Sri Ramakrishna College of Arts and Science

(Autonomous)

(Affiliated to Bharathiar University)

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

(An ISO 9001:2015 Certified Institution)

Nava India, Coimbatore-641 006, Tamil Nadu, India.

"Scheme of Examination along with Distribution of Marks and Credits"

CBCS & OBE PATTERN

UNDER GRADUATE PROGRAMMES

Programme: BSc **Branch:** Information Technology

(For the students admitted during the academic year 2018-2019 and onwards)

Part	Study Components and Course Title	CIA	Comprehensive Exam		Comprehensive Exam Total	Total	Credit
			Online	Descriptive Theory			
Semester – I							
I	18T01/18H01/18M01/18F01/ 18A01Tamil I/Hindi I/ Malayalam I/ French I/Arabic I	30	-	70	70	100	3
II	18E01English-I	30	-	70	70	100	3
III	18CSC01 CORE I – Digital Fundamentals	30	20	50	70	100	4
III	18ITC01 CORE II – Programming in C	30	20	50	70	100	4
III	18MATC07ALLIED I – Discrete Mathematics	30	20	50	70	100	4
III	18CSC02 COREIII -Practical I:Office Automation and Multimedia using Photoshop	30	-	-	70	100	3
III	18ITC02 CORE IV- Practical II: Programming in C Lab	30	-	-	70	100	3
IV	18VE01Value Education #	100			-	100**	1#
IV	18CPE01 PACE – I @	-			100	100**	1@
IV	18ITJC1 JOC – I $	-					1$
Semester – II							
I	18T02/18H02/18M02/18F02/ 18A02Tamil II/Hindi II/ Malayalam II/ French II/ Arabic II	30	-	70	70	100	3
II	18E02English-II	30	-	70	70	100	3
III	18CAC01 CORE V – Data Structures	30	20	50	70	100	4
III	18CACP01 CORE VI - Object Oriented Programming With C++ and Lab	50	-	50	50	100	5
III	18IT201 ALLIED II- Computational Mathematics and Statistics	30	20	50	70	100	4

III	18CAC02 CORE VII – Practical III: Data Structures Lab using C	30	-	-	70	100	3
III	18CSC07 CORE VIII – Computer Organization and Architecture	30	20	50	70	100	4
IV	18ES01 Environmental Studies #	100	-	-	-	100**	1#
IV	18CPE02 PACE – II @	-			100	100**	1@
IV	18ITJC2 JOC – II $	-					1$
Semester III ~							
III	18CSC03 CORE IX – Java Programming	30	20	50	70	100	4
III	18CSC04 CORE X-Practical V: Java Programming Lab	30	-	-	70	100	3
III	18ITC03 CORE XI - Computer Networks	30			70	100	4
III	18ITC04 CORE XII – Practical VI: RDBMS Lab	15	-	-	35	50	2
III	18ITI01 OPEN ELECTIVES –I	30	20	50	70	100	3
III	18MATC05 ALLIED III – Operations Research	30	20	50	70	100	4
III	18ITC05 Skill based Subject 1: RDBMS	30	20	50	70	100	3
IV	18BCT01/18AT01 Basic Tamil I / Advanced Tamil I #	100				100**	1$
IV	18CPE03 PACE – III @	-			100	100**	1@
IV	18ITJC3 JOC – III $	-					1$
Semester IV							
III	18CAC03 CORE XIII – Cloud Computing	30	20	50	70	100	4
III	18IT401 CORE XIV – Practical VII: Network Lab	30	-	-	70	100	3
III	18ITC07 CORE XV– Practical VIII: Web Technology Lab	15	-	-	35	50	2
III	18ITE01/18ITC06/18ITE02 Elective – I	30	20	50	70	100	4
III	18COC01 ALLIED IV – Business Accounting	30	20	50	70	100	4
III	18ITC08 Skilled Based Subject 2: Web Technology	30	20	50	70	100	3
IV	18BCT02/18AT02 Basic Tamil II /Advanced Tamil II #	100				100**	1$
IV	18CPE04 PACE IV @				100	100**	2@
IV	18ITJC4 JOC IV $	-					1$

Semester V							
III	18CAC05 CORE XVI – Operating System	30	20	50	70	100	4
III	18CAC06 CORE XVII – Operating System Lab	30	-	-	70	100	3
III	18CSC06 CORE XVIII – Python Programming Lab	15	-	-	35	50	2
III	18ITI02 OPEN ELECTIVE–II	30	20	50	70	100	3
III	18CSC05 Skill based Subject 3 – Python Programming	30	20	50	70	100	3
III	18ITP01 CORE XIX – Data Analysis using R Programming with Lab	50	-	50	50	100	5
IV	18CPE05 PACE V @				100	100**	2@
IV	18ITJC5 JOC V $	-					1$
IV	18ITT01 Industrial Training $						1$
Semester VI							
III	18IT601 CORE XX – Machine learning	30	20	50	70	100	4
III	18ITC09 CORE XXI – Mobile Application Development Lab	15	-	-	35	50	2
III	18ITC10 Skill based Subject 4 – Mobile Application Development	30	20	50	70	100	3
III	Elective II 18ITE04/18ITE05/18ITE06/18ITI07	30	20	50	70	100	4
III	18IT602 CORE XXII –Project and Viva Voce	80			20	100	4
V	18NS01/18NC01/18SP01/ 18YR01/18RB01/18SIS01 Extension Activities NSS/NCC/SPORTS/YRC/SIS/Swatchh Bharat Abhiyan/ Yoga #	100			-	100**	1

$ Extra credit courses for the candidates who opted other languages in Part – I and JOC

No Comprehensive Examinations. Only Continuous Internal Assessment (CIA)

@ No Continuous Internal Assessment (CIA). Only Comprehensive Examinations.

** Marks will not be included in CGPA calculations.

~ Any one core course will be replaced with SWAYAM course subject to availability.

List of Elective papers (Can choose any one of the papers as electives)		
Elective – I	18ITE01	Principles of Communication Systems
	18ITC06	Software Engineering
	18ITE02	Artificial Intelligence
	18ITE03	Internet of Things
Elective – II	18ITE04	Threats, Rights and Cyber Laws
	18ITE05	Block chain Technologies
	18ITE06	Augmented and Virtual Reality
	18ITE07	Data Analytics and Business Intelligence

List of Open Elective papers offered by the department	
Open Elective – I - 18ITI01	Multimedia Techniques
Open Elective – II - 18ITI02	Ethical Hacking

Summary							
Part	**Subjects**	**Papers**	**Credits**	**Total Credits**	**Paper**	**Mark**	**Total Marks**
Part I	Languages	2	3	6	2	100	200
Part II	English	2	3	6	2	100	200
Part III	Core	22	76	92	22	18 * 100 4 * 50	2400
					4	100	
	Allied	4	16				
	OPEN ELECTIVES	2	3	6	2	100	200
	Electives	2	4	8	2	100	200
	Skill Based	4	3	12	4	100	400
Part IV	Lang.	2	1	2$	2	100	200**
	PACE	3	1	3@	5	100	500**
		2	2	4@			
	EVS & VE	2	1	2#	2	100	200**
	JOC	5	1	5$	-	-	-
	Industrial Training	1	1	1$	-	-	-
Part V	@ Extension	1	1	1	1	100	100**
	Total			**140**			**3600**

$ - Extra Credit Course
** - NOT INCLUDED IN TOTAL MARKS
Note: Total Credits may vary between 140 to 145

Syllabus Coordinator
Sunil Samson A
Department of Information Technology
Sri Ramakrishna College of Arts and Science
Coimbatore – 641 006

BOS - Chairman
Dr Sumathi N
Department of Information Technology
Sri Ramakrishna College of Arts and Science
Coimbatore – 641 006

Dr. D. Jayasheela
(Academic Council, Member Secretary)

18CSC01 - DIGITAL FUNDAMENTALS

(Common to Computer Science / Information Technology / Computer Applications)

Semester	I
Credit	4
Max. Marks	CIA - 30 CE - 70 TOT =100

COURSE OBJECTIVES

- To develop a strong foundation in number systems and Boolean functions.
- To analysis and design of Logic gates, combinational circuits and sequential circuits
- To acquire the basic concepts of A/D Conversion and D/A conversions.

UNIT – 1 INTRODUCTION TO NUMBER SYSTEMS 12

Digital Vs Analog signals - Number Systems: Binary – Octal – Decimal – Hexadecimal – Conversions of Number systems – Arithmetic operation: Binary addition – Binary subtraction – Binary multiplication – Binary Division – 1's and 2's Compliments addition – subtraction.

UNIT – II CODES AND LOGIC GATES 12

Introduction to codes – Weighted codes – Non weighted codes – Binary codes – BCD codes – Excess 3 codes – Parity codes – Grey Codes – ASCII codes – Introduction to Logic Gates – Truth Tables – Universal Gates.

UNIT – III BOOLEAN ALGEBRA AND COMBINATIONAL CIRCUITS 12

Introduction: logic operations – Boolean Algebraic Laws – Reducing Boolean expression – Karnaugh Map representation – Combinational circuits design procedures – Adders – Subtractor – Decoders – Encoders – Multiplexers – Demultiplexer.

UNIT – IV SEQUENTIAL CIRCUITS AND REGISTERS 12

Introduction and classification – Latches – Flip Flops: RS Flip Flop – JK Flip Flop – D Flip Flop – T Flip Flops – Registers: Shift Registers – Serial in Serial out – Serial in Parallel out – Parallel in Serial out – Parallel in Parallel out registers.

UNIT – V COUNTERS AND CONVERTERS 12

Introduction – Asynchronous counter – Synchronous counter – Ring counter – Mod 10 counter – Converters: Digital to Analog converter – R _2R ladder type – Weighted Resistor type – Analog to digital converter: Counter type – Dual slope – Successive Approximation.

Total Periods: 60

COURSE OUTCOME

On successful completion of the course, the students will be able to

CO1: Differentiate Digital and Analog Signals
CO2: Convert one number systems to the other number system.
CO3: Define logic gates and also they can describe about various codes.
CO4: Represent Boolean expression in Karnaugh map and simplify the expressions.
CO5: Describe the fundamental concepts of sequential circuits.
CO6: Convert analog signal to digital value and vice versa.

TEXT BOOK

1. A. Anandkumar," Fundamentals of Digital Circuits", PHI, New Delhi, 4th Edition, 2016.
Unit I – chapter 2, Unit II – chapter 3,4, Unit III – 5,6,7, Unit IV – 10,11, Unit V – 12,17

REFERENCE BOOKS

1. M.Morris Mano, "Digital Logic Computer Design", Pearson Education, 5th Edition, 2013.
2. Donald P Leach, Albert Paul Malvino, Goutam Saha, "Digital Principles and Applications", Tata McGraw-Hill, 7th Edition, 2011.
3. V.Rajaraman, "Fundamentals of Computer", PHI, New Delhi, 3rd Edition, 2002.

Prepared By **Approved by**

M. Prasanna kumar **G. Maria Priscilla**

18CSC01 - DIGITAL FUNDAMENTALS

(Common to Computer Science / Information Technology / Computer Applications)

Semester	I
Credit	4
Max. Marks	CIA - 30 CE - 70 TOT =100

COURSE OBJECTIVES

- To develop a strong foundation in number systems and Boolean functions.
- To analysis and design of Logic gates, combinational circuits and sequential circuits
- To acquire the basic concepts of A/D Conversion and D/A conversions.

UNIT – 1 INTRODUCTION TO NUMBER SYSTEMS 12

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3. V.Rajaraman, "Fundamentals of Computer", PHI, New Delhi, 3rd Edition, 2002.

Prepared By **Approved by**

M. Prasanna kumar **G. Maria Priscilla**

18ITC01 -PROGRAMMING in C

(Common to Computer Science / Information Technology / Computer Application)

COURSE OBJECTIVES

- To learn strategies to solve a problem using computer
- To enable students to learn about the basic features of C Programming Language
- To learn the various decision making and looping statements
- To learn how to program using arrays and functions
- To learn about structures and pointers
- To learn file management in C

Semester	I
Credit	**4**
Paper Type	**Core**
Max. Marks	**CIA – 30 + CE – 70**

UNIT – I

11

Introduction: Computer Algorithms – Developing Algorithms – Flowcharts. **Overview of C:** History – Importance — Sample programs- Structure of a C Program**. Constants, Variables and Data Types:** Character set - C Tokens – Constants , Variables and Data Types.**Operators and Expressions:** Arithmetic Operator – Relational Operator – Logical Operator – Assignment Operator – Increment and Decrement Operator – Conditional Operator – Bitwise Operator – Special Operator – Arithmetic Expressions - Evaluation of Expressions – Precedence of Arithmetic Operators.

UNIT – II

11

Managing Input and Output Operations: Reading and Writing a Character – Formatted input and Output. **Decision making and Branching**: Decision Making with IF – Simple IF – The IF…ELSE Statement – Nesting of IF….ELSE Statements – ELSE IF Ladder – Switch Statement - ?: Statement – GOTO Statement. **Decision Making and Looping:** While Statement – DO Statement – FOR Statement.

UNIT – III

11

Arrays: Introduction – Declaring and Initializing One Dimensional Array – Declaring and Initializing of Two Dimensional Arrays – Multidimensional Arrays. **Character Arrays and Strings:** Declaring and Initializing String Variable – Reading Strings from Terminals – Writing String to Screen – Arithmetic Operation on Characters – Putting Strings together – Comparison of two Strings – String Handling Functions.

UNIT – IV

11

User Defined functions: Elements of User Defined Function – Definition of Function – Return Values and Types – Function Call and Declaration - Category of Functions – Recursion – Scope and lifetime of variables in functions. **Structures**: Definition of Structure – Declaring Structure Variable – Accessing Structure Member – Structure Initializing – Copying and Comparing Structure Variable – Operation on individual Member – Arrays of Structure – Arrays within Structure - Structure within Structure – Structures and Function.

UNIT – V

11

Pointers: Understanding Pointers – Accessing the Address of the Variable – Declaring and initializing pointer variable – Accessing Pointer Variable – Pointers and arrays – Pointers and Functions – Pointers and structures - Pointers and Character strings. **File Management in C**: Defining and Opening the File – Closing a File – I/O Operation on File.

Total Periods: 55 Hrs.

COURSE OUTCOMES

Upon the successful completion of the course, the students should be able to

CO1: Explain the basics of programs and programming
CO2: Select appropriate data types and control structures for solving a given problem.
CO3: Illustrate the representation of arrays, strings and usage of string operations.
CO4: Create functions and use structures in programming
CO5: Knowledge of pointers and dynamic memory allocation.
CO6: Explain the basics of file handling mechanism.

TEXT BOOK:

1.V. Rajaraman, "Computer Programming in C", PHI,2009
2. E. Balagurusamy , " Programming in ANSI C ", 4th Ed., Tata McGraw - Hill Publications ,2017.
Unit I: Text 1: Ch-1,2 Text 2:Ch-1,2,3 Unit II: Text 2:Ch-4,5,6 Unit III: Text 2:Ch-7,8
Unit IV: Text 2:Ch-9,10 Unit III: Text 2:Ch-11,12

REFERENCE BOOKS :

1. Yashavant Kanetkar, "Let us C",3rd Ed., BPB Publications, 2013.
2. Gottfried ,"Programming with C ", 2nd Ed.,TMH Publications

Prepared by
(Dr. C. Deepa)

Approved by
(Dr. N. Sumathi)

Semester	II
Credit	4
Paper Type	Allied
Max. Marks	CIA -30 CE -70 TOTAL =100

18MATC07 - DISCRETE MATHEMATICS

(Common to B.Sc. (CS) and B.Sc. (IT))

COURSE OBJECTIVE

To enable the students to learn and visualize the fundamental ideas about mathematical logic, formal languages, automata, Boolean algebra and graph theory.

UNIT I MATHEMATICAL LOGIC (11)

Connectives, Well – Formed Formulae, Equivalence of formulas, Tautological implications, Duality Law, Normal Forms, Theory of inference .

Chapter : XII [Sections : 12.1 - 12.12]

UNIT II RELATION AND FUNCTION (11)

Composition of relations, Equivalence relations, Partial ordering relation, Composition of functions, Inverse functions, One –to –one , Onto and Bijective functions.

Relations - Chapter : III [Sections : 3.1 - 3.12]

Functions - Chapter : IV [Sections : 4.1 – 4.6]

UNIT III FORMAL LANGUAGES AND AUTOMATA (11)

Language, Grammar- Definition and Types. Deterministic finite automata , Non- deterministic finite automata – Conversion of non-deterministic automata to deterministic automata – procedure and problems.

Chapter : XV [Sections : 15.1 – 15.7]

UNIT IV LATTICES AND BOOLEAN ALGEBRA (11)

Partial ordering, Set, Poset, Lattices, Distributive lattices, Boolean Algebra, Minimization of Boolean function using K map.

Lattices - Chapter : XIV [Sections : 14.1 – 14.7]

Boolean Algebra - Chapter : XIII [Sections : 13.1 – 13.4]

UNIT V GRAPH THEORY (11)

Basic Definitions, Representation of graphs, Paths, Reachability, Connectivity, Euler paths, Hamiltonian paths , Incidence matrix, Adjacency matrix, Trees, Binary trees, Theorems – Statements only (No Proof)

Graph - Chapter : IX [Sections : 9.1 – 9.11]

Trees - Chapter : X [Sections : 10.1 – 10.4, 10.11]

COURSE OUTCOME:

Upon successful completion of the course, students will be able to

- Solve Mathematical logic problems.
- Visualize the fundamental ideas of relations and functions.
- Describe the different types of formal languages.
- Apply automata theory and Boolean algebra.
- Acquire knowledge about graph theory.

Total Periods : 55

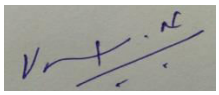
*** Note : The Question paper consists 20% Theory and 80% Problems**

TEXT BOOK:

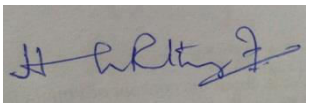
1. J.K.Sharma , "Discrete Mathematics" -Trinity Press - An imprint of Laxmi Publications Pvt Ltd, 4th edition, Reprint 2015.

REFERENCE BOOK:

1. Dr.M.K. Venkataraman, Dr.N. Sridharan, N. Chandrasekaran "Discrete Mathematics", National Publishing Company, 1st edition 2000, Reprint 2012.



DR.N.UMA
(COURSE COORDINATOR)



DR.HANNAH REVATHY F.
(BOS CHAIRMAN)

18CSC02 - OFFICE AUTOMATION AND MULTIMEDIA USING PHOTOSHOP
(Common to Computer Science / Information Technology / Computer Application)

Semester	I
Credit	3
Paper type	Core
Max. Marks	CIA - 30 + CE - 70 TOT =100

COURSE OBJECTIVES
- To develop a strong foundation in the field of office automation.
- A student should grasp the basic concepts of Ms-Word, Ms-Excel, PowerPoint and Ms-Access to understand the key skills of Desktop publishing.
- To design a poster of their own

MS – WORD
1. Preparing a news letter: To prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout.
2. Illustrate the mail merge concept to at least five companies with your cv.

MS – POWER POINT
3. Prepare an organization Chart for a college environment in PowerPoint and advertise it.
4. Prepare a power point presentation for a conference/seminar with all animation effects

MS – EXCEL
5. Worksheet preparation for electricity bill preparation with conditions on unit changes.
6. Draw graphs to illustrate class performance with their marks and grade.

MS- ACCESS
7. Perform sorting on name, place and pin code of student's database and list them in the sorted order. Using queries retrieve specific information.
8. Prepare form and Report using student database.

MULTIMEDIA USING PHOTOSHOP
9. Design an invitation for a family function.
10. Design a poster for an intercollegiate program of your college.

Total Period: 45 Hours

COURSE OUTCOMES

On successful completion on the course, the students will be able to

CO1: Identify various applications in Ms-Word, Excel & Access

CO2: Make presentations using Ms-Power point and presenting in software industries.

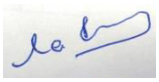
CO3: Analyze various ways of handling table, forms and reports using Ms-Access.

CO4: Design posters and invitations

Prepared by

(S. Govindaraju)

Approved by



(Dr. G. Maria Pricilla)

18ITC02 - Programming in C Lab

(Common to Computer Science / Information Technology / Computer Applications)

Semester	**1**
Credit	**3**
Paper Type	**Core Practical**
Max Marks:	**CIA – 30 + CE - 70**

COURSE OBJECTIVES

- To be familiar with programming in C Language
- To understand various programs using decision making and looping statements
- To understand simple programs using arrays and functions
- To understand simple programs in structures, pointers and file management

1. Implement various Operators
2. Illustrate the concept to manage various formatted input output operations in C
3. Implement Decision making and Branching statements
4. Implement Looping statements
5. Illustrate the concept of Arrays
6. Implement Character arrays and Strings
7. Implement User defined function
8. Implement Structures and Union
9. Implement Pointers
10. Illustrate the concept of files

Total Periods: 33 Hours.

COURSE OUTCOMES

Upon the successful completion of the course students will be able to

CO1: Understand the basic programming concepts
CO2: Write simple C programs using control structures, arrays and functions
CO3: Implement simple programs using pointers and file concepts.

Prepared by
(Dr. C. Deepa)

Approved by
(Dr. N. Sumathi)

Sri Ramakrishna College of Arts and Science (Autonomous)

Coimbatore – 641006

VALUE EDUCATION

[A one Credit Course offered during Even Semester with effect from 2018-2019 Academic year and onwards]

Syllabus :: Batch 2018-19

(Common to all UG courses)

Semester	1
Credit	1
Max. Marks	CIA – 100 TOT =100

COURSE OBJECTIVE:

- To orient about the society, social life, integrity in personal and public
- To learn the concepts of human values and respect for others
- To provide in-depth understanding about moral awareness
- To inculcate a sense of socially responsible citizens.

UNIT - I VALUE EDUCATION & HUMAN EDUCATION 3

Value Education - Definition - relevance to present day - Concept of Human Values - Self Introspection - Self Esteem

UNIT – II SOCIETY & FAMILY VALUES 3

Structure and components of Society, Marriage and Family System – Anger Neutralization, Adjustability - Threats of family life.

UNIT - III ETHICS & LEADERSHIP QUALITIES 3

Ethical values: Ethics, Social Ethics, Public Policy - Leadership qualities: Integrity, Character, Courage - Personality development. Inter-culture Tolerance

UNIT - IV SOCIAL VALUES 3

Social Values, Faith, Service, Commitment and Decency - Fundamental Rights and Responsibilities of citizens

UNIT - V SOCIAL PROBLEMS AND ROLE OF STUDENTS 3

Social Problems: Definition - Poverty, Illiteracy, Unemployment, Exploitation, Obscenity, Immorality - Crimes and Online Crimes - Student unrest, Ragging and Peaceful Campus - Role of Students in tackling social problems

COURSE OUTCOME: Total Periods : 15

- Develop a sense of self respect and respect for others
- Able to occupy one's own social space and help others live peacefully
- Develop scientific temper and logical reasoning and to apply in day to day life

REFERENCE BOOKS

1. Mani Jacob (Ed). 'Resource Book for Value Education', Institute for Value Education, New Delhi. 2002.
2. NCERT. "Value Education". Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
3. Daniel and Selvamony. "Value Education Today - Madras Christian College, Tambaram and ALACHE, New Delhi, 1990.
4. Ignacimuthu S. "Values for Life". Better Yourself Books, Mumbai, 1991.
5. M.M.M.Mascaronhas. Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993.

Sri Ramakrishna College of Arts and Science (Autonomous)

Coimbatore – 641006

VALUE EDUCATION

[A one Credit Course offered during Even Semester
with effect from 2018-2019 Academic year and onwards]

SCHEME OF EXAMINATION

(Continuous Internal Assessment :: April - 2019)

1. Value Education paper is a ONE CREDIT course.
2. The course will have only one Internal Examination (Model Examinations for 3 hours) at the end of the semester.
3. The examination pattern is descriptive type written examination.
4. The course carries a total marks of 100 out of which 80 marks will be allocated for written examination and 20 marks will be earmarked for activity.
5. The Passing minimum is 40 marks out of 100 marks.
6. The assessment will consist of two parts, as detailed below:

SN	Nature	Maximum Marks	Remarks
1.	Descriptive Examination	80 Marks (Section A: 10X4 = 40) (Section B: 5 X 8 - 40)	• Centralised Examination • For 3 Hours Duration • Descriptive type questions • Model Examination only
2.	Activity	20 Marks	Activity (Paper presentation / Quiz/Panel Discussion / Participation in seminar/workshop /Assignment / Seminar/ Model Design) Individual Report to be submitted to the Value Education Teacher
	Total	**100 Marks**	

Course Coordinator **Member Secretary** **Principal**
Academic Council

02.05.2018

Sri Ramakrishna College of Arts and Science (Autonomous)

Coimbatore – 641006

VALUE EDUCATION

[A one Credit Course offered during Even Semester with effect from 2018-2019 Academic year and onwards]

SN	Unit	Proposed Activities	References
1.	**Unit – I** Value Education & Human Education	• Assignments • Participation in seminar/workshop	https://www.slideshare.net/hitesh0141/human-values-57703636 https://www.slideshare.net/vinay3711/human-values-professional-ethics
2.	**Unit – II** Society & Family Values	• Assignment / Seminar • Participation in seminar/workshop	https://www.slideshare.net/khimberlybalbuena/society-and-culture-ppt https://www.slideshare.net/arunab/society-and-culture-14735577
3.	**Unit – III** Ethics & Leadership Qualities	• Participation in seminar/workshop • Paper presentation	https://www.slideshare.net/komalsuryavanshi/leadership-qualities-8798588?qid=bde3fb0b-eaba-4d71-8031-69ba121eebd8&v=&b=&from_search=1
4.	**Unit – IV** Social Values	• Quiz • Field Visit / Observation	https://www.slideshare.net/ParminderSingh320/our-social-values?qid=72be767e-11fc-4fed-ac3f-7d7525bf0fec&v=&b=&from_search=1
5.	**Unit – V** Social Problems and Role of Students	• Panel Discussion • Assignment / Seminar	https://www.slideshare.net/gowthamchandrasekar2/social-ills-that-ail-the-indian-society?qid=d37ea10f-9148-427a-b619-6b29293d9120&v=&b=&from_search=4

02.05.2018

Course Coordinator
Dr.R.Thirumoorthi
Prof. & Head – Social Work
Sri Ramakrishna College of
Arts and Science (Autonomous)

PERSONALITY, APTITUDE AND CAREER ENHANCEMENT (PACE – I)

Subject Code: 18CPE01

Common to all the UG streams admitted from MAY 2018-19

AIM:

Identifying individual students levels of communication and employability skills through assessments. Imparting the importance of soft skills and career planning for achieving goals, intra-personal skills through motivation and perception. Developing inter-personal skills, teamwork skills and emotional intelligence. Enhancing English language vocabulary and spoken communication skills.

Semester	I
Credit	1
Paper type	Skill based
Max. Marks	Online test : 50 + Viva-Voce : 50 = 100

Course Objectives

To enable students to,

- To identify individual levels of communication and employability skills through assessments.
- To impart the importance of soft skills and career planning for achieving goals.
- To give an account of the importance of intra-personal skills through motivation and perception.
- To enhance the usage of Grammar units like Nouns, Verbs, Tenses, Simple, Compound and Complex Sentences, Active & Passive Voice, Phrases, Synonyms, Antonyms, and Homonyms.
- To enhance English vocabulary and spoken communication skills.

Unit I Assessment of individual levels of communication skills, aptitude and employability skills; Psychometric test, SWOT analysis; Planning on setting goals.

Unit II Introduction to Career planning; Goal setting – Introduction to Soft Skills - Presentation skills - Intra-personal skills.

Unit III Emotional intelligence - Perception and Motivation.-Interpersonal Skills; Team work, styles in leadership.

Unit IV Enhancement of Basic English vocabulary; Parts of Speech, Nouns, Verbs, Tenses, Simple, Compound and Complex Sentences, Active and Passive Voice, Phrases, Synonyms, Antonyms, and Homonyms Descriptive words - Combining sentences, Sentence Formation and Completion.

Unit V Art of communication – the communication process - Word building and Role play; Exercise on English Language through symposiums and workshops.

Instruction Hours per Week: 40

Course Outcomes

On the successful completion of the PACE – I course the student would be able to…

- Identify their individual level of communication, aptitude and employability skills to understand their competency level.
- Plan their career and set their goals.
- Prove their presentation skills and also intra and interpersonal skills.
- Communicate well with improved sentence making skill and vocabulary.

References:

1) A Modern Approach to Verbal and Nonverbal Reasoning by Dr. R. S. Aggarwal
2) A Modern A Modern Approach to Verbal by Dr. R. S. Aggarwal
3) A Modern Approach to Nonverbal Reasoning by Dr. R. S. Aggarwal
4) A Practical Course in Spoken English by J.K.Gangal
5) Effective English Communication for you by V.Shamala
6) Developing Communication Skills by Krishna Mohan & Meera Banerji
7) English for Competitive Exams by Bhatnagar

18CAC01 - DATA STRUCTURES

(Common to Computer Applications, Computer Science and Information Technology)

Semester	II
Credit	4
Max. Marks	CIA - 30 CE - 70 TOT =100

COURSE OBJECTIVES

- To inculcate knowledge on basic data structures and importance of data structures in computer programs.
- To distinguish the key difference between various data structures and its application purpose.
- To acquire the knowledge about Various Linked Lists, its Applications and Trees and Graphs.
- To analyze the problem, properties, to develop an algorithm and determine the use of appropriate data structures in different real world applications

UNIT–I **11**

Introduction: Definition, Structure and properties of algorithms, Development of an algorithm, Data Structures and Algorithms, Data Structure - Definition and Classification. **Arrays:** Introduction, Array operations, Number of elements in an array, Representations of arrays in memory, applications.

UNIT–II **11**

Stacks: Introduction -Stack Operations - Stack implementations- **Applications:** Recursive Programming – Evaluations of Expressions. **Queues:** Introduction – Queue Operations – Queue implementations - Limitations of Linear Queue - **Circular Queues :** Operations on a Circular Queue – implementations of insertion and deletion in a Circular Queue - Other types of queues Priority Queues - Deque. **Applications** of Linear queue – **Applications** of Priority Queue.

UNIT–III **11**

Linked Lists: Drawbacks of sequential data structure – Merits of Linked data structures. **Singly Linked List**:- Representations - Insertion and Deletion in a singly Linked Lists. **Circular Linked lists** : Representations – Advantages of Circular Linked lists Over singly Linked Lists - Disadvantages of Circularly Linked Lists – Primitive Operations on Circular Linked lists. **Doubly linked lists**: Representations – Advantages and Disadvantages of Doubly Linked lists - Operations on Doubly Linked lists. **Applications**: Addition of Polynomials.

UNIT–IV **11**

Trees: Introduction, Trees-basic terminologies, Representation of Trees. **Binary Trees:** Basic terminologies and types, representation of Binary Trees, Binary tree Traversals, Threaded Binary Trees, Applications.
Graphs: Introduction, Definition and basic terminologies

UNIT–V **11**

File organizations; Introduction, Files, Keys, Basic File Operations. Sequential File Organizations, Indexed Sequential File Organizations, Direct File Organizations. **Searching**: Linear search, Binary search. **Sorting**: Merge sort and Quick sort.

Total Periods:55 hours

COURSE OUTCOMES:

On thesuccessful completion of the course, the student will be able to

CO1: Articulate the knowledge of basic data structures, its classifications and its importance in computer programs.
CO2: Analyze and Implement various operations of different data structures in real world problems.
CO3: Design and implement abstract data types such as linked list, stack, queues and trees to solve the problems.
CO4: Understand and implement fundamental algorithms like searching and sorting in various real time applications.

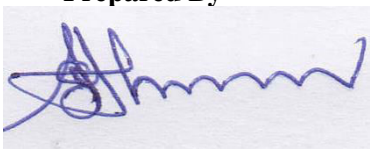
TEXT BOOK

1. G A V PAI " Data Structures and Algorithms-Concepts , Techniques and Applications"- TATA McGRAW HILL, 6th Reprint -2011. HTTP://WWW.mhhe,com/pai/dsa.

REFERENCE BOOKS

1. Ellis Horowitz &Sartaj Shani "Data And File Structures"- Galgotia Publication.
2. Jean Paul Tremblay, Paul G. Sorenson "An Introduction to Data Structures With Applications"- Second Edition, Tata Mcgraw Hill.

Prepared By



(Dr. S. Thavamani)

Approved By

(Dr. D. Hariprasad)

18CAC02 - OBJECT ORIENTED PROGRAMMING WITH C++ AND LAB

(Common to Computer Science / Information Technology / Computer Application)

Semester	II
Credit	5
Max. Marks	CIA – 50* CE – 50$ TOT -100

COURSE OBJECTIVES

- Understand object oriented programming and advanced C++ concepts
  - Be able to explain the difference between object oriented programming and procedural programming.
  - Be able to program using more advanced C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.
- Be able to build C++ classes using appropriate encapsulation and design principles.
- Improve problem solving skills

UNIT–I 15

Principles of Object-Oriented Programming: Software evolution – Procedure - oriented programming– Object-oriented programming paradigm – Basic concepts of OOPS – Benefits of OOPS – OOPS languages - Application of OOPS. **Beginning with C++:** What is C++ - Application of C++- Structure of C++ program–Data types–Declaration of variables– dynamic initialization of variables – Reference variables–Operators – Scope resolution operator – Operator Precedence – Control Structures.

Functions in C++: The main () function - Function prototype – Call by Reference – Return by reference - Inline functions - Default arguments – Function overloading

Practical Lab Exercises:

Develop C++ programs for

- Simple array
- Inline Functions
- Function Overloading

UNIT–II 15

Classes and Objects: Specifying Class – Defining member functions – Private member functions–Array with class-Static data members – Static member functions - Array of objects – Objects as function arguments – Returning objects- Constant member functions – Friend functions.**Constructors and Destructors**: Constructors - Types of constructors – Multiple constructors in a class Dynamic constructor –Destructors.

Practical Lab Exercises:

Develop C++ programs for

- Objects and Classes
- Array of Objects
- Constructors and Destructors

UNIT–III 15

Operator Overloading and Type Conversion: Defining operator overloading function –Overloading unary operators - Overloading binary operators - Overloading Binary operators with friend functions – Rules for overloading operators

Practical Lab Exercises:

Develop C++ programs for

- Overloading Unary Operators
- Overloading Binary Operators Using Friend functions

UNIT–IV 15

Inheritance: Defining derived classes – Types of inheritance – Virtual base classes – Abstract classes– Constructors in derived classes - Nesting of classes. **Pointers, Virtual functions and polymorphism:** Pointers to objects – this pointer – pointers to derived classes – virtual functions – pure virtual functions

Practical Lab Exercises:

Develop C++ programs for

* Multilevel Inheritance
* Multiple Inheritance
* Virtual Functions

UNIT–V **15**

Managing Console I/O Operators: C++ streams – Stream classes – Unformatted I/O operations– Formatted console I/O operations, Managing Output with Manipulators. **Working with Files:** Classes for file stream operations – Opening and Closing a file – Detecting end-of- File– File open modes – File pointers and their manipulators. **Templates:** class templates and function templates.

Practical Lab Exercises:

Develop C++ programs for

* Console I/O Operations
* File Operations

COURSE OUTCOME :

On the successful completion of the course, students will be able to

CO1: Distinguish between Structured and Object Oriented problem solving approaches and apply them based on t the problem given.

CO2: Identify classes and objects from the given problem description and able to create classes and objects using C++.

CO3: Improve secured data processing by applying Abstraction, Encapsulation and Information hiding

CO4: Achieve code reusability and extensibility by means of Inheritance and Polymorphism.

CO5: Apply the concepts of files and stream classes

Total Periods : Theory 45 Hours
Practical 30 Hours

Text Book:

1. Balagurusamy E, Object Oriented Programming with C**++,** McGraw Hill Education (India) Private Limited, New Delhi Sixth Edition**-**2013.
   UNIT I – Chapter 1 (Except 1.1), Chapter 2 (Only 2.1,2,2, 2,6), Chapter 3 (3.5 – 3.7, 3.10 – 3.14, 3.23, 3.24) Chapter 4 (4.1 -4.7, 4.9)
   UNIT II – Chapter 5 (5.3, 5.4, 5.8, 5.9, 5.11-5.17) Chapter 6 (Except 6.6, 6.9, 6.10)
   UNIT III – Chapter 7(Except 7.6, 7.8)
   UNIT IV – Chapter 8, Chapter 9
   UNIT V – Chapter 10, Chapter 11 (11.1 – 11.6), Chapter 12(12.2, 12.4)

Reference Books:

1. Herbert Schildt, C++ - The Complete Reference, Tata McGraw Hill, 1998.
2. Paul Deitel, Harvey Deitel, C++ How to Program, PHI, 9th edition, 2014.
3. Ashok N.Kamthane, Object Oriented Programming with ANSI & Turbo C ++, Pearson Education, 2006.
4. Poornachandra Sarang, Object-Oriented Programming With C++, PHI, 2nd Edition, 2009.
5. Alok Kumar Jagadev, Amiya Kumar Rath and Satchidananda Dehuri Object-Oriented Programming Using C++, PHI, New Delhi, 2007.

* Evaluation will be done in the form of Lab Exercises done by the students. (10 Marks per Unit lab Exercises).(5 * 10 = 50 Marks)

$ Evaluation will be External Descriptive Exam only for 50 Marks.

Prepared By
(Dr. N. Muthumani)

Approved By
(Dr. D. Hariprasad)

Semester	II
Credit	4
Paper Type	Allied
Max. Marks	CIA -30 CE -70 TOT =100

18IT201 – COMPUTATIONAL MATHEMATICS AND STATISTICS

COURSE OBJECTIVE

To enable the students to learn and visualize the fundamental ideas about matrices, numerical method and statistics.

UNIT I MATRICES (11)

Definitions – Operations – Inverse of a matrix – Eigen values - Eigen vectors – Characteristic equation – Cayley Hamilton Theorem (Statement only)-simple problems.

Chapter IV – Section (1 to 4)

UNIT II SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATION (11)

Bisection method , Method of false position -Newton Raphson (No Derivation)-simpleproblems.

Chapter III – Section (1 to 4)

UNIT III SYSTEM OF SIMULTANEOUS LINEAR ALGEBRAIC EQUATIONS (11)

Gauss Elimination method – Gauss Jordan method– Inversion of matrix - Gauss Jacobi method- Gauss Seidel methods (No Derivation) –simple problems.

Chapter IV – Section (1 to 3 and 6,7)

UNIT IV INTERPOLATION (11)

Newton Forward interpolation-Newton Backward Interpolation formula – Numerical Differentiation : Newton's forward Difference- Backward Difference – Numerical Integration : Trapezoidal rule- Simpson's1/3 rule. (No Derivation).

Chapter VI – Section (1 to 4), Chapter IX – Section (1 to 8)

UNIT V STATISTICS (11)

Arithmetic mean-Standard deviation- Simple Correlation-Karl Pearson's co-efficient of correlation- Rank Correlation.

Chapter VII – Pages (162-168), Chapter VIII – Pages (325-340),
Chapter XII – Pages (503-505,506-508,518-522)

COURSE OUTCOMES

After the completion of the course the students will be able to

- Formulate problems on matrix concepts
- Solve algebraic and transcendental equation problems.
- Determine the solution for linear algebraic equation.
- Derive the numerical and integration problems.
- Gain knowledge about mean, SD and correlation.

Total Periods : 55

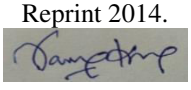
*** Note : The Question paper consists 20% Theory and 80% Problems**

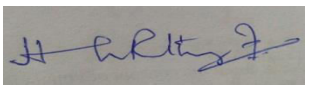
TEXT BOOKS

1. Dr. M. K. Venkataraman "Numerical methods in Science and Engineering" National Publishing Company , 5th edition 1999, Reprint 2013. (**Unit II , III, IV**)
2. Navnitham Pa , "Business Mathematics and Statistics " S.Chand & Co. Ltd., Reprint 2015. (**Unit V**)
3. Dr.M.K. Venkataraman, "Engineering Mathematics Vol. II " National Publishing Company, 4th edition 2003. (**Unit I**)

REFERENCE BOOK

1. S. S . Sastry, "Methods of Numerical Analysis", Prentice-Hall India , 3rd edition 1999, Reprint 2014.





Mr.VASANTH KUMAR BONIFACE
(COURSE COORDINATOR)

DR.HANNAH REVATHY F.
(BOS CHAIRMAN)

18CAC02 - DATA STRUCTURES LAB USING C

(Common to Computer Applications, Computer Science and Information Technology)

Semester	**II**
Credit	**3**
Max. Marks	**CIA -30** **CE -70** **TOT =100**

COURSE OBJECTIVES

- To develop skills to design and analyze simple linear and nonlinear data structures.
- To strengthen the ability to identify and apply the suitable data structure for the given real world problem
- To gain knowledge in practical applications of different data structures

Write C Programs To Illustrate the Data Structure Concepts

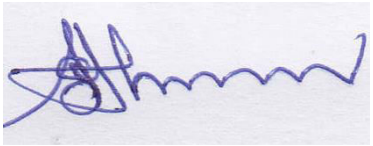
1. Create a C Program to find out maximum and minimum of given numbers using an array.
2. Write a C Program to calculate Factorial of a given number using Recursion.
3. Write a C Program to transpose of a given matrix using Two Dimensional Array.
4. Create a Stack and perform the operations like PUSH, POP and VIEW its elements in C.
5. Create a Queue and perform the operations like INSERT, DELETE & VIEW its elements in C.
6. Write a simple code for linear search in C Programming Language.
7. Write a C Program to search an element in an array using binary search.
8. Sort out the given numbers using Merge Sort Techniques in C Programming Language.
9. Sort out the given numbers using Quick Sort Techniques in C Programming Language.
10. Write a C Program to create a Linked List and Display its Length.

COURSE OUTCOMES:

On the completion of the course, the students will be able to

CO1: Implement elementary data structures such as stacks, queues, linked lists, trees and graphs.
CO2: Determine the appropriate data structure to represent real world applications.
CO3: Acquired practical knowledge on the application of data structures.
CO4: Analyze and develop the program for the real world problems by using appropriate data structure.

Total Periods: 33 Hours



Prepared By
(Dr. S. Thavamani)

Approved By
(Dr. D. Hariprasad)

18CSC07 COMPUTER ORGANIZATION AND ARCHITECTURE
(Common to Computer Science / Information Technology / Computer Applications)

Semester	I
Credit	4
Paper Type	Core Theory
Max. Marks	CIA -30 CE -70 TOT =100

COURSE OBJECTIVES:

- To understand how computers are constructed out of a set of functional units how the functional units operate, interact, and communicate
- To understand the concrete representation of data at the machine level and computations are performed at the machine level
- To know the fundamentals of computer organization and relate these basics to the contemporary design issues
- . To provide the students a thorough understanding of the inner workings of a computer system, and the various hardware and software issues related to computers.

UNIT I **12**

Central processing unit – General register organization – Stack organization – Instruction formats – Addressing modes- Data Transfer and manipulation-Program control - RISC.

UNIT II **12**

Pipeline & vector processing: Parallel processing-Pipelining – Arithmetic pipeline – Instruction pipeline – RISC pipeline – Vector processing – Array processors.

UNIT III **12**

Computer arithmetic addition & subtraction – Multiplication algorithm – Division algorithm – Floating point Arithmetic operation.

UNIT IV **12**

Input-Output organization: Input-Output interface - Asynchronous data transfer (Strobe and Handshaking)-Modes of transfer- priority interrupt- Direct memory access – Input-Output processor.

UNIT V **12**

Memory Organization: Memory hierarchy – main memory –Auxiliary Memory-Associative memory – Cache Memory – Virtual memory.

Total Periods: 60

COURSE OUTCOME

On successful completion of the course, the students will be able to

CO1: Think critically and independently about computer system design
CO2: Understand the strengths and weaknesses of the conventional computational organizations.
CO3: Learn the concepts of computer organization for several engineering applications.
CO4: Develop the ability and confidence to use the fundamentals of computer organization as a tool in the engineering of digital systems.

TEXTBOOK:

1. M.MORRIS MANO, "Computer System Architecture", 3rd Edn, PHI Pub., 2013.
Unit I – chapter 8, Unit II – chapter 9, Unit III – 10, Unit IV – 11, Unit V – 12

REFERENCE BOOK :

1. John P Hayes "Computer Architecture & Organization", Tata McGraw Hill Pub., Pvt. Ltd, 3rd Edition – 2004
2. Stephan D Burd, "System Architecture", 3rd Edition – Vikas Pub., 2002.

Prepared By **Approved by**

P.KAVITHA **Dr. G. MARIA PRISCILLA**

18ES01 - ENVIRONMENTAL STUDIES

Semester	II
Credit	1
Max. Marks	CIA - 100 TOT = 100

COURSE OBJECTIVES

- To recognize the major concepts of ecosystem and have in-depth understanding of environmental interactions and alternate energy resources.
- To understand the role of various environmental pollutants and its effects.
- To understand the environmental social issues and develop problem – solving skills using scientific techniques.
- To understand the Human Population growth and its variation in the environment.

Unit I **(4)**

Multidisciplinary nature of environmental studies Definition, scope and importance, Need for public awareness. Introduction to Renewable and Nonrenewable sources – Uses of alternate energy sources.

Unit II **(6)**

Ecosystems - Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem, Food chains, food webs and ecological pyramids. Types of ecosystem Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). Biodiversity – Levels – Patterns – Threats – Biodiversity services.

Unit III **(5)**

Environmental Pollution – Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Solid waste Management : Causes, effects and control measures of urban and industrial wastes. Disaster management : floods, earthquake, cyclone and landslides.

Unit IV **(6)**

Social Issues and the Environment Urban problems related to energy, Water conservation, rain water harvesting, watershed management, Environmental Issues in Coimbatore District (Noyyal River, Dye Industries and Agricultural issues). Environmental ethics : Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents. Environment Protection Act, Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation.

Unit V **(5)**

Human Population and the Environment - Population growth, variation among nations, Population explosion – Family Welfare Programme, Environment and human health, Human Rights-Women and Child Welfare, Role of Information Technology in Environment and human health.

***Activity – Visit to Local polluted site and documentation.**

Total Periods: 26

COURSE OUTCOMES

- Ability to understand the principles of ecology and major concepts in environmental sciences.
- Ability to identify the key concepts in Environmental pollution that apply to air, land and water issues on a global scale and population growth.
- Ability to relate the Socio- Environmental issues and apply them to the analysis or question related to the environment.
- Ability to understand the human rights, women and child welfare in the environment.

REFERENCES

1. Environmental Studies for Undergraduate Course – Bharathiar University.

2. Textbook for Environmental Studies for Undergraduate Courses of all Branches of Higher Education, Erach Bharucha for University Grants Commission, New Delhi and Bharati Vidyapeeth Institute of Environment Education and Research, Pune.

3. Shashi Chawla "A Text Book of Environmental Studies", 1st edition, Tata McGraw Hill, 2012

Verified by Course Coordinator
(Dr.D.Jayasheela)

Approved by BOS Chairperson
(Dr.D.Jayasheela)

PERSONALITY, APTITUDE AND CAREER ENHANCEMENT (PACE – II)

Subject Code: 18CPE02

Common to all the UG streams admitted from MAY 2018-19

AIM:

To enrich students with the Fundamentals of English Grammar, communication skills and professional grooming. Equip them on the techniques of Group Discussion, public speaking, debate, extempore and quiz etc.

Semester	II
Credit	1
Paper Type	Skill based
Max. Marks	Online test : 50 + Viva-Voce : 50 = 100

Course Objectives

To enable students to,

- Revive the Fundamentals of English Grammar
- Improve communication skills and professional grooming.
- Learn the techniques of Group Discussion.
- Take part in public speaking, debate, extempore and quiz etc.

Unit I English language enhancement- Business Idioms- Indianisms in English- Common Errors in Pronunciation - Signposts in English- Verbal ability-Articles-Parts of speech-Phrases, clauses and modifiers - errors in tenses – prepositional errors – parallelism errors – mood, conditionals and multiple usages.

Unit II English listening- hearing Vs. listening - Nonverbal communication – Appearance, dressing and grooming -Tips to maintain good impression at work - business etiquette – basic postures and gestures and table manners, Body language - dealing with people communication - media etiquette - telephone etiquette, email etiquette.

Unit III Group discussion, interviews and presentation skills - Group behaviour – Team Work – Team building – Open and Closed group discussions.

Unit IV Public speaking skills – Social Phobia – Eliminating Fear - Organizing speech and effective delivery – Common etiquette of Public speaking - opening and closing of speech, audience management and styles.

Unit V Exercises on Resume writing - Public speaking, Group discussion, debate, extempore, quiz and contemporary group play and role play.

Instruction Hours per Week: 40 Hours

Course Outcomes

On the successful completion of the PACE - II course the student would be able to…

Apply fundamentals of English grammar in usage, identify common errors, and pronunciation well.

Display the art of Communication both verbally and non-verbally with business etiquette.

Take part in in GD, Interview along with the ability of effective team work and group behavior.

Present public speaking without fear and with fundamental social etiquettes.

- Equipped in the various exercises like GD, Debate, Extempore and so on.

References:

1) A Modern Approach to Verbal and Nonverbal Reasoning by Dr. R. S. Aggarwal
2) A Modern A Modern Approach to Verbal by Dr. R. S. Aggarwal
3) A Modern Approach to Nonverbal Reasoning by Dr. R. S. Aggarwal
4) A Practical Course in Spoken English by J.K.Gangal
5) Effective English Communication for you by V.Shamala
6) Developing Communication Skills by Krishna Mohan & Meera Banerji
7) English for Competitive Exams by Bhatnagar

18CSC03 JAVA PROGRAMMING

(Common to Computer Science / Information Technology / Computer Application)

Semester	III
Credit	4
Paper Type	Core IX
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES:

The students should be able to

- Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.
- Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.
- Understand the principles of inheritance, packages and interfaces.
- Inculculate the knowledge of threading, Japplet and Swing.

UNIT – I

11

Java Evolution: Java history - Java features – How Java differs from C and C++ - Java environment – **Overview of Java Language:** Simple Java Program - Java Program Structure – Java Tokens – Java Virtual Machine – **Constants, Variables and Data Types:** Constants – Variables - Data Types – Scope of Variables – Type Casting – **Operators and Expressions:** Type Conversions in Expressions - Operator Precedence and Associativity. **Decision Making and Branching:** Decision Making with If Statement - **Decision Making and Looping:** while statement - do statement - for statement - Jumps in Loops - Labeled Loops. Arrays – Strings. **Using Java's Documentation Comments:** The javadoc Tags - The General Form of a Documentation Comment - What javadoc Outputs - An Example that Uses Documentation Comments.

UNIT – II

11

Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming – **Classes, Objects And Methods:** Defining a Class - Fields Declaration - Methods Declaration - Creating Objects - Accessing Class Members – Constructors - Method Overloading - Static Members - Nesting of Methods - Inheritance: Extending a Class - Overriding Methods - Final Variables and Methods - Final Classes - Finalizer Methods - Abstract Methods and Classes - visibility control. **Interfaces:** Defining Interfaces - Extending Interfaces - Implementing Interfaces - Accessing Interface Variables.

UNIT – III

11

Packages: Java API Packages - Using System Packages - Creating Packages - Accessing a Package - Using a Package - Adding a Class to a Package - Hiding Classes - Static Import. **Managing Errors and Exceptions:** Types of Errors - Exceptions - Syntax of Exception Handling Code - Multiple Catch Statements - Using Finally Statement - Throwing our Own Exceptions. **Java Collections:** Overview of Interfaces: The Collection Interface - Overview of Classes: The AbstractCollection Class - The AbstractList Class.

UNIT – IV

11

Multithread programming: Introduction - Creating Threads - Extending the Thread Class-Stopping and Blocking a thread-Life cycle of a Thread - Using thread methods - Thread Exceptions - Thread Priority - Synchronization - Implementing the runnable Interface. **IO Stream:** Stream Classes - Byte Stream Classes - Character Stream Classes.

UNIT – V

11

The Applet Class: Basics – Building applet code – Applet life cycle– Creating an executable applet – Running the applet. **Introducing Swing:** The Origins of Swing - Two Key Swing Features - Components and Containers - The Swing Packages - A Simple Swing Application - Create a Swing Applet - Painting in Swing. **Exploring Swing:** JLabel and ImageIcon - JTextField - The Swing Buttons - JButton - JToggleButton - Check Boxes - Radio Buttons - JTabbedPane - JScrollPane - JList - JComboBox - Trees - JTable.

COURSE OUTCOMES

Total Periods : 55 Hours

Upon successful completion the students will be able to

- Acquire the knowledge in basic features of Java Programming. L1
- Identify classes and methods for real time problems and apply Java specific concepts of code reusability. L2
- Design a well structured application by applying Packages, Exception Handling and Collection Class. L3
- Apply the concepts of threading and Stream Classes. L2
- Design a web application by using Japplet and Swing. L3

TEXT BOOK

1. E. Balagurusamy, Programming with Java: A Primer, 5th Edition, Tata McGraw Hill Pub.Ltd., New Delhi,2017.
   Unit-1: Chapters 2-7, 9 Unit-2 : 1,8,10 Unit 3: 11,13,17 Unit 4: 12,16 Unit 5: 14,15
2. Herbert Schildt, "Java: The Complete Reference",11th Edition, McGraw Hill Education, 2019.
   Unit 1: Appendix A, Unit 5: Chapter 31,32.

Verified by
Dr.P.Manikandaprabhu

Approved by
Dr.G.Maria Priscilla

18CSC04 JAVA PROGRAMMING LAB

(Common to Computer Science, Information Technology and Computer Application)

Semester	**III**
Credit	**3**
Paper Type	**Core X**
Max. Marks	**CIA:30 + CE :70**

COURSE OBJECTIVES:

The students should be able to

- Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- Use the Java SDK environment to create, debug and run simple Java programs.
- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- Convert specific problems to Java Programming.

1. Implement String handling functions.
2. Implement Class mechanism.
3. Implement Method Overriding Concept.
4. Implement the concept of Method Overloading and Constructor Overloading.
5. Implement various forms of Inheritance.
6. Implement the Interface Concept.
7. Implement the Collection Class.
8. Implement the following Exceptions.

   (a) Null Pointer Exception (b) Arithmetic exception (c) I/O exception (d) ArrayIndexOutofBounds exception.
9. Implement the Multithreading concept.
10. Design a web application using JApplet and Swing.

CASE STUDY

- Design and Implement a Payroll System for an Organization/Institution.

COURSE OUTCOMES

Total periods: **33 Hours**

Upon successful completion the students will be able to

- Write Java program in the aspects of designing, coding and implementation. **L2**
- Design a computer program to solve real world problems based on object-oriented principles. **L3**
- Analyze various concepts and apply them based on the nature of given problem.
- Design web application using JApplet and Swing. **L3**

L3

Verified by
Dr.P.Manikandaprabhu

Approved by
Dr.G.Maria Priscilla

18ITC03- COMPUTER NETWORKS

(Common to all branches Computer Science/Information Technology/BCA)

Semester	IV
Credit	3
Paper Type	Core
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES

- To understand the Reference model and its layers.
- To know the Data link Layer with the issues arising in Channel Allocation.
- To be aware of the various routing algorithm for transferring data.
- To know about the services of the transport layer.
- To secure data from the opponent while the data is transferred.

UNIT–I **11**

Introduction: Uses of Computer networks - Network hardware - Reference models The Physical Layer: Guided transmission media-Communication satellites – Wireless Transmission-The Mobile Telephone System.

UNIT – II **11**

The Data link layer: Data link layer design issues-Error detection and correction. The medium access Control sub layer: The channel allocation problem- Multiple Access Protocols: Carrier Sense Multiple Access Protocols, Collision free Limited Contention Protocols- Broadband Wireless.

UNIT – III **11**

The Network layer: Network layer design issues – Routing algorithms: The optimality Principle – Shortest path algorithm - Flooding - Distance vector routing – Link State Routing – Hierarchical Routing – Broadcast Routing - Routing for mobile hosts - Congestion Control Algorithm - Approaches – Traffic Aware – Admission Control.

UNIT – IV **11**

The Transport Layer: The Transport Service: Service provided to the upper layer-transport service primitives, Berkeley Sockets-Elements of transport protocols The Internet Transport Protocol UDP - Remote Procedure call.

UNIT – V **11**

The application layer: DNS- the Domain Name System. Network Security: Cryptography – Symmetric key algorithms- Public key Algorithm – RSA – Digital Signatures.

COURSE OUTCOMES

Upon the successful completion of the course the students will be able to

- Identify the services of the layers of the reference model. (L1)
- Deal with the issues when data transferred through channels. (L3)
- Choose the right routing technique. (L2)
- Identify the Protocols that are used from the time of Data transferred till it reaches the destination. (L1)
- Implement various cryptographic algorithms to secure data. (L3)

Total Periods: 55

TEXTBOOK

1. Andrew S TanenBaum&David.J.Wetherall, "Computer Networks", 5th Edition, Pearson Edition Publications 2, 2015

UNIT I - CHAPTERS 1, 2 UNIT II- CHAPTERS 3,4 UNIT III - CHAPTER 5
UNIT IV CHAPTER 6 UNIT V - CHAPTERS 7,8

REFERENCEBOOKS

1. Miller " Data and Communication", Vikas Publication, 2015
2. William A Shay, "Understanding Data Communication and Network" 2nd Edition, Vikas Publication, 2017

Prepared by
Mr .A. SUNIL SAMSON

Approved by
Dr.N. SUMATHI

18ITC04 Practical -VI: RDBMS Lab
(Common to Computer Science / Information Technology / Computer Applications)

Semester	**III**
Credit	**2**
Paper Type	**Core Practical**
Max. Marks	**CIA:15 + CE :35**

COURSE OBJECTIVES

- To give a good formal foundation on the relational model of data
- To apply the various constraints in RDBMS
- To create reports.

SQL

1. Implement Data Definition language commands & perform various Constraints operations
2. Implement DML & TCL commands
3. Perform Queries using various operators and built in functions
4. Implement Nested Queries, Join Queries
5. Construct Selection, projection and Set operations

PL/SQL

6. Demonstrate PL/SQL block using various control statements.
7. Construct a program for implementation of Cursors

TRIGGERS

8. a. Create a Trigger to perform DML operations

   b. Program to indicate invalid condition using trigger.

FUNCTIONS

9. a. Implement the concept of recursive function.

   b. Write a PL/SQL function to search an address from the given database

REPORTS

10. Creation of report for a database.

*** The above programs can be implemented using database management toolsets like TOAD (Tool for Oracle Application Developers), RazorSQL etc**

Total Periods: 30

COURSE OUTCOME

Upon the successful completion of the course the students will be able to:

- Design and implement a database schema for a given problem domain.(L3)
- Analyze the use of Structured Query Language (SQL) and its syntax.(L3)
- Populate and query a database using SQL DML/DDL commands.(L2)
- Implement PL/SQL programming including stored procedures, functions and Triggers.(L2)

Prepared By,
(B.Vidhya)

Approved By,
(Dr.N.Sumathi)

Semester	III
Credit	3
Paper Type	Open Elective
Max. Marks	CIA:30 + CE :70

18ITI01 OPEN ELECTIVE I- MULTIMEDIA TECHNIQUES

COURSE OBJECTIVES

- To impart the foundation knowledge of multimedia techniques and tools.
- To gain knowledge in image, sound and video editing and in some aspects of Multimedia authoring.
- To identify the current and future issues related to multimedia technology.

UNIT–I WHAT IS MULTIMEDIA? 08

Multimedia Definition – Use Of Multimedia – Delivering Multimedia – Text: About Fonts and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.

UNIT–II IMAGES & SOUND 09

Images: Plan Approach – Organize Tools – Configure Computer Workspace – Making Still Images – Color – Image File Formats. Sound: The Power of Sound – Digital Audio – Midi Audio – Midi vs. Digital Audio – Multimedia System Sounds – Audio File Formats – Vaughan's Law of Multimedia Minimums – Adding Sound to Multimedia Project.

UNIT–IIIANIMATION & VIDEO 09

Animation: The Power of Motion – Principles of Animation – Animation by Computer – Making Animations that Work. Video: Using Video – Working with Video and Displays – Digital Video Containers – Obtaining Video Clips – Shooting and Editing Video.

UNIT–IVMAKING MULTIMEDIA 09

The Stage of Multimedia Project – The Intangible Needs – The Hardware Needs – The Software Needs – An Authoring Systems Needs. Multimedia Production Team.

UNIT–VPLANNING AND COSTING 09

The Process of Making Multimedia – Scheduling – Estimating – RFPs and Bid Proposals. Designing and Producing – Content and Talent: Acquiring Content – Ownership of Content Created for Project – Acquiring Talent

COURSE OUTCOMES

Upon the successful completion of the course the students will be able to:

- Describe the basic concept of multimedia and its designing. (L1)
- Identify the application of images in digital world &Compare and contrast between various audio formats. (L2)
- Develop, edit and improve the content that incorporates a variety of digital media such as animation and video. (L2)
- Explore the various stages and the components needed for multimedia.(L3)
- Evaluate the implications of costing and planning in making multimedia.(L2)

TotalPeriods: 44 Hours

TEXTBOOK

1. TayVaughan"Multimedia:Making It Work"Tata McGraw-Hill Publishing,9thEdition,NewDelhi. 2014

REFERENCEBOOKS

1. Prabhat K. Andleigh, Kiran Thakrar"Multimedia Systems Design"Dorling Kindersley Pvt. Ltd4th Edition.
2. Ralf Steinmetz, KlaraNahrstedt, "Multimedia, computing, communications and applications", pearson Education.

Prepared by:
Mrs.B.VIDHYA

Approved by:
Dr.N.SUMATHI

Semester	III
Credit	3
Paper Type	Allied
Max. Marks	CIA -30 CE -70 TOT =100

18MATC05 – OPERATIONS RESEARCH

(Common to B.Sc. Computer Science, BCA & B.Sc. Information Technology)

COURSE OBJECTIVE

- To enable the students to understand the operational research concepts.

UNIT I :LINEAR PROGRAMMING (11)

Introduction – Mathematical Formulation of the Problem – Graphical Solution –Standard forms of the LPP – Simplex Method of $\leq$ constraints only.

Chapter – 2 &3 (2.1 -2.3) (3.1, 3.2, 3.4, 3.5, 3.6)

UNIT II TRANSPORATION AND ASSIGNMENT PROBLEM (11)

The Transportation Problem : Mathematical Formulation – Initial Basic Feasible Solution [North – West Corner Rule method, Least Cost method, VAM] - Unbalanced Transportation problem – Optimal solution [MODI Method] (Non-degeneracy problems only).**Assignment Problem :** Mathematical Formulation – Hungarian Assignment method – Unbalanced Assignment problem .

Chapter – 10 &11 (10.1 -10.3, 10.8 – 10.13) (11.1- 11.4)

UNIT III GAME THEORY AND INVENTORY CONTROL (11)

Game Theory : Concept of Pure and Mixed Strategies – Solving 2x2 matrix with and without saddle point- Graphical method of solving 2xm and nx2 games – Dominance property.

Inventory Control : Introduction – Various costs involved in the Inventory - EOQ models with and without shortages.

Chapter – 17 &19 (17.1 - 17. 7) (19.1 – 19.11)

UNIT IV REPLACEMENT PROBLEMS AND WAITING LINE THEORY (11)

Elementary replacement models – Individual and Group Replacement.

Definition of waiting line models – Problems from single server infinite population models .

Chapter –18 &21 (18.1 - 18.3) (21.1- 21.4, 21.7 – 21.9 model I only)

UNIT V CPM AND PERT (11)

Network representation – forward and backward pass computation - Critical path - Total, free and independent floats

PERT Calculations –Time scale analysis – Critical path –Probability factor.

Chapter – 25 (25.1 -25.8) (except 25.5)

*** No Derivations. Only applications**

COURSE OUTCOMES

After the completion of the course the student will be able

- to solve linear programming problems, (L3)
- to solve transportation and assignment problems; (L3)
- to acquire knowledge about game theory and construct inventory models (L3)
- to acquire knowledge about replacement in real life and solve waiting line problems. (L3)
- to construct network models. (L3)

Total Periods : 55

*** Note : The Question paper consists 20% Theory and 80% Problems**

TEXT BOOK

1.KantiSwarup, P.K.GuptaandMan Mohan "Operations Research" – Sultan Chand and Sons,13th Edition Reprint 2017, New Delhi.

REFERENCE BOOKS

1. P.K. Gupta, D.S. Hira "Introduction to Operations Research"– S.Chand Publication ,New Delhi, 2012.
2.Sundaresan, Ganesan&Ganapathy Subramanian "Resource Management Techniques"– A.R.Publications,9th Edition, Chennai, 2015.

Mr.E.VIVEK
(COURSE COORDINATOR)

Dr.N.UMA
(BOS CHAIRMAN)

18ITC05 Skill based Subject 1:RDBMS

(Common to Computer Science / Information Technology / Computer Applications)

Semester	III
Credit	3
Paper Type	Skill Based
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES

- Enable the students to understand the concept of relational database system
- Perform the principles of data modeling using Entity Relationship and develop good database design.
- Impart the use of Structured Query Language (SQL) and its syntax.
- Knowledge on Normalization techniques to database.
- Emphasize the need of Database processing and learn techniques for database failures and Recovery.

UNIT–I **8**

Database and Database users: Introduction-Characteristics of the database approach- Actors of the scene- Workers behind the scene-Advantages of using the DBMS approach-A brief history of database applications – when not to use a DBMS.
Database System Concepts and Architecture: Data models, schema & instances-Three schema architecture and data independence-database languages and interfaces - The database system environment-Centralized and Client/Server architecture of DBMS – classification of database management system

UNIT–II **9**

Data modeling using the ER-Model: Entity types, Entity sets, Attributes and keys- Relationship types, relationship sets roles & structural constraints- weak entity types-ER Diagrams, naming conventions and design issues
Relational Model: Relational model concepts - Relational model constraints &Relational database schemas – Update operation and dealing with constraint violations.
The Relational Algebra: Unary Relational operations-Relational algebra operation from set theory – Binary Relational operation- Additional relational operation

UNIT–III **9**

SQL: SQL Data definition & data types – Basic constraints in SQL – Schema change statements in SQL- Basic queries in SQL –More complex queries in SQL –Insert, Delete & Update in SQL – Additional features in SQL. More SQL: Assertions Views – Database Programming issues & techniques – Embedded SQL.

UNIT–IV **9**

Functional dependencies and Normalization for relational databases: Functional dependencies – Normal forms based on primary keys- General Definition for second and third normal forms- Boyce Codd normal form –Multi - valued dependencies & fourth normal form – Join dependencies & Fifth normal form.

UNIT–V **9**

Introduction to transaction processing concepts: Introduction – Transaction and system concepts – Desirable properties of transaction- characterize schedules based on recoverability and serializability - Transaction Support in SQL
Database recovery techniques: Concepts- Recovery techniques based on deferred update and immediate update, shadow paging, the ARIES recovery algorithm – Recovery in multidatabase systems

Total periods:44

Course Outcome

Upon the successful completion of the course the students will be able to:

- Differentiate Database Systems from File Systems and define various terminology in Database Systems. (L1)
- Interpret, Implement an E-R Model and design a data model and schemas in RDBMS. (L3)
- Create /Modify the Structure and write optimized SQL Queries to extract and modify Information from Tables or Views. (L3)
- Apply proper Techniques such as Normalization and analyze the applicability of a Specific Normal form in designing a Database. (L2)
- Identify the issues involved in the operation of a DBMS including transactions, perform database recovery. (L1)

Textbook

1.Ramez Elmasri ,Shamkant B.Navathe, Fundamentals of Database Systems, Addition Wesley Publications, Fifth Edition, 2013.

Unit I - Chapter 1,2 **Unit II**-Chapter3;5,6 **Unit III**- Chapter 8,9 **Unit IV** – Chapter 10,11 **Unit V** - Chapter 17,19

Reference Books

1. Abraham silberschatz , Henry F Korth , S. Sudarshan, Database SystemConcepts , McGraw Hill International, Sixth Edition, 2011
2. Raghu Ramakrishnan, Johannes Gehrke Database Management Systems, McGraw Hill International, Third Edition,2014.

Prepared By,
(B.Vidhya)

Approved By,
(Dr.N.Sumathi)

PERSONALITY APTITUDE AND CAREER ENHANCEMENT (PACE-III)

Subject Code: 18CPE03

Common to all the UG streams admitted from AY 2018-19 Onwards

Semester	III
Credit	1
Paper type	Skill based
Max. Marks	Total=100 (Online:50+Verbal Oral: 50)

Instruction Hours per Semester: 40

Aim:

To educate and enrich the students on quantitative ability, reasoning ability, and verbal ability. Equip the students on group behavior and team building skills.

Course Objectives

To enable students to,

- Improve their quantitative ability.
- Improve the ability of arithmetic reasoning
- Enhance their verbal ability through vocabulary building and grammar
- Enhance their linguistic ability.
- Manage emotions through intelligence

Unit I

Quantitative Ability – I

Sequence and Series, Profit And Loss, Time, Speed, Distance, Averages, Percentages, Problems on HCF and LCM, Problems on Ages, Simple Interest & Compound Interest,

Unit II

Reasoning Ability – I

Syllogism, Blood Relations, Puzzles, Analogies, Logical Order, Seating Arrangements, Statement and Conclusions, Most Logical Choice, Inferred Meaning, Data Arrangements,

Unit III

Verbal Ability – I

Vocabulary – Etymology, Root words, Verbal Analogy. Workshop on Reading – Sub-skills of Reading, Techniques of Reading, Jumbled Paragraphs and Jumbled Essays. Application of Grammar concepts – Sentence Construction

Unit IV

Linguistic Ability

Writing & Speaking Skills – Parts of Speech, Modal Verbs, Tenses, Active and Passive Voice, Degrees, Articles, Contextual usage of words – Conversational English

Unit V

Emotional Intelligence

Time Management – Conflict Resolution – Stress & Anger Management – Online presence & researching online – Mind maps – Negotiation & Persuasion – Level 1 & 2 Interview Questions

Course Outcomes

On the successful completion of the course, the student would be able to-

- Enhance their ability to deal with quantities
- Understand and improve arithmetic reasoning.
- Build better vocabulary and grammar
- Speak and write better language.
- Resolve Conflicts, Manage emotions like anger and stress.

References

1. Quantitative Aptitude for Competitive Exams by R. S. Agarwal
2. Quantum CAT by Sarvesh Verma
3. A Modern Approach to Logical Reasoning by R. S. Agarwal
4. Verbal Ability and Reading Comprehension by Arun sharma
5. Word Power Made Easy by Norman Lewis
6. High School English Grammar by Wren and Martin
7. English Conversation Practice by Grant Taylor
8. Group Discussion and Interviews by Anand Ganguly
9. Art of Social Media by Guy Kawasaki

Verified by
Course Coordinator

18CAC03 - CLOUD COMPUTING
(Common to Computer Applications, Computer Science and Information Technology)

Semester	IV
Credit	4
Paper Types	Core/ Elective-I
Max. Marks	CIA -30 + CE -70

COURSE OBJECTIVES
The students should be able to
- Gain knowledge about various basic concepts related to cloud computing technologies
- Develop the skills on underlying principle of cloud virtualization, cloud storage, data management and data visualization
- Impart different cloud programming platforms and tools

UNIT I
11

Introduction to Cloud Computing - Internet and the Cloud -Working Of Cloud Computing-Pros and Cons-Benefits and using of cloud computing-Architecture of cloud-Developing Cloud Computing Services-Discovering Cloud Services and Tools.

UNIT II
11

Clients – Security – Network – Services – Platforms - Cloud Computing for Everyone -Centralizing Email Communications, Cloud Computing -Web Applications – Web API – Web Browsers.

UNIT III
11

Types of Cloud Services:Software as a service-Platform as a service-Infrastructure as a service- Service providers-Collaborating On Calendars- Schedules And Task Management- Exploring On Line Scheduling And Planning- Collaborating on Event Management-Collaborating on Contact management- Collaborating on Project management.

UNIT IV
11

Collaborating On Word Processing - Spreadsheets-Databases - Collaborating on Presentation - Storing and Sharing files and other online content-Sharing digital photographs-Web based desktop.

UNIT V
11

Collaborating via Web based communication tools- Collaborating via Social network and Groupware-Collaborating via Blogs and Wikis.

Total Periods: 55 hours

COURSE OUTCOMES
Upon the successful completion of the course, the student will be able to:
- Analyze the components of cloud computing
- Use and Examine different cloud computing services
- Illustrate the tools in cloud computing
- Demonstrate the concept of web based desktop
- Differentiate the web based communication tools.

TEXT BOOK
1. Michael Miller, "Cloud Computing" Pearson Education, New Delhi, 2012
   Unit I:Chapters:1 &2 Unit II:3&4 Unit III:4,5,6,7,8,9,10 Unit IV: 11,12,13,14,15,16,17 Unit V:18,19,20

REFERENCE BOOKS
1. Anthony T Velte, "Cloud Computing: A practical Approach" Tata McGraw Hill, 2010.
2. Barrie Sosinsky, "Cloud Computing Bible" Wiley Publishing, Inc,.2011.
3. Rajkumar Buyya, Christian Vecchiola and Thamarai Selvi S, "Mastering in Cloud Computing"McGraw Hill Education (India), Private Limited, 2013.

Prepared by	Verified by	Approved by
Prof.R.Punitha	Dr.Anna Saro Vijendran	Dr.D.Hari Prasad
Course Co-ordinator	Dean- School of Computing	BOS Chairman

18IT401 - NETWORK Lab

Semester	IV
Credit	3
Paper Type	Core
Max. Marks	CIA -30+ CE -70

COURSE OBJECTIVE

- To understand Protocols for File Sharing and Communication.
- To extract the system Properties.
- To be familiar with the routing algorithm.
- To deal with various methods to invoke remote data.
- To be aware of cryptographic algorithms for securing data.

1. Write a program to find the Properties of the local machine.
2. Write a program to find the TCP Packet Detail.
3. Design a DNS server, and resolve a Domain Name from a Client's request.
4. Read an IP Address in dotted notation, and hence, find out its network IP Address, with the help of a suitable mask.
5. Write a program to check whether the given IP address is valid.
6. Implement a routing algorithm.
7. Implement File sharing between Client and the Server.
8. Implement machine - to - machine chatting.
9. Write a program to implement Remote Method invocation.
10. Implement an Encryption Algorithm to encrypt the given plain text.

Total Periods : 33 Hrs.

COURSE OUTCOME

Upon successful completion of the course, the students will be able to

- Use right protocol for the right application.
- Validate the IP address of the system.
- Implement routing algorithm to route data.
- Implement file sharing concept.
- Encrypt data with the right Encryption algorithm.

Prepared by	Verified by	Approved by
(Mr Sunil Samson A) Course Co-ordinator	(Dr Anna Saro Vijendran) Dean, School of Computing	(Dr Sumathi N) BoS Chairman

18ITC07– WEB TECHNOLOGY LAB

(Common to Information Technology and Computer Science)

Semester	IV
Credit	2
Paper Type	Core
Max. Marks	CIA-15+ CE -35

COURSE OBJECTIVES

- To create HTML programs with all basic tags
- To know the usage of Cascading Style Sheet
- To be aware of basic Java Script Programming concepts.
- To gain knowledge of the usage of functions, arrays, objects and events
- To know the basics of Bootstrap

1. Develop a web page with table and apply the following condition.
   (i) Merge two rows and two columns.
   (ii) Padding the cells and widening the cell spacing.
   (iii) Aligning your data horizontally and vertically.
   (iv) Create a table caption and set colors for individual rows.
   (v) Aligning text and table and use images in the table.
2. Design a Web Page with Internal and external Linking.
3. Design a College Web Site using HTML5 by applying Style Sheet.
4. Design a web page to link audio and video files in HTML5.
5. Implement HTML5 canvas.
6. Create a Web Page for Positioning Elements Dynamically.
7. Write Java Script Program to validate login form.
8. Write a Java Script Program to implement methods of string, date and numerical functions (each five).
9. Write a Java Script Program to Implement Events.
10. Design a table with Bootstrap styles.

Total Periods: 30 Hrs.

COURSE OUTCOME

Upon successful completion of the course, the students will be able to

- Design web page with all HTML features like tables, frames, images, links etc.
- Implement Style Sheets and Link it with the HTML program
- Design an Interactive Web page using Java Script by implementing Functions, Arrays, Objects and Events
- Apply the basic Bootstrap concepts in web design

Prepared by

(Dr Sumathi N)
Course Co-ordinator

Verified by

(Dr Anna Saro Vijendran)
Dean, School of Computing

Approved by

(Dr Sumathi N)
BoS Chairman

18ITC06 - SOFTWARE ENGINEERING

(Common to Computer Applications, Computer Science and Information Technology)

Semester	**IV**
Credit	**4**
Paper Type	**Elective / Core**
Max. Marks	**CIA – 30+ CE - 70 TOT =100**

COURSE OBJECTIVES:

- To outline various software engineering models.
- To gain knowledge on requirement analysis and validating requirements.
- To be aware of various software designing concepts.
- To be aware of various testing strategies and validation.
- To familiarize project scheduling, risk management and software quality verification.

UNIT–I **11**

INTRODUCTION

Software and Software Engineering: Software Engineering –The software process –Software Engineering Practice
Process Models: A Generic process - Model Prescriptive Process Models – Specialized Process Models – The Unified Process
Agile Development: Agile Process – Extreme Programming - Other Agile Process Models

UNIT–II **11**

REQUIREMENT ANALYSIS

Understanding Requirement: Requirements Engineering – Establishing the Groundwork - Eliciting Requirements- Developing Use Cases- Building the Requirement Model - Negotiating Requirements-Validating Requirements
Requirement Modeling: Requirement Analysis – Scenario based modeling - UML models – Data Modeling Concepts – Class based Modeling.

UNIT–III **11**

SOFTWARE DESIGN

Design Concepts: The Design Process – Design Concepts – The Design Model
Architectural Design: Software architecture – Architectural Design
Component –Level Design: Component – Designing class-based components – Component based development
User Interface Design: User Interface analysis and design – Interface analysis – Interface design

AGILE METHODOLOGY

Method overview – Lifecycle – Work products, Roles and Practices values – Common mistakes and misunderstandings – Sample projects – Process mixtures – Adoption strategies – Fact versus fantasy – Strengths versus "Other" history. Agile – Motivation – Evidence – Scrum – Extreme Programming – Unified Process – Evo – Practice Tips.
Case study on sample project

UNIT–IV **11**

SOFTWARE TESTING

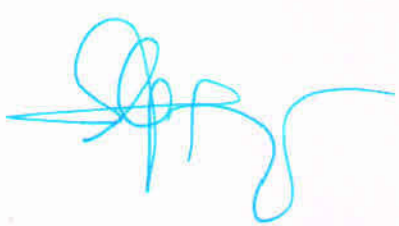
Software Testing: A strategic approach to software testing – strategic issues – Test Strategies for conventional software – Test strategies for object oriented software – Validation Testing - System Testing
Testing Conventional applications: Software Testing Fundamentals – White Box Testing – Basis Path Testing – Control Structure Testing – Black Box Testing – Model Based Testing – Patterns for Software Testing.

UNIT–V **11**

SCM AND QUALITY ASSURANCE

Project Scheduling: Basic concepts - Project Scheduling – Defining a Task set for Software Project.
Risk Management: Software Risk – Risk Identification – Risk Projection
Maintenance and Reengineering: Software Maintenance – Software Supportability – Reengineering – Business Process Reengineering – Software Reengineering
Software process Improvement: What is SPI – CMMI
Software Quality Assurance: Elements of Software Quality Assurance – SQA Task, Goals, Metrics.

Total Periods: 55 Hrs



COURSE OUTCOMES

Upon the successful completion of the course the student will be able to:

- Identify the basic concepts of various software engineering models.
- Perform the requirement analysis to build software components.
- Design a model for software component using agile method.
- Perform software testing using testing techniques.
- Analyze software quality standards and assurance.

TEXTBOOKS:

1. Roger Pressman S, "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw –Hill, Reprint 2016.
   UNIT I – Chapters 1 (1.3, 1.4, 1.5) 2 (2.1 – 2.5), 3 (3.1 – 3.5)
   UNIT II – Chapters 5 (5.1 – 5.7), 6 (6.1 – 6.5)
   UNIT III – Chapters 8 (8.2 – 8.4), 9 (9.1, 9.4) 10 (10.1, 10.2, 10.6) 11(11.2, 11.3)
   UNIT IV – Chapters 17(17.1 – 17.7) 18 (18.1 – 18.7, 18.9)
   UNIT V – Chapters 27(27.1 -27.3) 28(28.2 – 28.4) 29(29.1 – 29.6) 16(16.1 – 16.3)
2. Craig Larman "Agile and Iterative Development – A Manager's Guide", Pearson Education , 2004.
   UNIT III – Chapter 3

REFERENCEBOOKS:

1. Sommerville," Software Engineering" , Addison Wesley, 10th Ed., 2016.
2. Ronald J. Leach, "Introduction to Software Engineering", CRC Press, Taylor & Francis Group, 2nd Ed., 2016
3. Rajib Mall, "Fundamentals of Software Engineering", PHI Learning Pvt. Ltd., 4th Ed., 2014.

REFERENCE WEB SITES:

https://www.tutorialspoint.com/software_engineering/index.html
https://www.geeksforgeeks.org/software-engineering/
https://tutorialspoint.dev/computer-science/software-engineering

Prepared by	Verified by	Approved by
(Dr Deepa C) Course Co-ordinator	(Dr Anna Saro Vijendran) Dean, School of Computing	(Dr Sumathi N) BoS Chairman

18COC01 BUSINESS ACCOUNTING

(Common Paper for BSc CS & BSc IT 2018 Admitted Students)

Semester	IV
Credit	4
Paper Type	Allied
Max. Marks	CIA -30 CE -70 TOT =100

COURSE OBJECTIVES

- To familiarize the basic concepts of accounting and its Features
- To develop conceptual understanding of fundamentals of financial accounting, cost accounting and management accounting.

UNIT –I INTRODUCTION TO ACCOUNTING 14

Introduction - Accounting Principles - Accounting Concepts and Conventions - Accounting rules –Journal –Ledger Subsidiary book including Cash Book –Bank Reconciliation Statement – Rectification of errors –Trial balance.

UNIT –II FINAL ACCOUNTS - PREPARATION 10

Preparation of Final Accounts –Trading Account-Profit and Loss Account –Balance Sheet (simple adjustments).

UNIT –III COST ACCOUNTING AND STORES LEDGER 10

Cost accounting –meaning, objectives –Elements - Cost Sheet Preparation –Stores ledger –LIFO - FIFO– Average Stock- Weighted Average Stock.

UNIT-IV MANAGEMENT ACCOUNTING AND FINANCIAL STATEMENT ANALYSIS 11

Management Accounting –Meaning –Merits & Demerits –Financial Statements Analysis – Ratio Analysis- Merits-Demerits-Types (Solvency & Profitability ratios only).

UNTI-V BUDGETING AND ITS CLASSIFICATION 10

Budgeting –Meaning –Advantages - Classification of budgets - Preparation of Production budget, Sales budget, Cash budget, and Flexible budget.

Total Hours: 55

TEXT BOOKS

1. T.S Reddy and A. Murthy -"Advanced Accountancy" Margham Publiations-Volume I 2nd Revised Edition, Reprint 2017. (Unit I and II)
2. Jain.S.P and Narang.K.L., -"Cost Accounting"- 8th Revised Edition Reprint 2018, Kalyani Publishers.(Unit III)
3. R.K.Sharma & Shashi K. Gupta , Gupta Neeti, "Management Accounting"- Kalyani Publishers, 14th Edition-2017.(Unit IV and V)

REFERENCE BOOKS

1. S.P-. Jain and K.L Narang ", Advanced Accountancy " Volume I , Kalyani Publications-20th Revised Edition-2018. (Unit I and II)
2. Ts. Reddy, Hari Prasad Reddy Y,, Cost Accounting, Margham Publiations-. 4th Edition, Reprint 2017. (Unit III)
3. Khan & Jain- "Management Accounting"- Tata McGraw Hill Publishing Company Limited 7th Edition - 2018. (Unit IV and V)

COURSE OUTCOMES

On Successful Completion of the Course, the students can

COURSE OUTCOMES	DESCRIPTION	UNIT	LEVEL
CO1	Identify the Concepts of Financial Accounting and preparation of journal, ledger and Trial Balance.	I	L2
CO2	Ascertain Profit / Loss and preparation of balance sheet to analysis the financial position of the business.	II	L2
CO3	Construct Cost Sheet and Stores Ledger.	III	L3
CO4	Assess the financial Performance of the company by applying Ratio Analysis.	IV	L2
CO5	Prepare various budgets for managerial decision making and policy framing.	V	L3

Verified by

N. Selvakumar

Dr Selvakumar N
Course Coordinator

Approved by

Dr Nirmala Devi V
Chairperson - BOS

Approved by

Dr Senthilkumar G
Member Secretary
Academic Council

18ITC08–WEB TECHNOLOGY

(Common to Information Technology and Computer Science)

Semester	IV
Credit	3
Paper Type	Skill based
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES

- Get to know the HTML5 tags and its usage
- Knowledge about Cascading Style sheet to Design the web page
- Able to write a dynamic HTML program with the Programming concepts of Java Script
- Basic knowledge on Bootstrap programming

UNIT – 1 9

Introduction to HTML: Headers – Linking – Images - Unordered List - Nested and Ordered Lists- **Tables:** Tables and Formatting – Forms - Internal Linking
HTML5: **Creating User-Friendly Web Forms:**. Describing Data with New Input Fields- Jumping to the First Field with Autofocus- Providing Hints with Placeholder Text- Validating User Input without JavaScript- In-Place Editing with content editable.
Drawing in the Browser: Drawing a Logo on the Canvas -Graphing Statistics with RGraph-Creating Vector Graphics with SVG
Embedding Audio and Video : Working with Audio - Embedding Video - Making Videos Accessible

UNIT – 2 8

Cascading Style Sheets: Inline Styles - Embedded Styles Sheets - Conflicting Styles Sheets -W3C CSS Validation Service - Positioning Element – Backgrounds - Element Dimension -Text Flow and Box Model

UNIT – 3 9

Java Script: Introduction – User Input & prompt Dialog Boxes - Memory Concepts –
Operators: Arithmetic operator - Operator Precedence - Relational Operators - Logical Operators
Control Structures: If, Else, While, Do - While, For, Break, Continue statements
Functions: Programmer Defined Functions - Scope rules - Global Function – Recursion

UNIT – 4 9

Arrays: Arrays - Passing Arrays to Function - Multidimensional Arrays
Java Script Object: Math Object - String Object - Date Object - Boolean and Number Objects - Document Object - Window Object

UNIT–5 9

DHTML Object Model and Collections: Object Referencing - Collections all and Children - Dynamic Styles - Dynamic Positioning - Frames Collection
DHTML Event Model: Onclick Event – Onload Event – Onerror Event– Onmousemove Event – Onmouseout Event – Onfocus Event – Onblur Event – Onsubmit Event – Onreset Event
Bootstrap: Understanding Normalize CSS and the Basics of Bootstrap CSS, Grids, Bootstrap Typography, Tables

Total Periods: 44

COURSE OUTCOMES

Upon successful completion of the course, the students will be able to

- Analyze and design a web page and identify its elements and attributes
- Create web pages using HTML5 and linking with external Cascading Style Sheets
- Build and deploy dynamic web pages using JavaScript and manipulate data using Java script objects
- Create interactive website with object collections and utilize event handling mechanism to respond to user data
- Design web pages using Bootstrap

TEXT BOOKS:

1. Brian P. Hogan, "HTML5 AND CSS3,The Pragmatic Programmers", LLC. 2nd Ed., 2013 (Chapters 3,6,7)
2. Thomas Powell, "HTML COMPLETE REFERENCE",TMH, 5th Ed., 2013
3. Deitel&Deitel, "Internet & World Wide Web – How to Program –Goldberg", Pearson Education, 3rd Ed.,2012.

REFERENCE BOOKS:

1. Thomas Powel & Fritz Schneider, "JAVA SCRIPT COMPLETE REFERENCE",TMH, 5th Ed., 2012
2. RiwantoMegosinarso, "Step By Step Bootstrap 3: A Quick Guide to Responsive Web Development Using Bootstrap 3", Create Space Independent Publishing Platform, 2014
3. Jennifer kyrnin ,"Sams Teach Yourself Bootstrap in 24 hours", Pearson Education, 3rd Ed., 2015
4. Kogent learning solutions Inc,"HTML5 Balck Book", Dreamtech Press, 2nd Ed., 2016

REFERENCE WEB SITES:

https://www.tutorialspoint.com/html5/index.htm
https://livebook.manning.com/book/html5-in-action

Prepared by	Verified by	Approved by
(Dr Sumathi N) Course Co-ordinator	(Dr Anna Saro Vijendran) Dean, School of Computing	(Dr Sumathi N) BoS Chairman

PERSONALITY APTITUDE AND CAREER ENHANCEMENT (PACE-IV)

Subject Code: 18CPE04

Common to all the UG streams admitted from AY 2018-19 Onwards

Semester	IV
Credit	2
Paper type	Skill based
Max. Marks	Total=100 (Online:50+Verbal Oral: 50)

Instruction Hours per Semester: 40

Aim

To educate and enrich the students on quantitative ability, reasoning ability and verbal ability. Equip the students on group discussion and interview skills.

Course Objectives

To enable students to,

- Improve their quantitative ability.
- Improve their reasoning ability.
- Enhance their verbal ability through vocabulary building and grammar
- Equip with creative thinking, problem solving and leadership skills
- Build resumes, speak in public, and attend interviews better.

Unit - 1

Quantitative Ability – II

Ratios & Proportions, Clocks & Calendars, Partnerships, Pipes and Cisterns, Surds & Indices, Problems on Trains, Height and Distance, Races and Games

Unit – 2

Reasoning Ability – II

Mathematical Operations, Cubes & Cuboids, Passage and Inference, Venn Diagrams, Flowchart & Logical Gates

Unit-3

Verbal Ability – II

26/4/19 26/4/19

Synonyms, Sentence Completion, Antonyms, Selecting Words, Spotting Errors, Sentence Correction, Reading Comprehension, Jumbled Sentences, Theme Detection, Sentence Selection

Unit 4

Group Discussion Skills

Creative Thinking – Problem Solving – Dealing with criticism – Leadership skills – Team Playing skills – Presentation skills – Spontaneity – Empathy – Perseverance – Decision Making

Unit – 5

Interview Skills

Resume Writing Techniques – Types of Resume – Understanding Key Words – JD Mapping. Interview Techniques – Reiteration of SWOT and Goal Setting – Level 3 Interview Questions – Importance of Grooming and Non-verbal Communication

Course Outcomes

On the successful completion of the course, the student would be able to-

- Enhance their ability to deal with quantities
- Understand and improve arithmetic reasoning.
- Build better vocabulary and grammar
- Enhance their creative thinking, problem solving and leadership skills
- Prepare resumes, speak in public and attend interviews better.

References

1. Quantitative Aptitude for Competitive Exams by R. S. Agarwal
2. Quantum CAT by Sarvesh Verma
3. A Modern Approach to Logical Reasoning by R. S. Agarwal
4. Verbal Ability and Reading Comprehension by Arun sharma
5. Word Power Made Easy by Norman Lewis
6. High School English Grammar by Wren and Martin
7. English Conversation Practice by Grant Taylor
8. Group Discussion and Interviews by Anand Ganguly
9. Art of Social Media by Guy Kawasaki

26/4/19

26/4/19

Verified by
Course Coordinator

18ITE01-PRINCIPLES OF COMMUNICATION SYSTEMS

Semester	IV
Credit	4
Paper type	Elective -I
Max. Marks	CIA -30 CE -70

COURSE OBJECTIVES

- Components of Communication.
- The Modulation schemes and their models.
- Multiplexing schemes and Data communication
- Concepts of information coding and data communication
- Spectrum and accessing multi user data communication

UNIT I : ANALOG COMMUNICATION 11

Introduction to communication systems-Noise: External Noise- Internal Noise-Noise Calculation.
Amplitude Modulation: Amplitude modulation Theory. **SSB Techniques**: Evolution and description of SSB-Suppression of Unwanted sidebands. Frequency Modulation: Theory of Frequency and Phase Modulation.

UNIT II: DIGITAL COMMUNICATION 11

Digital communications- Shannon Limit for information Capacity- Digital Amplitude Modulation-FSK,BW Consideration of FSK, Minimum Shift- Keying- PSK, BPSK,BW Consideration of BPSK, QPSK, BW Consideration of QPSK- QAM, Eight QAM, BW Consideration of 8-QAM, BW Consideration of 16 QAM-Bandwidth Efficiency.

UNIT III: DATA PULSE COMMUNICATION 11

Data Communication : History of Data Communication- Standards Organizations for Data Communication-Data Communication Circuits- Data Communications Codes- Error Control. Pulse Communication: Pulse Modulation.

UNIT IV: INFORMATION THEORY & CODING 11

Fundamental Limits in Information Theory: Uncertainty, Information and Entropy-Source Coding Theorem – Huffman Coding –Mutual Information- Channel Capacity. **Error- Control Coding**: Linear Block Codes- Cyclic Codes-Convolutional Codes.

UNIT V:SPREAD- SPECTRUM AND MULTIPLE–ACCESS TECHNIQUES 11

Spread- Spectrum modulation: Pseudo –Noise Sequence –A Notion of spread spectrum – Direct Sequence Spread Spectrum with coherent BPSK- frequency- Hop spread spectrum. **Multi-user Radio Communication**: Multiple – Access Techniques –Satellite communication- Wireless communication.

Total Periods: 55 Hrs

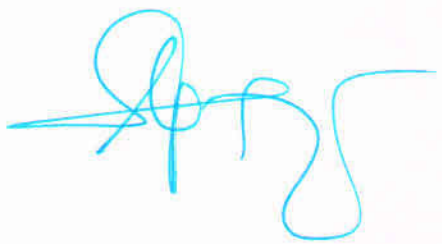
COURSE OUTCOMES :

The student should able to

- Have familiarity with amplitude modulated and communication systems and analyse their performance in the presence of noise.
- Analyse the communication both time and frequency domains .
- Having knowledge about data pulse communication.
- Understand source coding ,Information theory and error detection codes ,including block codes.
- Having knowledge about spectrum and multiple access techniques and communications

TEXT BOOKS:

1. Greorge Kennedy," Electronic Communication systems", Tata McGraw Hill Edition,Third edition , 2015 (Reprint).
Unit - I (Text:1 Chapter 1, 2,3,4,5) Unit - II (Text:2 Chapter 1,2,3)
Unit - III (Text:3 Chapter 3,4) Unit – IV (Text:3 Chapter 13)
Unit – V (Text:3 Chapter 17)



REFERENCE BOOKS

1. Rodger E. Ziemer, William H. Tranter, "Principles of Communications", John Wiley &sons, Inc 6th Ed, 2009.
2. Herbert Taub, Donald L Schilling, Goutam Saha, "Principles of Communication Systems", Tata Mcgraw Hill Publishing Co Ltd, Fifth Edition , 2014
3. Simon Haykin Michael Mohar, "Communication Systems", John Wiley & Sons, Inc., 5th Ed. 2009.

Prepared by	Verified by	Approved by
(Mr Rajeev R) Course Co-ordinator	(Dr Anna Saro Vijendran) Dean, School of Computing	(Dr Sumathi N) BoS Chairman

18ITE02 – ARTIFICIAL INTELLIGENCE

Semester	**IV**
Credit	**4**
Paper Type	**Elective**
Max. Marks	**CIA – 30+ CE - 70 TOT =100**

COURSE OBJECTIVES

- To understand how computer system adapts evolves and learns
- To Solve problem based on heuristic search techniques.
- To understand various probabilistic reasoning techniques.
- To gain knowledge on decision making ability.
- To understand various learning techniques.

UNIT – 1

11

Introduction: Concept of AI – history - current status - scope - agents – environments - Problem Formulations - Review of tree and graph structures - State space representation - Search graph and Search tree.

UNIT – 2

11

Search Algorithms: Random search - Search with closed and open list - Depth first and Breadth first search - Heuristic search - Best first search - A* algorithm - Game Search.

UNIT – 3

11

Probabilistic Reasoning: Probability - conditional probability - Bayes Rule - Bayesian Networks – representation - construction and inference - temporal model - hidden Markov model.

UNIT – 4

11

Markov Decision process: MDP formulation - utility theory - utility functions - value iteration - policy iteration and partially observable MDPs.

UNIT – 5

11

Reinforcement Learning: Passive reinforcement learning - direct utility estimation - adaptive dynamic programming - temporal difference learning - active reinforcement learning- Q learning.

Total Periods: 55 Hrs

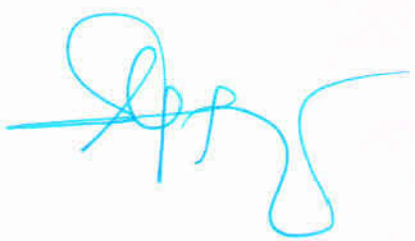
COURSE OUTCOMES

Upon the successful completion of the course, the students will be able to:

- Build intelligent agents for search and games
- Solve AI problems through programming with Python
- Learning optimization and inference algorithms for model learning
- Design and develop programs for an agent to learn and act in a structured environment.

TEXT BOOKS:

1. Stuart Russell and Peter Norvig, "Artificial Intelligence: A Modern Approach", 3rd Ed., Prentice Hall, 2009.
2. Elaine Rich and Kevin Knight, "Artificial Intelligence", Tata McGraw Hill, 3rd Ed., 2010.



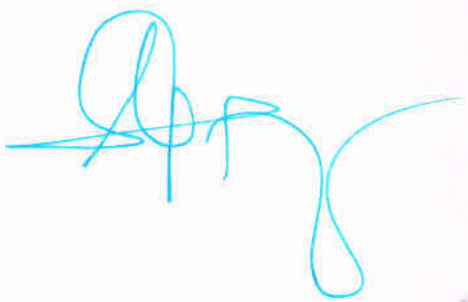
REFERENCE BOOKS

1. Trivedi, M.C., "A Classical Approach to Artifical Intelligence", Khanna Publishing House, Delhi. 1st Ed., 2018
2. Saroj Kaushik, "Artificial Intelligence", Cengage Learning India, 1st Ed., 2011.
3. David Poole and Alan Mackworth, "Artificial Intelligence: Foundations for Computational Agents", Cambridge University Press, 1st Ed., 2010.

WEBSITES FOR REFERENCE

https://nptel.ac.in/courses/106105077
https://nptel.ac.in/courses/106106126
https://aima.cs.berkeley.edu
https://ai.berkeley.edu/project_overview.html

Prepared by	Verified by	Approved by
for		
(Swayam NITTR)	(Dr Anna Saro Vijendran) Dean, School of Computing	(Dr Sumathi N) BoS Chairman



REFERENCE BOOKS

1. Trivedi, M.C., "A Classical Approach to Artifical Intelligence", Khanna Publishing House, Delhi. 1st Ed., 2018
2. Saroj Kaushik, "Artificial Intelligence", Cengage Learning India, 1st Ed., 2011.
3. David Poole and Alan Mackworth, "Artificial Intelligence: Foundations for Computational Agents", Cambridge University Press, 1st Ed., 2010.

WEBSITES FOR REFERENCE

https://nptel.ac.in/courses/106105077
https://nptel.ac.in/courses/106106126
https://aima.cs.berkeley.edu
https://ai.berkeley.edu/project_overview.html

Prepared by
for
(Swayam NITTR)

Verified by
(Dr Anna Saro Vijendran)
Dean, School of Computing

Approved by
(Dr Sumathi N)
BoS Chairman

18ITE03 – INTERNET of THINGS

Semester	IV
Credit	4
Paper Type	Elective
Max. Marks	CIA – 30+ CE - 70 TOT =100

COURSE OBJECTIVES

- To understand various IoT application.
- To gain knowledge on various IoT based components.
- To gain knowledge on various software components and programming APIs.
- To learn basic IoT application development
- To impart knowledge on real time case studies in IoT.

Unit -1 **11**

Introduction: Architectural Overview - Design principles and needed capabilities - IoT Applications - Sensing – Actuation - Basics of Networking - M2M and IoT Technology Fundamentals- Devices and gateways - Data management - Business processes in IoT - Everything as a Service(XaaS) - Role of Cloud in IoT - Security aspects in IoT.

Unit – 2 **11**

Elements of IoT: Hardware Components- Computing (Arduino, Raspberry Pi) – Communication – Sensing – Actuation - I/O interfaces.

Unit-3 **11**

Software Components- Programming API's (using Python/Node.js/Arduino) for Communication Protocols-MQTT – ZigBee – Bluetooth - CoAP – UDP - TCP.

Unit – 4 **11**

IoT Application Development: Solution framework for IoT applications- Implementation of Device integration - Data acquisition and integration - Device data storage- Unstructured data storage on cloud/local server - Authentication - authorization of devices.

Unit – 5 **11**

IoT Case Studies: IoT case studies and mini projects based on Industrial automation - Transportation – Agriculture - Healthcare - Home Automation

Total Periods: 55 Hrs

COURSE OUTCOMES

Upon the successful completion of the course, the students will be able to:

- Explore internet of Things and its hardware and software components
- Interface I/O devices, sensors & communication modules
- Remotely monitor data and control devices
- Develop real life IoT based projects

TEXT BOOKS

1. Vijay Madisetti, Arshdeep Bahga, "Internet of Things, A Hands on Approach", University Press, 1st Ed., 2015
2. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press, Auerbach Publications, 1st Ed.,, 2017
3. Jeeva Jose, "Internet of Things", Khanna Publishing House, Delhi, 1st Ed., 2018.
4. Cuno Pfister, "Getting Started with the Internet of Things", O Reilly Media, 1st Ed., 2011.

REFERENCE BOOKS

1. Adrian McEwen, "Designing the Internet of Things", Wiley, 1st Ed., 2015.
2. PoonamRailkar, Identity Management for Internet of Thing, River Publishers, 1st Ed., 2015, ISBN: 978-87-93102-91-0 (EBook), ISBN:978-87-93102-90-3.
3. Raj Kamal, "Internet of Things: Architecture and Design", McGraw Hill, 1st Ed., 2017.

Prepared by

for

(Swayam NITTR)

Verified by

(Dr Anna Saro Vijendran)
Dean, School of Computing

Approved by

(Dr N Sumathi)
BoS Chairman

18CAC05 -OPERATING SYSTEM

(Common to all branches of Computer Science, Information Technology and Computer Application)

Semester	V
Credit	4
Paper Type	Core
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES

- To impart the students the basic concepts of Operating Systems, its functions and services.
- To familiarize the students with various views and management policies adopted by Operating Systems.
- To brief the students about resource management of Operating Systems.
- To provide the students the knowledge of Operating System synchronization, behavior and related issues.

PREREQUISITE

- Basic courses on Computer Organization, Data Structures and Computer Programming

UNIT–I 11

Introduction: What is an Operating System? – Simple batch systems – Multi programmed Batch System – Time Sharing systems - Parallel systems – Distributed systems – Real time systems.
Operating system structures: System components – Operating system services – system calls – system programs – system structure..

UNIT–II 11

Process Management: process concept – process scheduling – operation on processes – cooperating processes, Inter process Communication.
CPU Scheduling: Basic concepts – scheduling criteria – scheduling Algorithms
Deadlocks: Definition – Deadlock characterization – Deadlock prevention – Deadlock Avoidance – Deadlock detection – Recovery.

UNIT–III 11

Memory Management: Background – swapping – contiguous memory allocation – paging – Segmentation.
Virtual Memory: Background – Demand Paging, Page replacement – page replacement Algorithms, Thrashing

UNIT–IV 11

File systems: File concept – Access methods – Directory structure – protection – File system - structure – Allocation methods – Free space management Secondary Storage Structure: Disk structure, Disk scheduling – Disk management.

UNIT–V 11

Case study: Linux - Design principles – Kernel Modules – Memory management – File systems – Input & output – security.

COURSE OUTCOMES

Upon the completion of Operating Systems theory course, the student will be able to:

- Discuss the role of Operating System as system software.
- Compare and contrast various algorithms used for management of memory, CPU scheduling, file handling and I/O operations.
- Illustrate the various Operating System concepts for resource allocation and deadlock management.
- Demonstrate the role of process synchronization.
- Analyze Linux system architecture.

Total Periods: 55

TEXTBOOKS

1. Abraham Silberschatz, Greg Gagne, Peter. B. Galvin, , "OPERATING SYSTEM CONCEPTS", Tenth Edition , Wiley 2018.

REFERENCE BOOKS

1. Andrew S. Tanenbaum, Albert S. Woodhull "OPERATING SYSTEMS: DESIGN & IMPLEMENTATION", PHI, 3nd Edition 2007.
2. William Stallings, "OPERATING SYSTEMS", PHI, Fourth Edition, 2009
3. H.M Dietal, Paul J. Deitel, David R. Choffnes, "OPERATING SYSTEMS", Pearson Education Asia, Third Edition, 2012

Prepared By	Verified By	Approved By
Prof. S.Gomathi @ Rohini	Dr. Anna Saro Vijendran	Dr. D. Hari Prasad
Course Coordinator	Dean – School of Computing	BOS Chairman

18CAC06-OPERATING SYSTEM LAB

(Common to all branches of Computer Science, Information Technology, and Computer Application)

Semester	V
Credit	3
Paper Type	**Practical**
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES

- To demonstrate operating systems concepts by writing Linux shell scripts
- To gain practical experience on implementing and various algorithms in MS Windows.

PREREQUISITE

- Basic knowledge on Principles of Computer operating system

LIST OF EXPERIMENTS

1. Basic LINUX commands.
2. Write a shell script to do the following
   a. Fibonacci series.
   b. Factorial of given number.
   c. To convert the decimal number to binary number.
3. Write a shell script to do the following
   a. To check whether the given string is palindrome or not.
   b. To count number of words, lines in a given file
4. Write a shell script for the following
   a. To find whether the given input is file/directory.
   b. To delete a particular pattern in file.
   c. To find the user login.
   d. To set the attributes of a file
   e. To compare two files
5. Write a shell script for student evaluation.
6. Write a shell script for employee details using files.
7. Implementation of CPU scheduling algorithms.
8. Implementation of memory allocation methods.
9. Implementation of page replacement algorithms.
10. Implementation of disk scheduling algorithms.

COURSE OUTCOMES

Upon the completion of Operating Systems practical course, the student will be able to:

- Run various LINUX commands in Linux Ubuntu.
- Code shell script in LINUX Operating System.
- Implement CPU scheduling, memory allocation, page replacement and disk scheduling algorithms.

Total Periods: 44

Prepared By
Prof. S.Gomathi @ Rohini
Course Coordinator

Verified By
Dr. Anna Saro Vijendran
Dean – School of Computing

Approved By
Dr. D. Hari Prasad
BOS Chairman

18CSC06 PYTHON PROGRAMMING LAB
(Common to Computer Science, Information Technology & Computer Application)

Semester	V
Credit	2
Paper Type	Core
Max. Marks	CIA:15 + CE :35

COURSE OBJECTIVES
The students should be able to

- Familiar with the main features of the python language.
- Introduce Python concepts and to develop real time application in Python Programming
- Demonstrate functional programs to solve a well specified problem.

Perform all programs

1. Implement the arrays concept.
2. Implement the concept of strings.
3. Demonstrate plot bar charts.
4. Create the statistical models.
5. Implement the access of web pages.
6. Implement the data analysis with pandas.
7. Illustrate the plot histograms.
8. Demonstrate the merge mails.
9. Implement the concept of hash files.
10. Implement the concept of data structures.

Case Study
Implements statistical analysis of weather prediction.

COURSE OUTCOMES
Upon successful completion the students will be able to

CO1: Demonstrate a simple Python programs.
CO2: Implement Python programs with conditionals and loops.
CO3: Develop Python programs step-wise by defining functions and calling them.
CO4: Use Python data structure for representing compound data.
CO5: Create pandas based statistical models.

Total Periods: 30

Prepared by
M.Praneesh

verified by
Dr.AnnaSaroVijendren

Approved by
Dr.G.Maria Priscilla

18ITI02 - OPEN ELECTIVE-II ETHICAL HACKING

Semester	V
Credit	3
Paper Type	Open Elective-II
Max. Marks	CIA - 30 CE - 70

COURSE OBJECTIVES

- To understand the basic concepts of ethical hacking and learn about different techniques.
- To learn and analyze the malware, hardware and software vulnerabilities and their effect.
- To acquire knowledge on different types of applications, attacks and security

UNIT–I **8**

An Introduction to ethical Hacking: Security Fundamentals - Security testing - Hacker and Cracker Descriptions -Test Plans- keeping It legal - Ethical and Legality. The Technical Foundations of Hacking: The Attacker's Process - The Ethical Hacker's Process.

UNIT–II **9**

Foot printing and Scanning: Information Gathering -Determining the Network Range - Identifying Active Machines - Finding Open Ports and Access Points - OS Fingerprinting - Fingerprinting Services - Mapping the Network Attack Surface.

UNIT–III **9**

Enumeration and System Hacking: Enumeration-System Hacking. Malware Threats: Viruses and Worms–Trojans - Keystroke Logging and Spyware - Malware Counter measures.

UNIT–IV **9**

Sniffers Session Hijacking and Denial of Service: Sniffers - Session Hijacking - Denial of Service and Distributed Denial of Service. Web Server Hacking, Web Applications and Database Attacks: Web Server Hacking- Web Application Hacking.

UNIT–V **9**

Wireless Technologies, Mobile Security and Attacks: Wireless Technologies - Mobile Device Operation and Security .IDS, Firewalls and Honeypots: Intrusion Detection Systems – Firewalls – Honeypots.

Total Periods: 44 hours

COURSE OUTCOMES:

Upon the successful completion of the course, the student will be able to

CO1: Identify with the basics of ethical hacking and categorize the different types of hackers.
CO2: Familiarize with foot printing and identify the vulnerabilities in real world scenario.
CO3: Differentiate the various malware threats and detect their attacks.
CO4: Identify different types of hijacking.
CO5: Detect and prevent the security attacks in different environments such as wireless and mobile security.

Text Book

1. Michael Gregg, "Certified Ethical Hacker (CEH)", Pearson IT Certification Version 9, Second Edition, 2017.

Reference Books

1. Roger A Grimes, "Hacking the Hacker", John Wiley & Sons, 2017
2. Ankit Fadia, "The Unofficial Guide to Ethical Hacking", Premier Press 2002.

Prepared by	Approved by	Verified by
(Mrs Kiruthika S)	(Dr Anna Saro Vijendran)	(Dr Sumathi N)
Course Co-ordinator	Dean, School of Computing	BoS Chairman

(Dr Jayasheela D)
Academic Counsil Member Secretary

18CSC05 PYTHON PROGRAMMING
(Common to Computer Science, Information Technology & Computer Application)

Semester	V
Credit	3
Paper Type	Skill based
Max. Marks	CIA:30 + CE :70

COURSE OBJECTIVES

The students should be able to

- Introduce Python concepts and to develop programming skills in Python Programming.
- Know the principles and data structures of python.
- Provide knowledge on advanced features like strings and statistics for python.

UNIT I **8**

Introduction to python – History of python – Features of python – writing and Executing first python program – variable and identifiers – data types – other data types – input operation – Reserved words -operators and Expressions – Type conversion.

UNIT II **10**

Introduction to Decision Control statements – Selection/ Conditional branching statements: if Statement – if – else statement – Nested if Statement – if – elif – else statement – Basic Loop Structures/ iterative Statements: While loop – for loop – Nested loops – break statement – continue statement – pass statement – else statement used with loops – functions and modules: Function definition – function call – variable Scope and Lifetime – More on Defining functions – Recursive functions.

UNIT III **11**

List: accessing values in list- updating values in list – nested lists – cloning list- basic list operations- list methods- using list as stack- using list as queue – Functional programming – Tuple: creating Tuple-utility of tuples- accessing values in tuples- updating tuples- deleting elements in tuples- basic tuples operations- nested tuples –creating sets – Dictionaries: creating – accessing values – adding and modifying an item in dictionary – modifying an entry – deleting items – sorting items in dictionary- looping over a dictionary – nested dictionary.

UNIT IV **8**

Strings: Concatenating , Appending and Multiplying Strings – String Formatting operator – Built-in String methods and functions – slice operation – ord() and chr() functions – comparing strings – iterating string – Regular Expressions.

UNIT V **8**

Pandas – Series and Data frames – Data Frames and Data wrangling – Visualization – Plotting – Histograms – Grouping Data – Time series and Statistics - Visualization in Python- I Python – NumPy Basics: Arrays - Vectorized Computation.

COURSE OUTCOMES

Upon successful completion the students will be able to

CO1: Analyze fundamental python concepts in real world application.
CO2: Solve real world software problems based on python functions.
CO3: Examine different data structure concepts for python to validate different social issues.
CO4: Analyze the formatting strings in python.
CO5: Identify various quantitative analysis techniques using pandas.

Total Periods : 45

TEXT BOOKS

1. Reema Thareja, "Python Programming using Problem solving Approach", 3rd Edition, Oxford University press, 2017 (UNIT 1 – UNIT 4)
2. Mark Pilgrim, "Dive into Python3", 5th Edition Revised, Publisher Apress, year 2015. (UNIT 5)

REFERENCE BOOKS

1. Allen Downey,"Think Python", revised edition, Green Tea Press Needham, Massachusetts, 2015
2. Phuong Vo. T. H., Martin Czygan , "Getting started with Python Data Analysis", Revised edition, Packet Publishing, 2011 (UNIT 4)

Prepared by
M.Praneesh

verified by
Dr.AnnaSaroVijendren

Approved by
Dr.G.Maria Priscilla

18ITP01 – DATA ANALYSIS USING R PROGRAMMING WITH LAB

Semester	**V**
Credit	**5**
Paper Type	**CORE**
Max Marks:	**CIA – 50** **CE – 50** **Total - 100**

COURSE OBJECTIVES

- To use R for data analysis, computation, graphics, and modeling,
- To write functions and use R in an efficient way,
- To summarize data sets in R
- To use R in their own research,
- To expand their knowledge of R on their own.

UNIT–I **15**

Overview of R and data structures:R Introduction- Mathematical operations and vectors–Inspecting variables and workspace – Vectors – Matrices – Arrays – Lists and Data frames

Practical Lab Exercises:

Develop programs to

- Illustrate mathematical operations and variable assignment in R
- Illustrate vectors, matrices and arrays in R
- Illustrate List and Data frames in R

UNIT–II **15**

R Programming Structures: Environments – Functions – Strings – Factors – Flow controls – Loops – Advanced looping - Packages

Practical Lab Exercises:

Develop programs to

- Illustrate flow controls and loops in R
- Illustrate functions in R
- Illustrate strings and factors in R

UNIT–III **15**

Reading, Cleaning and Transforming data: Built-in datasets –Reading text files – Reading binary files – web data -Accessing database – Cleaning strings – Manipulating data frames - Sorting

Practical Lab Exercises:

Develop programs to

- Illustrate importing data into R
- Illustrate exporting data from R

UNIT–IV **15**

Exploring and Visualizing: Summary statistics – Three plotting systems – Scatter plots – Lin plots – Histograms – Box plots – Bar charts – Other plotting packages and systems.

Practical Lab Exercises:

Develop programs to

- Illustrate summary statistics in R
- Illustrate to crate graphs and usage of plot() functions in R

UNIT–V **15**

Distribution and Modelling: Normal Distribution - Binomial Distribution - Poisson Distributions - Other Distribution - Simple Linear Regression, -Multiple Regression - Logistic Regression, - Poisson Regression - Other Generalized Linear Models - Survival Analysis

Practical Lab Exercises:

Develop programs to

- Illustrate normal and binomial distribution in R
- Illustrate linear regression model in R

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO1: Acquire knowledge on basic and advanced data structures of R Programming.

CO2: Master the use of R programming structure in data analysis

CO3: Apply the concepts of data import and export in R.

CO4: Implement graphical data analysis in R Programming.

CO5: Apply probability distribution and regression models in data analysis.

Total Periods: Theory 45 Hours
Practical 30 Hours

TEXTBOOKS:

1. Richard Cotton , Learning R: A Step-by-Step Function Guide to Data Analysis , O' REILLY 2016
2. Jared P. Lander, ,R for Everyone: Advanced Analytics and Graphics, 2nd Edition,Addison-Wesley Professional, 2017

REFERENCE BOOKS:

1. Norman Matloff, The Art of R Programming,No starch Press, 2011
2. Hadley Wickham, Garrett GrolemundR for Data Science: Import, Tidy, Transform, Visualize and Model Data,O' REILLY 2017

WEB REFERENCES:

https://www.tutorialspoint.com/r/index.htm
https://www.guru99.com/r-tutorial.html
https://www.datamentor.io/r-programming/
https://www.edureka.co/blog/r-tutorial/

EVALUATION PATTERN

***CIA-50**
(1.Lab Internal-10 marks 2. Lab Model Exam- 10 marks 3. Observation Note- 10 marks 4. Record Note- 10 marks 5. Theory Model Exam – 10 marks)
$CE-50. Evaluation will be External Descriptive Exam for 50 Marks.

Prepared by	Approved by	Verified by
(Mr Rajeev R)	(Dr Anna Saro Vijendran)	(Dr Sumathi N)
Course Co-ordinator	Dean, School of Computing	BoS Chairman

(Dr. Jayasheela D)
Academic Counsil Member Secretary

PERSONALITY APTITUDE AND CAREER ENHANCEMENT (PACE- V)

Subject Code: 18CPE05

Common to all the UG streams admitted from AY 2018-19 Onwards

Semester	V
Credit	2
Paper type	Skill based
Max. Marks	Total=100 (Online:50+Verbal Oral: 50)

Instruction Hours per Semester: 40

Aim

To educate and enrich the students on quantitative ability, reasoning ability and verbal ability. Enhance the students on shaping attitudes, grooming and etiquettes and achieve professionalism.

Course Objectives

To enable students to,

- Enhance their quantitativeability.
- Enhance their reasoningability
- Enhance their verbalability.
- Build final resumes and shape attitudes.
- Create an impression through grooming, etiquettes andprofessionalism.

Unit I

Quantitative Ability – III

Numbers, Permutations & Combinations, Geometry, Mensuration, Algebra, Probability, Time and Work.

Unit II

Reasoning Ability – III

Logical Deductions, Odd Man Out, Image Based Problems, Direction Sense, Coding and Decoding, Data Sufficiency, Data Interpretation

Unit III

Verbal Ability – III

Verbal Analogies, Sentence Improvement, Sentence Formation, Choosing the Correct Word, Idioms and Phrases, Odd Words, Paragraph Formation

Unit IV

College to Corporate – I

Final Resume Preparation; Mock Group Discussion, Mock Interview Sessions, Body Language, Power Dressing; Attitude Shaping & Building; Influencing Skills and Persuasion;

Unit V

College to Corporate – II

Personal Grooming & Etiquette Social Graces, Etiquette and Body language; Making a Great First Impression: How to present yourself to people; Developing Your Professional and Personal Image; Build self-confidence and self-esteem; Rapport building; Interpersonal Communication; Displaying Courteousness and Thoughtfulness at the Workplace; Email and Telephone Etiquette; Professionalism - Accountability, Responsibility, Ownership, Integrity, Self-motivation and being self-driven.

Course Outcomes

On the successful completion of the course, the student would be able to-

- Enhance their ability to deal withquantities
- Enhance their reasoningability.
- Enhance their verbalability.
- Build final Resumes and Shape Attitudes.
- Create an impression through grooming, etiquettes and professionalism.

References

1. Quantitative Aptitude for Competitive Exams by R. S.Agarwal
2. Quantum CAT by SarveshVerma
3. A Modern Approach to Logical Reasoning by R. S.Agarwal
4. Verbal Ability and Reading Comprehension by ArunSharma
5. Word Power Made Easy by NormanLewis
6. High School English Grammar by Wren andMartin
7. English Conversation Practice by GrantTaylor
8. Group Discussion and Interviews by AnandGanguly
9. Art of Social Media by GuyKawasaki

(Dr Jayasheela D)
Academic Council Member Secretary

Verified & Approved by
Course Coordinator

18IT601 - MACHINE LEARNING

Semester	VI
Credit	4
Paper Type	Core
Max. Marks	CIA -30 CE -70 Total 100

COURSE OBJECTIVE

- To enable students to understand the basis of neural networks
- To equip students with fundamental knowledge on multi-layer perceptron.
- To analysis and apply methods for dimensionality reduction.
- To introduce various learning techniques

Unit I **11**

Machine Learning: Introduction – Preliminaries - The Brain and The Neuron - Neural Networks - The Perceptron - Linear Separability - Linear Regression.

Unit II **11**

The Multi-layer Perceptron: Going Forwards - Going Backwards – Back Propagation of Error - The Multi layer Perceptron in Practice - Examples of Using the MLP - Deriving Back Propagation - Receptive Fields - The Radial Basis Function (Rbf) Network - Interpolation and Basis Functions

Unit III **11**

Dimensionality Reduction: Linear Discriminant Analysis (LDA) - Principal Components Analysis (PCA) - Factor Analysis - Independent Components Analysis (ICA) - Locally Linear Embedding – ISOMAP - Gaussian Mixture Models - Nearest Neighbour Methods - Optimal Separation - The Support Vector Machine Algorithm - Extensions to the SVM

Unit IV **11**

Evolutionary Learning : The Genetic Algorithm (GA) - Generating Offspring - Genetic Operators - Using Genetic Algorithms - Reinforcement Learning:Overview and Examples - Markov Decision Processes – Values - Uses Of Reinforcement Learning

Unit V **11**

Learning with Trees: Using Decision Trees - Constructing Decision Trees - Classification and Regression Trees (CART) - Ensemble Learning:Boosting – Bagging - Random Forests - Unsupervised Learning: The K-Means Algorithm - Vector Quantisation - The Self Organising Feature Map

Total Periods: 55 Hours

COURSE OUTCOMES:

Upon successful completion of the course, students will be able to

CO1: Acquire knowledge about basic concepts of Machine Learning
CO2: Gain fundamental knowledge on multi-layer perceptron.
CO3: Apply dimensionality reduction techniques.
CO4: Acquire knowledge in various learning techniques like Evolutionary, Reinforced, Trees Ensemble and Unsupervised learning.
CO5: Identify machine learning techniques suitable for a given problem.

TEXTBOOK:

1. Stephen Marshland, "Machine Learning: An Algorithmic Perspective", Chapman & Hall/CRC, Taylor & Francis Group, 2015.

Reference Books:

1.Ethem Alpaydin, "Introduction to Machine Learning", The MIT Press, September 2014,
2. Mitchell, Tom, "Machine Learning", New York, McGraw-Hill, First Edition, 2003
3. Mehryar Mohri, Afshin Rostamizadeh, Ameet Talwalkar, "Foundations of Machine Learning", MIT Press (MA) 2012.
4. Miroslav Kubat, "An Introduction to Machine Learning", Second Edition, Springer International Publishing AG 2017

Web References:

1. https://machinelearningmastery.com/
2. https://towardsdatascience.com/introduction-to-machine-learning-for-beginners/
3. https://www.coursera.org/learn/machine-learning-duke
4. https://developers.google.com/machine-learning/

Prepared by:	Approved by:	Verified by:
Dr C Deepa	Dr Anna Saro Vijendran	Dr N Sumathi
(Course- coordinator)	(Dean, School of Computing)	(BoS, Chairman)

Dr. D. Jayasheela
(Academic Council - Member Secretary)

18IT602 – PROJECT AND VIVA VOCE

Semester	VI
Credit	4
Paper Type	Project
Max. Marks	CIA:80 CE :20 Total : 100

COURSE OBJECTIVE:

GUIDELINES FOR PROJECT WORK:

1. Students should carry out individual/group project work and it may be a work using a software packages that they have learned or the implementation of concepts from the paper studied or implementation of any innovative idea focusing on application oriented concepts.
2. The project work should be completed under the supervision of the allotted department staff concerned.
3. The student should compulsory follow the guidelines for the project work followed by the department.
4. Out of 100 marks, 80 marks for internal assessment as review I, II and III and 20 marks for VIVA-VOCE is allotted. Review I, II and III may carry 20, 30 and 30 marks respectively.

VIVA-VOCE:

VIVA-VOCE will be conducted at the end of the semester by both Internal(Respective Guides) and External Examiner, after duly verifying the Annexure report available in the department, for a total of 20 marks.

Total Hours: 45

COURSE OUTCOMES:

Upon successful completion of project work the students will be able to

CO1: Develop a useful software product of their own.
CO2: Perform analysis, design, testing and validation for a software requirement.

Prepared by:	Approved by:	Verified by:
Mr ASunil Samson (Course- coordinator)	Dr Anna Saro Vijendran (Dean, School of Computing)	Dr N Sumathi (BoS, Chairman)

Dr. D. Jayasheela
(Academic Council-Member Secretary)

18ITC09-MOBILE APPLICATION DEVELOPMENT LAB
(Common to BSc Computer Science, BCA and BSc IT)

Semester	VI
Credit	2
Paper Type	Core Practical
Max. Marks	CIA:15 CE : 35 Total:50

COURSE OBJECTIVE

- Know the components and structure of mobile application development frameworks for mobiles devices
- Learn the basic and important design concepts and issues of development of mobile applications.
- Understand the capabilities and limitations of mobile devices.

LIST OF EXPERIMENTS

1. Develop an application to display your personal details as a message
2. Design a Login Screen with validation
3. Develop an application that uses GUI component font size and color
4. Develop an application that makes use of different background color
5. Develop an application that uses layout managers and event listeners.
6. Design a native calculator application
7. Create an application that draws basic graphical primitives on the screen.
8. Implement an application that implements Multi threading
9. Develop a native application that uses GPS location information
10. Develop an app and deploy it in Google Play store

COURSE OUTCOMES:

Upon the successful completion of the course the student will be able to:

CO1: Apply fundamental mobile application concepts.
CO2: Solve real world software problems in mobile devices.
CO3: Analyze mobile application for various mobile devices.

Total Hours: 33

Prepared by:	Approved by:	Verified by:
Dr C Deepa (Course- coordinator)	Dr Anna Saro Vijendran (Dean, School of Computing)	Dr N Sumathi (BoS, Chairman)

Dr D Jayasheela
(Academic Council Member Secretary)

18ITC10-MOBILE APPLICATION DEVELOPMENT
(Common to BSc Computer Science, BCA and BSc IT)

Semester	VI
Credit	3
Paper Type	Skill Based Subject
Max. Marks	CIA :30 CE :70 Total: 100

COURSE OBJECTIVES

- Understand mobile applications , its importance and to solve and analyze real world problems
- To learn the requirements of the software and efficient product designs for mobile application
- Prepare the students for a successful mobile application developer
-

UNIT I: **8**

INTRODUCTION: Preliminary Considerations - Cost of Development - Importance of Mobile Strategies in Business World - Mobile Web Presence - Mobile Applications - Marketing - Web Services for Mobile Devices –Web Services Languages

UNIT II: **9**

MOBILE USER INTERFACE DESIGN: Effective Use of Screen Real Estate - Understanding Mobile Application Users - Understanding Mobile Information Design - Understanding Mobile Platform - Using the Tools of Mobile Interface Design - Choosing A Mobile Web Option – Adaptive Mobile Web Sites – Dedicated Mobile Web Sites – Mobile Web App With HTML 5

UNIT III: **9**

ANDROID APPLICATION DEVELOPMENT: Introduction to Android Operating System – Configuration of Android Environment – Operating System –JDK,SDK,ADT,AVD,Emulator,DVM – Steps To Install And Configure Eclipse and SDK – Create The First Android Application- Directory structure - Android User Interface - Understanding The Components Of A Screen

UNIT IV: **9**

DESIGNING USER INTERFACE: Designing User Interface With View – Activity - Intent and Intent_filter – Activity And Broadcast Life Cycle- Service – SQLite Database in Android - SQLite Database – Creation And Connection Of The Database- Extracting Value From A Cursor - Transactions

UNIT V: **9**

IOS AND WINDOWS PHONE 7 FOR ANDROID: Getting started with iOS - Getting the Tools - iOS Project - Debugging iOS Apps - Objective C Basics – Building App in iOS and Other Useful Thing - Windows Phone 7 Project – Building App in Windows Phone 7 - Distribution and Other Useful Windows Phone Things

Total Periods: 44

COURSE OUTCOMES:

Upon the successful completion of the course the student will be able to:

CO1: Examine mobile application market and web services for various mobile devices.
CO2: Design patterns for mobile platform.
CO3: Apply foundational android mobile application concepts.
CO4: Design and Explore operations on various GUI objects.
CO5: Implementing development setup of iOS and Windows Phone 7.

TEXT BOOKS:

1. Jeff McWherter and Scott Gowell, Professional Mobile Application Development, Wrox 2012 Ed.
2. Prasanna Kumar Dixit, Android, Vikas Publishing House Pvt. Ltd. 2014.

REFERENCE BOOKS:

1. Wei – Meng Lee, Beginning Android Application Development, Wiley 2011 Ed.
2. Charlie Collins, Michael Galpin and Matthias Kappler, Android in Practice, Dream Tech. 2012 Ed.

Prepared by:	Approved by:	Verified by:
Dr C Deepa (Course- coordinator)	Dr Anna Saro Vijendran (Dean, School of Computing)	Dr N Sumathi (BoS, Chairman)

Dr. D. Jayasheela
(Academic Council – Member Secretary)

18ITE04 - THREATS, RIGHTS AND CYBER LAWS

Semester	VI
Credit	4
Paper Type	Elective
Max. Marks	CIA:30 CE :70

COURSE OBJECTIVES

- To acquaint students about the protection of intellectual property copyright, related rights, patents , Industrial designs and unfair competition.
- To familiarize with implications of information technology.
- To familiarize with patent protection.
- To understand about the emerging cyber ethics and law.

UNIT—I

INTELLECTUAL PROPERTY **11**

Introduction: Protection of Intellectual Property Copyright - Related Rights – Patents Industrial Designs – Trademark - Unfair Competition.

UNIT — II

INFORMATION TECHNOLOGY RELATED INTELLECTUAL PROPERTY RIGHTS **11**

Computer Software and Intellectual Property – Objective - Copyright Protection – Reproducing – Defenses - Patent Protection - Database and Data Protection-Objective - Need for Protection - UK Data Protection Act 1998- US Safe Harbor Principle – Enforcement - Protection of Semi-conductor Chips - Objectives Justification of protection- Criteria – Subject - matter of Protection WIPO Treaty –TRIPs – SCPA - Domain Name Protection – Objectives - domain name and Intellectual Property - Registration of domain names - disputes under Intellectual Property Rights - Jurisdictional Issues and International Perspective.

UNIT — HI

PATENTS **11**

Patents (Ownership and Enforcement of Intellectual Property) Patents – Objectives – Rights – Assignments - Defenses in case of Infringement Copyright – Objectives – Rights - Transfer of Copyright - work of employment Infringement - Defenses for infringement Trademarks – Objectives – Rights - Protection of good will – Infringement - Passing off - Defenses. Designs –Objectives – Rights – Assignments – Infringements - Defenses of Design Infringement.

UNIT — IV

CYBER LAW **11**

Cyber Law: Basic Concepts of Technology and Law : Understanding the Technology of Internet, Scope of Cyber Laws - Cyber Jurisprudence Law of Digital Contracts: The Essence of Digital Contracts - The System of Digital Signatures - The Role and Function of Certifying Authorities, The Science of Cryptography

UNIT—V

INTELLECTUAL PROPERTY ISSUES IN CYBER SPACE **11**

Domain Names and Related issues - Copyright in the Digital Media - Patents in the Cyber World. Rights of Netizens and E-Governance : Privacy and Freedom Issues in the Cyber World - E-Governance - Cyber Crimes and Cyber Laws.

Total Periods: 55

COURSE OUTCOMES

Upon the successful completion of the course the student should be able to:

CO1: Recognize the specialties of intellectual property law and its related roles.
CO2: Identify information technology related IPR computer software.
CO3: Determine the legal issues in patent and computer software.
CO4: Evaluate the basic theories of Cyber Laws.

TEXT BOOKS:

1. Adv. (Prof.) Sunil N, Shah, "IPR and Cyber Laws", Himalaya Publishing house, 1st Edition., Mumbai, 2016.

REFERENCE BOOKS:

1. Joan Ruttenburg, Paige von Mehren, Julie Yen, "The OPIA Insider's guide to Intellectual Property and Cyber Law", Bernard Koteen Office of Public Interest Advising Harvard Law School Wasserstein Hall, Cambridge, 2013.
2. Mr. Atul Stawa Jaybhaye, "Cyber Laws and IPR issues", Bharath Law review, April – June 2016 (Published in Articles section of www.manupatra.com)

Prepared by:	Approved by:	Verified by:
Dr C Deepa	Dr Anna Saro Vijendran	Dr N Sumathi
(Course- coordinator)	(Dean, School of Computing)	(BoS, Chairman)

Dr. D. Jayasheela
(Academic council-Member Secretary)

18ITE05 - BLOCK CHAIN TECHNOLOGIES

Semester	VI
Credit	4
Paper Type	Elective
Max. Marks	CIA – 30 CE – 70 TOT – 100

COURSE OBJECTIVES

- To understand block chain concepts and its usage
- To be able to explain the different components involved within block chain
- To be aware of usage of block chain within the environment
- To gain knowledge on crypto currency and its tools.

UNIT–I **11**

Block chain – Public Ledgers, Block chain as Public Ledgers - Bitcoin, Block chain2.0, Smart Contracts, Block in a Block chain, Transactions – Distributed Consensus, The Chain and the Longest Chain –Crypto currency to Block chain 2.0 – Permissioned Model of Block chain, Cryptographic - HashFunction, Properties of a hash function - Hash pointer and Merkle tree.

UNIT–II **11**

A basic crypto currency, Creation of coins, Payments and double spending, FORTH – the precursor for Bitcoin scripting, Bitcoin Scripts , Bitcoin P2P Network, Transaction in Bitcoin Network, Block Mining, Block propagation and block relay, Consensus introduction, Distributed consensus in open environments - Consensus in a Bitcoin network

UNIT–III **11**

Bitcoin Consensus, Proof of Work (PoW) - Hashcash PoW, Bitcoin PoW, Attacks on PoW, monopoly problem - Proof of Stake - Proof of Burn - Proof of Elapsed Time - Bitcoin Miner, Mining Difficulty, Mining Pool – Permissioned model and use cases, Design issues for Permissioned Block chains, Execute contracts-Consensus models for permissioned block chain - Distributed consensus in closed environment - Paxos

UNIT–IV **11**

RAFT Consensus - Byzantine general problem, Byzantine fault tolerant system - Agreement Protocol, Lamport – Shostak - Pease BFT Algorithm-BFT over Asynchronous systems, Practical Byzantine Fault Tolerance

UNIT–V **11**

Architecture of Hyper ledger fabric v1.1-Introduction to hyper ledger fabric v1.1, chain code - Ethereum: Ethereum network, EVM, Transaction fee, Mist Browser, Ether, Gas, Solidity, Smart contracts, Truffle-Design and issue Crypto currency, Mining, DApps, DAO

Total Periods: 55

COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO1: Analyze emerging abstract models for block chain Technology.
CO2: Identify major research challenges and technical gaps existing between the ory and practice in Crypto currency domain.
CO3: Analyze conceptual understanding of the function of Block chain as a method of securing Distributed ledgers
CO4: Interpret how consensus on their contents is achieved, and the new applications that they enable.
CO5: Apply hyper ledger Fabric and Etherumplat to implement the Block chain Application.

TEXT BOOKS:

1. Imran Bashir "Mastering Block chain: Deeper insights into decentralization, cryptography, Bitcoin, and popular Block chain frameworks", Packt Publishing2017
ISBN 10: 1787125440 / ISBN 13: 9781787125445

REFERENCE BOOKS:

1. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Gold feder. "Bitcoin and Cryptocurrency Technologies: A comprehensive introduction." Princeton University Press, 2016. Joseph Bonneau et al, SoK: Research perspectives and challenges for Bitcoin and cryptocurrency, IEEE Symposium on security and Privacy, 2015.

2. Don Tapscott , Alex Tapscott, "Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World Paperback", June 2018,

Prepared by:	Approved by:	Verified by:
Mrs. B. Vidhya	Dr Anna Saro Vijendran	Dr N Sumathi
(Course- coordinator)	(Dean, School of Computing)	(BoS, Chairman)

Dr. D. Jayashela
(Academic Council - Member Secretary)

18ITE06 –AUGMENTED AND VIRTUAL REALITY

Semester	VI
Credit	4
Paper Type	Elective
Max. Marks	CIA:30 CE :70 Total: 100

Course Objectives:

- To introduce the basic human sensory system.
- To provide an understanding of the systems required to fool the sensory system into immersion.
- To provide an understanding of the pipe for Mixed reality Content Creation.

UNIT I: **11**

Mixed Reality History of Augmented Reality and Virtual Reality - Use Cases - Gaming and Entertainment - Architecture and construction - Science and Engineering - Health and medicine Education - Mechanics of Sight - Mechanics of Hearing - Mechanics of Feeling.

UNIT II: **11**

Augmented Reality Basics Tactile and Force Feedback Devices - Display Fundamentals - Augmented Displays (Monocular, Binocular) - Types of Displays – Tracking - Sensors for Tracking.

UNIT III: **11**

Augmented Reality Setup Orientation and Motion – Calibration - Computer Vision - Devices to enable navigation and Interaction.

UNIT IV: **11**

Concepts that make VR work Immersion - Presence, Reality trade-off - Perception Models and Processes - Health Issues and Content Creation for mixed reality Motion Sickness - Eye strain - After effects - Hardware Challenges – Latency - Content Creation - Environment Design - Field of View.

UNIT V: **11**

Future of Augmented Reality and Virtual Reality Characters Avatars - Collaboration and Social Networking - Interaction and interaction Design - Input Devices - foveated rendering.

Total Hours: 55

COURSE OUTCOME

Upon successful completion of the course, the student will be able to

CO1: Identify various types of mixed reality systems.
CO2: Demonstrate appropriate system components for building a mixed reality system
CO3: Analyze the calibration required to increase immersion
CO4: Solve challenges and health hazards associated with mixed reality.
CO5: Predict the approximate future direction of Mixed Reality.

TEXT BOOKS:

1. D. Schmalstieg and T. Höllerer, Augmented reality, 1st ed. Pearson Education, 2016. ISBN13: 978-0321883575.
2. S. Aukstakalnis, Practical augmented reality, 1st ed. Pearson Education, 2017. ISBN13: 9780134094236.
3. J. Jerald, The VR Book: Human-Centered Design for Virtual Reality, 1st ed. 2016

REFERENCES:

1. Jesse Glover, Jonathan Linowes, "Complete Virtual Reality and Augmented Reality Development with Unity", April 2019 2019, ISBN:9781838644864, 1838644865
2. Bruno Arnaldi (Editor), Pascal Guitton (Editor), Guillaume Moreau (Editor), "Virtual Reality and Augmented Reality: Myths and Realities", March 2018 , 978-1-786-30105-5

Prepared by:	Approved by:	Verified by:
Mr. A Sunil Samson (Course- coordinator)	Dr Anna Saro Vijendran (Dean, School of Computing)	Dr N Sumathi (BoS, Chairman)

(Dr. D. Jayasheela)
(Academic Council - Member Secretary)

18ITE07 - DATA ANALYTICS AND BUSINESS INTELLIGENCE

Semester	VI
Credit	4
Paper Type	Elective
Max. Marks	CIA:30 CE :70 Total: 100

COURSE OBJECTIVES

- To know how to derive meaning from huge volume of data and information
- To Understand Data mining principles and techniques
- To learn to use association rule mining for handling large data
- To understand the concept of classification for the retrieval purposes
- To understand how knowledge discovering process is used in business decision making

UNIT I

INTRODUCTION TO BUSINESS INTELLIGENCE **11**

Introduction - Changing Business Environments and Computerized Decision Support – Business Environment Factors – A Framework for Business Intelligence (BI) - BI's Architecture and Components - Automated Decision Making – Intelligence Creation and Use - Successful BI Implementation - Issues for Successful BI - Major BI Tools and Techniques

UNIT II

INTRODUCTION TO DATA MI NING **11**

What is data mining? – Where is data mining used? – Origins of data mining – Terminology and notations – Core ideas in data mining – supervised and unsupervised learning – steps in data mining – building model – data summaries – data visualization – Correlation analysis.

UNIT III

EVALUATING CLASSIFICATION **11**

Classification Introduction – Judging classification performance – Evaluating predictive performance – Multiple linear regression – Explanatory Vs Predictive modeling – Estimating the regression equation and prediction –variable selection in linear regression – Classification methods introduction – Naïve Bayes – k-nearest neighbors.

UNIT IV

NEURAL NETS AND DISCRIMINANT ANALYSIS **11**

Concept and structure of a neural network – fitting a network to data – Exploring the relationship between predictors and response – advantages and weaknesses of neural networks – discriminant analysis introduction – distance of an observation from a class – Fisher's linear classification function – classification performance of discriminant analysis.

UNIT V

ASSOCIATION RULES AND CLUSTER ANALYSIS **11**

Association Rules introduction -Discovering Association rules in transaction databases – Generating candidate rules – selecting strong rules – Cluster Analysis introduction –Measuring distance between two records – Measuring distance between two clusters – hierarchical clustering

Total Hours : 55

COURSE OUTCOMES

Upon successful completion of course the students will able to

CO1: Appreciate the techniques of knowledge discovery for business applications.
CO2: Apply various steps of data mining to reduce dimensionality without sacrificing accuracy.
CO3: Design and deploy appropriate classification techniques.
CO4: Analyze Big Data Management with neural nets.
CO5: Apply the association rules for mining the data.

TEXT BOOK

1.Galit Shmueli, Nitin R. Patel and Peter C. Bruce, Data Mining for Business Intelligence – Concepts, Techniques and Applications Wiley, India, 2010. Unit 2,3,4,5 – chapter 1-6, 9-12

2.Efraim Turban, Ramesh Sharda, Jay E. Aronson and David King, Business Intelligence, Prentice Hall, 2008. Unit 1 – Chapter 1

REFERENCE BOOKS

1.Jaiwei Ham and Micheline Kamber, Data Mining concepts and techniques, Kauffmann Publishers 3 rd edition, 2011

2. Michel Berry and Gordon Linoff, Mastering Data mining, John Wiley and Sons Inc, 3nd Edition, 2011

3. Elizabeth Vitt, Michael Luckevich Stacia Misner, Business Intelligence, Microsoft, 2011

4. Michalewicz Z., Schmidt M. Michalewicz M and Chiriac C, Adaptive Business Intelligence, Springer – Verlag, edition 2016

Prepared by:	Approved by:	Verified by:
Dr R Rajeev	Dr Anna Saro Vijendran	Dr N Sumathi
(Course- coordinator)	(Dean, School of Computing)	(BoS, Chairman)

Dr. D. Jayasheela

(Academic Council – Member secretary)