Μ	L
CO2	S	Μ	Μ	Μ	L
CO3	S	Μ	Μ	Μ	L
CO4	S	Μ	Μ	Μ	L
CO5	S	Μ	Μ	Μ	L

### **Blooms taxonomy**

	(	CA	End of		
	First	Second	Semester		
Knowledge-K1	40%	40%	40%		
Understand-K2	40%	40%	40%		
Apply-K3	20%	20%	20%		
Total marks	52	52	140		

### Content

### **Unit -I: Basics of Algorithms**

What is an Algorithm-Algorithm specification- Sets and Disjoint Set Union-Introduction-Union and find operations-Graphs-Introduction, Definitions-Graph representations.

### **Unit -II: Divide and Conquer**

General Method -Binary search-Finding the maximum and minimum-Merge Sort-Quick sort

### **Unit -III: Greedy Method**

General methods-Knapsack problem-Minimum cost spanning trees-optimal storage on tapessingle source shortest paths.

### **Unit -IV: Dynamic Programming**

General method-Multi stage graphs-All pair shortest paths -Backtracking-General method-The 8 Queen Problem.

### **Unit -V: Sorting Algorithms**

Types - Algorithms and performance measures - Algorithm: insertion - quick sort - merge – shell – Bucket sorting- Heap sorting-bubble Sorting.

Unit	Chapters/ Section
Ι	1(1.1-1.9,1.12,1.13),2(2.1-2.6), 6(6.1), 7
II	8(8.1-8.6), 10
III	14 (14.1-14.6), 16(16.1-16.6)
IV	17(17.1-17.4),18(18.1-18.7)
V	7,8,9,10,12, 15, 17,32,34,35

### **Text Books:**

Ellis Horowitz, Sartaj Sahni, Rajasekaran, 2010, Fundamentals of Computer Algorithm, Galgotia Publication, New Delhi.

### **References:**

1. Anany Levinfis, 2015, Introduction to the design & analysis algorithm, Pearson.

- 2.John Kleinberg, Eva Tardos, 2013, Algorithm Design,1<sup>st</sup> edition, Pearson.
- 3. Ellis Horowitz, Sartaj Sahni, Rajasekaran, 2008, Computer Algorithm, Silicon press.

### Web Resources:

1.https://www.geeks for geeks.org/graph-data-structure-and-algorithms/

2.https://www.tutorialspoint.com/design\_and\_analysis\_of\_algorithms/design\_and\_analysis\_of\_algori thms\_greedy\_method.htm

3.http://www.cs.umsl.edu/~sanjiv/classes/cs5130/lectures/dp.pdf

### **Course Designers:**

- 1. Mrs. R.Umamaheshwari
- 2. Dr. S. Abirami

### 13hours

16hours

15hours

16hours

15hours

	Торіс	No. of lecture
		hours
1	Basics of Algorithms	13
1.1	What is an Algorithm-Algorithm specification	4
1.2	Sets and Disjoint Set Union-Introduction- Union and find	4
	operations	
1.3	Graphs-Introduction, Definitions-Graph representations	5
2	Divide and Conquer	16
2.1	General Method -Binary search	5
2.2	Finding the maximum and minimum	6
2.3	Merge Sort-Quick Sort	5
3	Greedy Method	15
3.1	General methods-Knapsack problem	5
3.2	Minimum cost spanning trees	5
3.3	Optimal storage on tapes- single source shortest paths.	5
4	Dynamic Programming	16
4.1	General method-Multi stage graphs	5
4.2	All pair shortest paths -Backtracking	5
4.3	General method-The 8 Queen Problem.	6
5	Sorting Algorithms	15
5.1	Types - Algorithms and performance measures	5
5.2	Algorithm: insertion - quick sort	3
5.3	merge – shell-Bucket sorting	4
5.4	Heap sorting-bubble Sorting.	3
	Total(13+16+15+16+15)	75

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Course		Course Title	Catego	ry	L	Т	Р	Credit
Code								
UCA190	CE(a/b/c/d/e/f/g)	Artificial Intelligence	Core El	ective V	5	-	-	5
	L - I	Lecture T - Tutori	al	P – Practi	cals			_
Year	Semester		Internal	Externa	1 ]	Fotal		
2	III / IV		25	75	1	100		

### Preamble

This course provides knowledge about the concept of Artificial Intelligence.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome					
<b>CO1</b>	Illustrate Artificial Intelligence, the issues in the design of search programs	K1,K2,K3				
	with heuristic search techniques and means-ends analysis.					
<b>CO2</b>	Describe knowledge representation issues, choosing the granularity of	K2,K3				
	representation and sets of objects and the frame problem.					
<b>CO3</b>	Discuss simple facts in logic, instance and ISA relationships, computable					
	functions and predicates, resolution in propositional logic.					
<b>CO4</b>	Identify the minimax search procedure, adding alpha-beta cut offs and	K2,K3				
	secondary search, references on specific games.					
CO5	Analyze the representation and usage of domain knowledge, expert system					
	shells and knowledge acquisition.					
	K1 - Knowledge K2 - Understand K3 - Apply					

### Mapping of COs with POs

S-Strong	N	<b>1- Medium</b>	L-Low	·		
CO5	S	Μ	L	Μ	L	
CO4	S	Μ	L	Μ	L	
CO3	S	Μ	L	Μ	L	
CO2	S	Μ	L	Μ	L	
CO1	S	Μ	L	Μ	L	
	PSO1	PSO2	PSO3	PSO4	PSO5	
	PSO1	PSO2	PSO3	PSO4	PSO5	

### S-Strong

### **Blooms taxonomy**

	(	CA	End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	52	52	140

### Content

### Unit I:

**Problems and Search**: What is Artificial Intelligence: The AI problems – The Underlying Assumption – what is an AI Technique – The level of the model – Criteria for Success. Problems, problem Spaces and Search: Defining the problem as a state space search - production systems problem characteristics- production system characteristics - Issues in the design of search programs. Heuristic Search Techniques: Generate and Test - Hill Climbing - Best-first Search - Problem Reduction - Constraint Satisfaction - Means-ends Analysis.

### Unit II:

Knowledge Representation : Knowledge Representation Issues: Representation and Mappings - Approaches to Knowledge Representation - Issues in Knowledge Representation -Important Attribute-Relationship among attributes- Choosing the Granularity of representation-Representing Sets of Objects - Finding the Right Structured as Needed- The Frame Problem.

### **Unit III:**

Using Predicate Logic: Representing Simple Facts in Logic – Representing Instance and ISA Relationships - Computable functions and Predicates- Resolution - Conversion to clause form - The Basis of Resolutions - Resolution in Propositional logic- The Unification Algorithm - Resolution in Predicate logic –The need to try Several Substitution– Natural Deduction.

### .Unit IV:

Gaming Playing: Overview – The MiniMax Search Procedure– Adding Alpha-Beta Cutoffs - Additional Refinements - Secondary Search - Using Book Moves - Alternatives to Minimax -Iterative Deepening – References on Specific Games.

### Unit V:

**Expert Systems:** Representing and Using Domain Knowledge – Expert System Shells – Explanation – Knowledge Acquisition.

|--|

Elaine Rich, Kevin Knight, Shivashankar B Nair, 2015, Artificial Intelligence, 3<sup>rd</sup> edition, McGraw - Hill Education Private Limited, New Delhi.

## 15hours

15hours

### L - 129

#### **Chapters/ Section** Unit Ι 1 (1.1-1.5),2(2.1-2.5),3(3.1-3.6) Π 4(4.1 - 4.4)III 5(5.1-5.5) IV 12(12.1-12.6) V 20(20.1-20.4)

### 15hours

15hours

### 15hours

### **References:**

1.Michael Negnevitsky, 2008, Artifical Intelligence: A Guide to Intelligence, 2<sup>nd</sup> edition, Pearson India Education Services Private Limited.

2.Eugene Charniak, Drew McDermott, 2006, Introduction to Artificial Intelligence, Pearson India Education Services Private Limited.

3. Padhy N.P, 2005, Artifical Intelligence and Intelligent System, Oxford University Press.

### Web Resources:

1.www.tutorialspoint.com/artificial\_intelligence/

- 2.http://www-g.eng.cam.ac.uk/mmg/teaching/artificialintelligence/nonflash/problemframenf.htm
- 3.http://www.cs.bham.ac.uk/~jxb/IAI/w5.pdf
- 4..https://searchenterpriseai.techtarget.com/definition/expert-system

### **Course Designers:**

- 1. Dr. V. T. Meenatchi
- 2. Mr. P. Muthumariappan

### **Lecture Schedule**

	Торіс	No.of Lecture
1.1	<b>Problems and Search</b> :What is Artificial Intelligence: The AI problems – The Underlying Assumption – what is an AI Technique – The level of the model – Criteria for Success.	4
1.2	Problems, problem Spaces and Search: Defining the problem as a state space search – production systems – problem characteristics	4
1.3	Production system characteristics – Issues in the design of search programs.	4
1.4	Heuristic Search Techniques: Generate and Test – Hill Climbing- Best-first Search – Problem Reduction – Constraint Satisfaction – Means-ends Analysis.	3
2.1	<b>Knowledge Representation</b> : Knowledge Representation Issues: Representation and Mappings	3
2.2	Approaches to Knowledge Representation – Issues in Knowledge Representation – The Frame Problem	4
2.3	Using Predicate Logic: Representing Simple Facts in Logic – Representing Instance and ISA Relationships	5
2.4	Natural Deduction. Representing Knowledge using Rules.	3
3.1	<b>Statistical Reasoning :</b> Probability and Bayes's Theorem – Certainty Factors and Rule Based Systems – Bayesian Networks	4
3.2	Dempster-Shafer Theory – Fuzzy Logic. Natural Language Processing: Introduction	3
3.3	Syntactic Processing – Semantic Analysis. Parallel and Distributed AI: Psychological Modeling,(PPT)	4
3.4	Parallelism in Reasoning Systems – Distributed Reasoning Systems.	4

4.1	<b>Learning</b> : What is Learning – Role Learning – Learning by Taking	3
	Advice – Learning in Problem solving	
4.2	Learning from Examples:Induction – Explanation based Learning –	4
	Discovery – Analogy – Formal Learning Theory	
4.3	Neural Net Learning and GeNetic Learning. Expert System:	4
	Representing and Using Domain Knowledge	
4.4	Expert System Shells – Explanation – Knowledge Acquisition	4
5.1	<b>Perception and Action:</b> Real time Search – Perception – Action –	4
	Robot Architectures	
5.2	Fuzzy Logic Systems: Introduction – Crisp Sets – Fuzzy Sets – Some	4
	Fuzzy Terminology	
5.3	– Fuzzy Logic Control. Prolog-The Natural Language of Artificial	4
	Intelligence: Introduction	
5.4	Converting English to Prolog Facts and Rules – Goals – Prolog	3
	Terminology	
	Total(15+15+15+15+15)	75

### THIAGARAJAR COLLEGE, MADURAI- 9 An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY

(For those joined BCA on or after June 2019)

Course		Course Title	Catego	ory	L	Т	P	Credit
Code								
<b>UCA190</b>	CE(a/b/c/d/e/f/g)	Logical Reasoning	Core E	lective	5	-	-	5
			VI					
	L - I	Lecture T - Tutoria	al	P – Practio	cals			
Year	Semester		Internal	External	1	Fotal		
2	III / IV		25	75	1	100		

### Preamble

This course facilitates the students to understand and analyze the various problems in logical reasoning and also attend the competitive examinations with confidence.

**Course Outcomes** 

### On the completion of the course the student will be able to

#	Course Outcome	Knowledge Level
<b>CO1</b>	Illustrate the concept of series and analog in verbal reasoning	K1,K2,K3
CO2	Discuss various coding and decoding techniques and blood relations concept	K1,K2,K3
CO3	Solve problems using mathematical operation	K1,K2,K3
<b>CO4</b>	Explain the concept of logic, statement arguments and assumption	K1,K2,K3
<b>CO5</b>	Illustrate the concept of series and analog in non verbal reasoning	K1,K2,K3

K1 - Knowledge K2 - Understand K3 - Apply

### Mapping of COs with POs

	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	S	S	S	S	L	
CO2	S	Μ	S	S	L	
CO3	S	Μ	S	S	L	
CO4	S	Μ	S	S	L	
CO5	S	S	S	S	L	
C Ctreamor	٦	I Madimu	T T arres			

S-Strong

**M- Medium** 

L-Low

**Blooms taxonomy** 

	(	CA	End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	52	52	140

### Content

### Lecture Schedule

### Unit I:

**Series:** Series compilation – Number series- Alpha numeric series- Alphabetic series- Patterns -analog – Direct and simple analogs – pair analogies – Alphabet analog.

### Unit II:

**Coding-Decoding** :Letter coding-Direct letter coding – number/symbol coding – Blood relations – Jumbled up descriptions- Relation process.

### Unit III:

**Mathematical Operation** :Mathematical Operation – Problem by substitution Interchanges of sign and Numbers

### Unit IV:

**Logic** :Logic – Statements arguments – Statement assumption.

### Unit V:

**Series** :Series – 5 figure series - 3 and 4 figure series – detecting incorrect order in a series – Arithmetic reasoning.

### **Text Books:**

Aggarwal R.S, 2015, A Modern Approach To Verbal & Non Verbal Reasoning, S. Chand & Company Pvt.Ltd, New Delhi.

### **References:**

1. A K Gupta, 2014,Logical and Analytical Reasoning 30th Edition (English, Paperback), Ramesh Publishing House, New delhi

2. Jaikishan , 2012, How to Crack Test of Reasoning In All Competitive Exam PB (English, Paperback), Arihant Publications(I) Pvt.Ltd - Meerut

### Web Resources:

1.http://www.edugoog.com/series-completion/question-answer/1.html

2.https://www.hitbullseye.com/Coding-and-Decoding-Questions.php

3.https://www.wikijob.co.uk/content/aptitude-tests/test-types/logical-reasoning

### **Course Designers:**

- 1. Mr. P. Muthumariappan
- 2. Dr.V.T. Meenatchi

15 hours

### 15 hours

# 15 hours

15 hours

### 15 hours

	Торіс	No.of
		Lecture
		hrs
1.1	Series: Series compilation – Number series- Alpha numeric series	5
1.2	Alphabetic series- Patterns	5
1.3	analog – Direct and simple analogs – pair analogies – Alphabet	5
	analog.	
2.1	Coding-Decoding :Letter coding-Direct letter coding	5
2.2	number/symbol coding	5
2.3	Blood relations – Jumbled up descriptions- Relation process.	5
3.1	Mathematical Operation :Mathematical Operation	8
3.2	Problem by substitution Interchanges of sign and Numbers	7
4.1	Logic :Logic	5
4.2	Statements arguments	5
4.3	Statement assumption.	5
5.1	Series : Series – 5 figure series	4
5.2	3 and 4 figure series	4
5.3	detecting incorrect order in a series	4
5.4	Arithmetic reasoning	3
	Total(15+15+15+15+15)	75

### **THIAGARAJAR COLLEGE, MADURAI-9** An autonomous institution affiliated by Madurai kamaraj university (Re-Accredited with 'A' Grade by NAAC) **DEPARTMENT OF COMPUTER APPLICATION & INFORMATION TECHNOLOGY** (For those joined BCA on or after June 2019)

Course		<b>Course Title</b>			Cat	tegory	L	Т	Р	Credit
Code										
<b>UCA190</b>	CE(a/b/c/d/e/f/g)	Ethics in Info	rmation Sec	curity	Cor	re	5	-	-	5
					Ele	ctive VII				
	L - I	.ecture	T - Tutoria	ıl		P – Practio	cals			_
Year	Semester			Intern	nal	External	l '	Total		
2	III / IV			25		75		100		

### Preamble

This course facilitates the students to understand, analyze the various information security issues and security technologies.

### **Course Outcomes**

### On the completion of the course the student will be able to

#	Course Outcome	Level (according to Bloom's
<b>CO1</b>	Analyze the broad perceptive of information SECURITY	K1,K2
CO2	Explain need of information security	K1,K2
CO3	Illustrate the Risk control strategies and Risk Management	K1,K2
<b>CO4</b>	Describe the polices of Information security	K1,K2
CO5	Illustrate the Intrusion Detection and Prevention Systems	K1,K2,K3
<b>_</b>	K1 - Knowledge K2 - Understand K3 - Apply	

### Mapping of COs with POs

S-Strong	<b>I</b>	M- Medium	L-Low	1	•
CO5	S	S	Μ	Μ	L
CO4	S	S	Μ	Μ	L
CO3	S	S	Μ	Μ	L
CO2	S	S	Μ	Μ	L
CO1	S	S	Μ	Μ	L
	PSO1	PSO2	PSO3	PSO4	PSO5

### **Blooms taxonomy**

	CA		End of
	First	Second	Semester
Knowledge-K1	40%	40%	40%
Understand-K2	40%	40%	40%
Apply-K3	20%	20%	20%
Total marks	52	52	140

### Content

### UNIT I:

**Introduction to Information Security-History, What is Information Security**? - Components of an Information System- Balancing Information Security and- Access- The Systems Development Life Cycle-The Security- Systems Development Life Cycle- Security Professionals and Organization.

**The Need for Security-Business Needs**- Threats-Attacks-Secure Software Development -Legal-Professional and Ethical Issues.

### **UNIT III:**

**UNIT II:** 

**Risk Management-Risk Identification**- Risk Assessment- Risk Control Strategies- Selecting Risk Control Strategies-Quantitative versus Qualitative Risk Control Strategies- Risk Management Discussion Points.

### UNIT IV :

**Planning for Security-Information Security Planning and Governance**- Information Security Policy- Standards and Practices- Information Security Blueprint- Security Education- Training and Awareness Program- Continuity Strategies.

### UNIT V:

**Security Technology**-Intrusion Detection and Prevention Systems- Scanning and Analysis Tools-Biometric Access Control- Cryptographic Methods- Algorithms.

Unit	Chapters/Pages
Unit I	1(1-30)
Unit II	2(39-76), 3(89-92)
Unit III	4(121-164)
Unit IV	5(173-237)
Unit V	7(291-343)
	8(349-372)

### **Text Books:**

Michael E Whitman and Herbert J Mattord, "Principles of Information Security", 6th Edition,

Course Technology, Cengage Learning, 2017.

### 18Hrs

#### L - 136

### 14Hrs

15Hrs

14Hrs

14Hrs

### **References:** REFERENCE BOOKS

- 1. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004 (Reprint 2009)
- 2. Stuart McClure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill,2017.

### Web Resources:

- 1. https://www.techopedia.com/definition/10282/information-security
- 2. <u>http://bedford-computing.co.uk/learning/wp-content/uploads/2016/08/Principles-of-Information-Security-4th-ed.-Michael-E.-Whitman.pdf</u>

### **Course Designers:**

- 1. Dr.S.Abirami
- 2. Dr. V.T Meenatchi

### **Lecture Schedule**

	Торіс	No. of lecture
1	Introduction to Information Security-History, What is	4
	Information Security? - Components of an Information System	
1.1	- Balancing Information Security and-	3
1.2	AccessThe Systems Development Life Cycle-The Security- Systems Development Life Cycle	4
1.3	Security Professionals and Organization.	3
2	The Need for Security-Business Needs	2
2.1	Threats to Information	2
2.2	Attacks-Secure Software Development	7
2.3	Legal-Professional and Ethical Issues.	4
3	Risk Management-Risk Identification.	4
3.1	Risk Assessment- Risk Control Strategies	4
3.2	Selecting Risk Control Strategies-Quantitative versus Qualitative Risk Control Strategies	3
3.3	Risk Management Discussion Points	3
4	Planning for Security-Information Security Planning and	2

	Governance	
4.1	Information Security Policy- Standards and Practices	4
4.2	Information Security Blueprint- Security Education-	4
4.3	Training and Awareness Program- Continuity Strategies	4
5	Security Technology-Intrusion Detection and Prevention Systems	3
5.1	Scanning and Analysis Tools	4
5.2	Biometric Access Control- Cryptographic Methods	4
5.3	Algorithms	7
	Total(14+15+14+14+18)	75

### THIAGARAJAR COLLEGE, MADURAI – 9. (Re-Accredited with 'A' Grade by NAAC) ENVIRONMENTAL STUDIES

(For those joined B.A., B.Sc., B.Com., B.B.A., B.C.A on or after June 2019)

Course Code	Course Title	Category	L	Т	Р	Credit
U19EVS11	Environmental Studies	AECC1	2	-	-	2

Year	Semester	Int. Marks	Ext.Marks	Total
First	First	15	35	50

### Preamble

Students acquire knowledge on the basic concepts, components and importance of environment.

### **Course Outcomes**

### On the completion of the course the student will be able to

	Course outcomes	Knowledge
		Level
<b>CO1</b>	Define the structure and functions of ecosystem	K1
<b>CO2</b>	Explain the benefits of biodiversity conservation	K2
CO3	Summarise the sources, effects and control measures of various types of	K1
	Pollutants	
<b>CO4</b>	Perceive the environment legislations in India for sustainable development.	K3
IZ1. IZ-		

K1: Knowledge K2: Understand K3: Apply

### **Blooms taxonomy:** Assessment Pattern

	CA		End of
	First	Second	Semester
Knowledge	40%	40%	40%
Understand	40%	40%	40%
Apply	20%	20%	20%

### Unit I

Definition and Scope of Environmental Studies – Ecology and Ecosystem – Structure of an Ecosystem – Food chains, food webs and ecological pyramids – Causes of Biodiversity Loss – Benefit and Conservation of Biodiversity

### Unit II

Environmental problems and Management: Causes, effects and Control measures of : Air PSOllution – Water PSOllution – Noise PSOllution – Nuclear Hazards. Solid waste management and Waste DisPSOsal methods. Climate change and Global Warming causes and Measures. Waste and Plastics. Urban environmental problems and measures. Environmental Legislations in India. Sustainable development and Inclusive growth.

### **Text Book**

1. Kanagasabai, C.S. 2005.Environmental Studies. Rasee publishers. Madurai.

### **Reference Books**

1. Yogendra, N. and Srivastava, N. 1998. Environmental PSOllution, Ashish Publishing House. New Delhi.

Sapru R.K.2001. Environment Management in India, Vol. I & Vol. II Ashish publishers house, New Delhi.

### THIAGARAJAR COLLEGE, MADURAI – 9. (Re-Accredited with 'A' Grade by NAAC) VALUE EDUCATION

(For those joined B.A., B.Sc., B.Com., B.B.A., B.C.A on or after June 2019)

Course Code	Course Title	Category	L	Т	Р	Credit
U19VE51	Value Education	AECC1	2	-	-	2

Year	Semester	Int. Marks	Ext.Marks	Total
Third	Fifth	15	35	50

### **Preamble**

Students acquire knowledge on the basic concepts, components and importance of environment.

### **Course Outcomes**

### On the completion of the course the student will be able to

	Course outcomes	Knowledge
		Level
<b>CO1</b>	Define the structure and functions of ecosystem	K1
<b>CO2</b>	Explain the benefits of biodiversity conservation	K2
<b>CO3</b>	Summarise the sources, effects and control measures of various types of	K1
	Pollutants	
<b>CO4</b>	Perceive the environment legislations in India for sustainable development.	K3
	nowledge K2: Understand K3: Apply	

1: Knowledge K2: Understand K3: Apply

### **Blooms taxonomy: Assessment Pattern**

	СА		End of	
	First	Second	Semester	
Knowledge	40%	40%	40%	
Understand	40%	40%	40%	
Apply	20%	20%	20%	

### Unit I

Self Development - Introduction - Definition and Types of Values - Self Assessment - Values needed for self development - Values needed for family life -Principles of happy living

Character development- Good character - Good relationships - Legendary people of highest character - The quest for character - Developing character - The key to good character.

### Unit II:

Positive Thinking and Self Esteem - Types of thoughts - Areas of thinking - Developing thought pattern - External influences on Thoughts - Methods to keep outlook positive - Meaning of Self Esteem - Self empowerment.

**Stress free living** – Illusions and causes - Symptoms and stages of stress – Self confidence– Role models and leadership qualities – Critical thinking - Communication skills – Happy and successful life.

### Reference

Study material / Course material

Values for Excellence in Life Compiled by then Curriculum Development Cell Thiagarajar College, Madurai, in collaboration with the Education wing, Brahma Kumaris, Madurai.

### விழுமியக் கல்வி

### கூறு - 1

### சுய முன்னேற்றம்

அறிமுகம் - விழுமியங்களின் விளக்கம் மற்றும் வகைகள் - சுயமதிப்பீடு - சுய முன்னேற்றத்திற்கு விழுமியங்களின் தேவை - குடும்ப வாழ்க்கைக்கு விழுமியங்களின் தேவை - மகிழ்ச்சியான வாழ்க்கைக்கான கொள்கைகள்

### பண்பு வளர்ச்சி

நற்பண்பு - நல்லுறவு - உயரிய பண்புகளால் உயர்ந்த பெருமக்களாதல் -பண்புகளைத் தேடல் - பண்புகளை வளர்த்தல் - நற்பண்புகளுக்கான திறவுகோல்.

### கூறு - 2

### சுயமரியாதையும் நேர்மறைச் சிந்தனையும்

சிந்தனையின் வகைகள் - சிந்தனைப் பகுதிகள் - சிந்தனையை வளர்க்கும் முறை -சிந்தனையில் புறத்தாக்கங்கள் - நேர்மறைப் பண்பை வெளித்தோற்றத்தில் காட்டும்முறை -சுயமரியாதையின் பொருள் - சுய அதிகாரமளித்தல்

### அழுத்தமில்லா வாழ்க்கை

பிரமைகளும் காரணங்களும் - அழுத்த நிலைகளுக்கான அறிகுறிகள் - தன்னம்பிக்கை - தலைமைப் பண்பில் முன்னுதாரணங்கள் - விமர்சனச் சிந்தனை - தொடர்புத் திறன்கள் -மகிழ்ச்சி மற்றும் வெற்றிகரமான வாழ்க்கை

### Reference

Study material / Course material

### "Values for Excellence in Life" Compiled by then Curriculum Development Cell Thiagarajar College, Madurai, in collaboration with the Education wing, Brahma Kumaris, Madurai

# Self Study Paper

### Thiagarajar College (Autonomous) :: Madurai – 625 009 SELF STUDY PAPER

(For those joined UG on or after June 2019)

Course Code	Course Title	Category	L	Т	Р	Credit
U19SS51	Soft Skills	Self Study Paper	-	-	-	5

Year	Semester	Int. Marks	Ext.Marks	Total
Third	Fifth		100	100

# \* Carries Extra 5 credits that do not form part mandatory credits (140) required for completion of the course. Optional paper not compulsory for all UG students.

### Preamble

Prepare the students to develop skills, provide training to face interview .prepare themselves with the right skill-sets and attitude

### **Course Outcomes**

### On the completion of the course the student will be able to

	Course outcomes	Knowledge
		Level
<b>CO1</b>	Possess a basic idea on the understanding of nature, cause, effect and ways to	K1,K2
	deal with critical challenges in everyday life	
CO2	Overcome the aspects such as Communication barriers, Stress management,	K3
	Emotions.	
CO3	Gain insights into high-in-demand soft skills and prepare themselves with the	K1,K2
	right skill-sets and attitude	
<b>CO4</b>	Develop or take part inteam work, Thinking skills, Creativity and time	K3
	management.	
<b>CO5</b>	Prepare themselves to face different levels of interviews. Develop skills to	K3
	manage an organization	
CO5	Prepare themselves to face different levels of interviews. Develop skills to manage an organization	К3

K1: Knowledge K2: Understand K3: Apply

**Blooms taxonomy:** Assessment Pattern

	CA		End of	
	First	Second	Semester	
Knowledge	40%	40%	40%	
Understand	40%	40%	40%	
Apply	20%	20%	20%	

### <u>Unit - 1</u>

Self Awareness (Concept of Self-esteem, Positive and Negative self esteem) Motivation (Nature and types, Factors enhancing and affecting Motivation, Needs and Drives) (Creativity
Introduction, Nature of Creativity, Stages of Creativity, Enhancing Creativity, Verbal and Non Verbal Creativity) Values and Ethics (Nature and Significance, Values, Ethics, Work Ethics, Character building, Manners and Ethics)

Self Management (Self management skills and Social Competency, Social Competency Behaviour, Value Orientation, Life goals)

#### <u>Unit 2</u>

Communication and Thinking Communication (Definition, Types, Styles, Culture and Communication); Thinking (Nature, Types, Problem Solving, Proactive thinking, Positive Thinking, Assertiveness)

#### <u>Unit 3</u>

Emotions (Nature of emotions, Emotional Intelligence and its strategies, Attachment, Love, Happiness, Introduction to Anger – Causes, Types, Functions and Consequences, Anger management)

Stress (Nature of stress, Relation between Demands and Coping, Types and Causes, Effects and Indicators, Management of Stress, Time management and Stress reduction) Empathy (Definition, Nature and Factors enhancing empathy)

#### <u>Unit4</u>

Excelling through a placement process( Resume writing; Taking a written test; Group discussion – Need, Types, Tips and techniques; Interview handling – Tips and Techniques)

#### <u>Unit 5</u>

Being effective in an organisation

50 rules of work, Professional Etiquettes and Mannerism, Building relationship within an organisation, Communication skills, Working in teams, Managing conflicts, Effective negotiation skills, Problem solving using creativity.

#### Text book

- 1. Life Skills for Success AlkaWadkar 2016 Edition SAGE | TEXTS Sagepublishing.com
- 2. Campus to Corporate Roadmap to Employability Gangadhar Joshi 2015 Edition SAGE | TEXTS Sagepublishing.com

Reference textbook

- 1 ACE of Soft skills Gopalaswamy Ramesh and Mahadevan Ramesh, Pearson Publication
- 2 Bridging the soft skills gap Bruce Tulgan 2015 Edition Wiley Publication

## **BCA Major papers**

Assessment values of course learning outcomes and their mapping with program specific outcomes (PSOs)

#	Title of the courses	PS	PSO2	PSO	PSO4	PSO5
		01		3		
UCA19 C11	Digital Principles and Computer Organization	14	09	13	10	11
UCA19 C12	Programming in C	15	14	13	14	15
UCA19 CL11	Programming in C Lab	12	11	11	10	09
UCA19 CL12	Multimedia Lab	11	10	11	10	11
UCA19 C21	Microprocessor and Assembly Language Programming	13	11	15	10	07
UCA19 C22	Programming in C++	15	11	13	11	15
UCA19 CL21	Programming in C++ Lab	12	09	07	09	11
UCA19 CL22	MS Office Lab	12	09	10	10	12
UCA19 C31	Relational Database Management System	13	12	11	13	13
UCA19 C32	Java Programming	15	11	09	09	09
UCA19 CL31	RDBMS Lab	12	10	10	11	11
UCA19 CL32	Java Programming Lab	11	11	11	11	08
UCA19CE( a/b/c/d/e/f/ g)	Options given					
UCA19 C41	Software Engineering	15	11	08	09	07
UCA19 C42	Data Structures	15	12	12	08	08
UCA19 CL41	Data Structures Lab Using C	12	08	12	07	06
UCA19 CL42	Web Designing With PHP Lab	15	15	15	08	15

UCA19						
C51	Data Communication and Network	15	14	15	10	05
UCA19 C52	.Net Programming	15	14	14	10	10
UCA19 C53	Operating System	15	11	10	10	05

Thiagarajar College, Madurai - 38<sup>th</sup> Academic Council, June 2019

UCA19	.Net Programming Lab	12	09	08	10	10
CL51						
UCA19PJ	Project					
51						
UCA19	Data Mining	15	11	11	10	05
C61						
UCA19	Mobile Application Development	15	10	15	10	13
C62						
UCA19	Python Programming	15	11	11	13	08
C63						
UCA19	Mobile Application Development Lab	12	12	12	09	08
CL61						
UCA19	Python Programming Lab	12	12	12	08	06
CL62						

### NME / SBE papers

#	Title of the courses	PSO1	PSO2	PSO3	PSO4	PSO5
	Environmental Studies					
UCA19AC21	Effective Communicative English	12	06	09	11	07
UCA19	Principles of Big Data	12	12	12	08	04
NE31						
UCA19	i) Latex Lab	12	12	10	08	04
SE(a/b/c/d/e/f/g	j) R-Tool Lab	12	06	08	05	04
/h/1/J)	k) Programming with	12	10	08	07	04
	SCILAB					
	l) Fundamentals of Big	12	12	08	08	04
	Data					
	m) Data Mining Lab (	12	08	08	08	04
	WEKA Tool )					
	n) Advanced Java	12	12	12	08	04
	Programming					
	o) Problem Solving using C	12	12	12	08	04
	p) Computer Hardware and	12	12	12	07	04
	Software Installation					
UCA19	Digital Image Processing	12	12	08	04	04
NE51						
UCA19CE(a/b/	h) Cloud Computing	15	11	11	09	05
c/d/e/f/g)	i) Web Designing With	15	15	15	15	10
	PHP					
	j) Virtual Reality	15	10	11	07	05
	k) Computer Algorithms	15	11	10	10	05
	l) Artificial Intelligence	15	10	05	10	05
	m) Logical Reasoning	15	12	15	15	05
	n) Ethics in Information	15	15	10	10	05
	Security					

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# Allied / Ancillary papers

#	Title of the courses	PSO1	PSO2	PSO3	PSO4	PSO5
	Discrete Mathematics					
	Operations Research					
	Numerical Methods					
UCA19A41	Quantitative Aptitude	15	14	15	10	10