YEAR-WISE AND SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF B.Sc. COMPUTER SCIENCE & COGNITIVE SYSTEMS
FIRST SEMESTER
ACADEMIC -YEAR 2023-24 OF 2023-26 BATCH
(CBCS)

Sl. No.	Part	Subject Code	Title of the Subject	Hours /Week	Duration of Exam (hrs.)	Marks			Credits
						Internal	External	Total	
1	I	EN18101	General English-I (AECC-1)	3	3	40	60	100	3
2	I	VE18101	Value Education and Personality Development (AECC-2)	2	2	40	60	100	2
3	I	CSC20101	Introduction to Work Sheets (SEC-1)	4	3	40	60	100	4
4	II	CSC20102	Operating Systems (CORE-1)	5	3	40	60	100	4
5	II	CSC20103	Computer Fundamentals (CORE –2)	4	3	40	60	100	4
6	II	CSC20104	Problem Solving and Programming in C (CORE-3)	5	3	40	60	100	4
PRACTICALS									
7	II	CSC20105	Work Sheets Lab (SEC-1)	2	3	40	60	100	1
8	II	CSC20106	Operating Systems Lab (CORE-1)	2	3	40	60	100	1
9	II	CSC20107	C Programming Lab (CORE-3)	2	3	40	60	100	1
	Total			**29**	**-**	360	540	900	**24**

*Ability Enhancement Compulsory Course (AECC)

* Skill Enhancement Course (SEC)

GENERAL ENGLISH -I

Credits: 3 **Semesters: I**
Subject Code: EN18101 **No. of Lecture Hours: 45**

Objectives:

- To enhance the learner‘s communication skills by giving adequate exposure in reading, writing, listening and speaking skills and the related sub-skills.
- To develop oral and written communicative skills among the students so that their employability enhances and English becomes the medium of their livelihood and personality.

Outcome:

CO1: To **distinguish** between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage of language and for developing the art of parallel listening and writing.
CO2: To **construct** vocabulary and to gain understanding on the tense component, a pivotal constituent for language structuring and vocabulary building.
CO3: To **identify** with economical word constructions, paying specific attention in constructing sound writing skills.
CO4: To **interpret** functional grammar, the basic part involved in sentence constructing to improve linguistic skills.
CO5: To **develop** communication skills to provide a platform for language efficiency for effective language delivery.

UNIT-I **9 Hrs**

Wit and Humor

From the text ―A Tea Party‖ by Ruth Prawer Jhabvala

- Explanation of the text 2
- Grammar----Nouns, Articles 2
- Vocabulary---Homonyms, homophones, homographs 2
- Writing Skill--- Note- Making 2
- Speaking Skill – Note-Making 1

UNIT-II **9 Hrs**

Risk Management

From the text ―Deadly Factory Fires in India.‖

- Explanation of the text 2
- Grammar----Tenses – The Present Tense 2
- Vocabulary ---Synonyms 2
- Writing Skill--- Information Transfer 2

- Speaking Skill--- 1

UNIT-III **9 Hrs**

Human Values

From the text‖ India‘s Contribution to World Unity‖

- Explanation of the text 2
- Grammar--- Tenses- The Past Tense 2
- Vocabulary ---- Adjective and Adverb Suffixes 2
- Writing Skill--- Formal Letters. Curriculum Vitae 2
- Speaking Skill--- JAM 1

UNIT-IV **9 Hrs**

The Cyber Age

From the text ―Polymer Bank Notes‖

- Explanation of the text 2
- Grammar----Concord or Subject Verb Agreement 2
- Vocabulary -----Word Formation. Collocations. 2
- Writing Skill---- References and Bibliographies. 2
- Speaking Skill--- Presentations 1

UNIT-V **9 Hrs**

Sports

From the text ―Sachin Tendulkar‖

- Explanation of the text 2
- Grammar------Adjectives, Comparison of Adjectives 2
- Vocabulary—Common Errors, Commonly Mis-spelt Words, Commonly Confused Words 2
- Writing Skill- Technical Reports, Project Reports 2
- Speaking Skill----Group Discussions 1

ESSENTIAL READING

1. Skills Annexe – Functional English for Success.Orient Black Swan.

SUGGESTED READING

1. Balasubramaniam, M. 1985. **Business Communication**. Vani Educational Books, New Delhi.
2. Krishna Mohan and Meera Banerjee, 1990. **Developing Communication Skills.** Macmillan India Ltd. New Delhi.
3. Krishnaswamy.N. and Sri raman, T. 1995. **Current English for Colleges**. Macmillan India Ltd. Madras
4. Narayanaswamy, V.R. 1979. **Strengthen Your Writing**. Orient Longman, New Delhi

5. Sharma, R.C. and Krishna Mohan. 1978. **Business Correspondence**. Tata McGraw-Hill Publishing Co., New Delhi.

VALUE EDUCATION & PERSONALITY DEVELOPMENT

Credits: 2 **Semester: I**
Subject Code: VE18101 **No. of Lecture Hours: 30**

Objective: To produce intellectually competent, morally upright, socially committed, spiritually inspired citizens in the service of the nation and the world.

Outcome:

CO1: Students will be able to **differentiate** Accepted norms and Counter values and be able to identify the various Dimensions of Human Development.
CO2: Students will be able to **demonstrate** Love and Experience of God and identify the Basic Issues of Life and Happiness as a life goal.
CO3: They will able to **understand** the importance of Concern for others and critique the various problems that deter the growth of the society.
CO4: The students will be able to **recognize** the traits of a good personality and practice Self-exploration.
CO5: Students will be able to interpret the Purpose of Life and Goal Setting and **demonstrate** Self-management.

UNIT-I **6 Hrs**

INTRODUCTION TO ETHICS

- Why Value Education?
- Reasons to have Ethics for Life
- Accepted Norms and Counter Values
- Dimensions of Human Development: Physical, Intellectual, Emotional, Moral, Spiritual and Social

UNIT-II **6 Hrs**

APPROACH TO LIFE

- Conscience and Pseudo-Conscience
- Happiness as Life-goal
- Values revealed and lived in Religions
- Experience of God
- Love: The three components of Love
- Some of the basic stages and issues of Life: Family, Love, Sex, Marriage

UNIT-III **6 Hrs**

CONCERN FOR OTHERS

- Self and Another

- Human Context

- Moral Problems of a Society / True Society : Social Desire, Social Fear, Social Silence, Social Indifference

UNIT-IV **6 Hrs**

TRANSFORMATION OF SELF

- Definitions of personality
- Characteristics of personality
- Elements of personality
- Traits of good personality
- Self-Identity, Self Concept
- Self-Discovery, Self-Acceptance
- Self-Esteem

WORK SHEET (1): Self Estimation

UNIT-V **6 Hrs**

LIFE ENRICHMENT SKILLS

- Purpose of life - Goal setting
- Characteristics of Goals
- Building Relationships
- Time Management
- Stress Management
- Emotional Management
- Conflict Management
- Team Management (Group Dynamics)

WORK SHEETS (1) & (2): 1) Anger Management
2) Team Management

ESSENTIAL READING

1. Human Values - Development Program - AIACHE
2. In Harmony

INTRODUCTION TO WORK SHEETS

Credits : 4 **Semester: I**
Subject Code : CSC23101 **No. of Lecture Hours: 60**

Objective: To understand the basic concepts of MS-Excel and Visual Basic Programming.

Outcome:

CO1: **Explain** the concepts of MS-Excel
CO2: **Understand** basic concepts of VBA
CO3: **Develop** basic programming using VBA
CO4: **Divide** large programs into functions and create user forms
CO5: **Create** charts using VBA code

UNIT-I **12 Hrs**

Introductory concepts of MS-Excel spread sheet

1. Application of work sheet - Menus & Tool bars 2
2. Creating, Naming Saving, Editing and Printing of Worksheets. 1
3. Entering and editing of numbers, formatting numbers, cell reference 2
4. Use of copy, move and paste option, Creating and using formulae 1
5. Work sheet to analyze data with graphs and charts 2
6. Functions- Text, Date, Math, statistical, logical, engineering, information 4

UNIT-II **12 Hrs**

Introduction to Visual Basic for application

1. Creating a macro, comparing absolute and relative recording 2

Working with VB Editor

2. Understanding VBE components, working with project window, code window 2
3. Customizing VB environment, Editor format tab, general tab and docking tab 2

VBA fundamentals

4. Objects, working with range objects, workbook, worksheet 2
5. VBA language fundamentals-comments, Variables, datatypes, constants, assignment statements, operators 4

UNIT-III **12 Hrs**

1. Arrays, declaring arrays, object variables, user-defined datatypes 2
2. Built-in functions, Manipulating objects and collections 2
3. Controlling code execution-GoTo, If Then, Select Case 2
4. Looping block of instructions-For Next, Do While, Do Until 2
5. Working with VBA Sub procedures-about procedures, Executing Sub Procedures 2
6. Passing Arguments to Procedures, Error handling techniques 2

UNIT-IV **12 Hrs**

Creating functions procedures

1. Sub procedures Vs Functions procedures, Function example, function procedures 2
2. Passing arguments to function 2
3. String Handling functions, Date time functions 2

4. Introducing User forms- handling custom dialog boxes, inserting and adding controls user form 2
5. Toolbox controls, Adjusting user form controls, control's properties 2
6. Displaying, closing and creating a user form 2

UNIT-V **12 Hrs**

Leveraging custom dialog boxes

1. Alternative to User forms, Using InputBox, VBA MsgBox Function 2
2. Using the Excel GetOpenFilename Method, GetSaveAsFilename Method 1
3. Prompting for a Folder, Built-in dialog boxes, Displaying Data Form 2

Working with charts

4. chart locations, chart object model, creating embedded chart 1
5. Creating a chart-on-chart sheet, modifying charts, Using VBA to activate chart 2
6. Using chart to deactivate chart, sizing and aligning chart objects 2
7. Exporting a chart, changing the Data used in chart, displaying chart in userform 2

ESSENTIAL READING

1. Alexander, Michael and Kulseika, Richard. 2019. **Excel 2019 Power Programming with VBA**. 1st Edition. John Wiley and Sons. Indiana: IndianaPolis.
2. Walkenbach, John. 2013**. Excel VBA Programming for Dummies**. 3rd Edition. John Wiley and Sons. NJ:Hoboken.

SUGGESTED READING

1. Dr. Liew Voon Kiong. 2010. **Excel VBA Made Easy**. CreateSpace Independent Pub.

OPERATING SYSTEMS

Credits : 4 **Semester : I**
Course Code: CSC23102 **No. of Lecture Hours: 60**

Objective: To learn the core ideas in operating systems, process management, memory protection, CPU scheduling, concurrent programming, deadlocks and File systems.

Course Outcomes:
CO1: **Explain** functions, types and structures of operating system
CO2: **Analyze** various process management concepts including scheduling and synchronization
CO3: **Illustrate** the concepts of memory management and I/O system.
CO4: **Solve** issues related to file system interface.
CO5: **Choose** an appropriate Page replacement algorithm

UNIT – I	**12Hrs**
1. Introduction -Define Operating System, mainframe system, desktop systems	2
2. Multiprocessor systems, distributed systems, clustered systems	2
3. Real time systems , hand held systems	2
4. Operating system structures-system components	2
5. Operating system services, system calls	2
6. system programs, system structures , virtual machines	2

UNIT – II	**12Hrs**
1. Process concept-process concept, process scheduling	3
2. Operation on processes, cooperating processes	3
3. Inter process communication	3
4. Process scheduling-basic concepts, scheduling criteria, scheduling algorithms.	3

UNIT – III	**12Hrs**
1. Process synchronization-critical section problem	3
2. Semaphores, monitors	3
3. Deadlocks-deadlock characterization, methods for handling deadlocks	3
4. Deadlock prevention, Deadlock avoidance, Deadlock detection	3

UNIT – IV	**12Hrs**
1. File system-file concept, access methods	3
2. Directory structure, file system mounting, file system sharing.	3
3. File system implementation-file system structure, file system implementation.	3
4. Directory implementation, allocation methods, free space management	3

UNIT – V	12Hrs
1 Memory management-swapping, contiguous memory allocation	2
2 Fragmentation-internal and external fragmentation	2
3 Paging, segmentation, segmentation with paging.	3
4 Virtual memory management-demand paging	2
5. Page replacement algorithms, Thrashing and working set model.	3

ESSENTIAL READING

1. Silber Schatz Abraham, Galvin Peter, B. and Gagne Greg. 2006. **Operating System Concepts.** 6th Edition. India: Wiley.

SUGGESTED READING

1. Tanenbaum Andrew, S. 2001. **Modern Operating Systems.** New Delhi: Pearson Education.

COMPUTER FUNDAMENTALS

Credits: 4 **Semester: I**
Course Code: CSC23103 **No. of Lecture Hrs: 60**

Objective: To understand the application of computers and telecommunications equipment to store, retrieve, transmit and manipulate data in the context of a business or an enterprise.

Outcome:
CO1: **Understand** various I/O devices and functionality of
computer CO2: **Understand** types of memory and software
CO3: **Solve** arithmetic operations using different types of number systems
CO4: **Distinguish** different types of networks, networking devices and
topologies. CO5: **Explain** various IP addressing mechanisms

UNIT-I **12Hrs**

INTRODUCTION TO COMPUTERS

1. Definition, characteristics, stored program concept, history and classification 3
2. Applications and basic organization of computer 3

INPUT AND OUTPUT DEVICES

3. Input devices- keyboard, pointing, handheld, optical, Audio-visual, card readers Digitizers 3
4. Output Devices- soft copy devices, Monitor and types, Hardcopy devices Voice response systems, biometric devices 3

UNIT- II **12Hrs**

COMPUTER MEMORY

1. Introduction, memory organization, hierarchy, sequential and random access 2
2. Process Registers, Primary memory and cache memory 3
3. Secondary storage devices, Magnetic tapes, Hard disks- external, optical disks USB flash drives, Memory Cards, Mass storage devices 3

COMPUTER SOFTWARE

4. Introduction, classification, System software, application software 2
5. Firm ware, middle ware, procuring computer software 2

UNIT-III **12Hrs**

NUMBER SYSTEMS AND COMPUTER CODES

1. Introduction, binary number system- working with binary numbers 4
2. Octal number system- conversions 2
3. Hexadecimal number system- conversions, addition and subtraction 2
4. Signed number representation in binary form 2
5. BCD and other codes 2

UNIT-IV	**12Hrs**
COMPUTER NETWORKS	
1. Introduction, types of networks	2
2. Physical components of a network	1
3. Wired media and wireless media	3
4. Networking devices	2
5. Networking topologies	2
6. Data transmission modes	2

UNIT-V	**12 Hrs**
THE INTERNET	
1. Internet-history, intranet and extranet, differences	2
2. IP address- types	2
3. Domain Name System, Uniform resource locator, Internet browsers	2
4. Internet services	2
5. Types of Internet connections	2
6. Internet Security	2

ESSENTIAL READING

1. Thareja, Reema. 2020. **Fundamentals of Computers**. 2nd Edition. Oxford Higher Education.

SUGGESTED READING

1. Sinha Pradeep, K. and Sinha Preeti. 2007. **Computer Fundamentals, Concepts, Systems and Applications.** 4th edition. BPB Publications
2. Rajaraman. 2006. **Fundamentals of Computers.** 4th edition. PHI Publications.
3. Bharihoke Deepak. 2000. **Fundamentals of Information Technology.** 2nd edition. Excel Books.

PROBLEM SOLVING AND PROGRAMMING IN 'C'

Credits: 4 **Semester: I**
Subject Code: CSC23104 **No. of Lecture Hours: 75**

Objective: To understand major programming constructs this serves as the basis for any programming language.

Outcome:

CO1: Explain the basic introduction of C programming languages.
CO2: Categorize different data types, operators and data input /output functions in _C'.
CO3: Develop programs using _C' control structures, arrays and string concept.
CO4: **Analyse** larger problems into smaller ones using _C' functions.
CO5: Create programs using the concept of structures, union and file handling in _C'.

UNIT – I	**15 Hrs**
1. Introduction to programming languages	1
2. Generation of programming languages	2
3. Algorithms and Flow charts	3
4. Introduction to C programming	2
5. Structure of C program	3
6. Files used in a C program	2
7. Compiling and executing C program	2

UNIT – II	**15 Hrs**
1. C tokens, Constants, Character set in C, Keywords, Identifiers	3
2. Data Types in C, Enumerated data types, typedef	2
3. Variables and scope of a variables	2
4. Data input and output statements in C	3
5. Operators in C	3
6. Type conversion and Typecasting	2

UNIT – III	**15 Hrs**
1. Conditional Branching Statement – if, if-else, if-else-if, switch case	3
2. Iterative Statements – while loop, do-while loop, for loop	3
3. Nested loops, break and continue statements, goto statement	3
4. Arrays - Single and double dimensional arrays	3
5. String- string input output functions, string manipulation functions	3

UNIT-IV	**15 Hrs**
1. Function- Declaring, defining and invoking functions	2
2. Categories of functions-Built-in functions	2
3. Passing parameters to functions – call by value & call by reference	2

4. Storage classes	2

5.	Recursion.	1
6.	Pointers - Declaration, passing pointer to functions	2
7.	Pointers and one dimensional arrays	2
8.	Dynamic memory allocations.	2

UNIT – V **15 Hrs**

1.	Structures - Simple structures, nested structure, Array of structures	3
2.	Unions-Differences between Structures and Unions.	3
3.	File handling - Various modes, File operations – fopen(), fclose()	3
4.	File input output functions – fputc(), fgetc(), fputs(), fgets(), getw(), putw(), getc(), putc(), fprintf(), fscanf(), getchar(), putchar()	3
5.	Random accessing file – fseek(), ftell(), rewind()	3

ESSENTIAL READING

1. TharejaReema. 2015. **Programming in C.** 2nd Edition**.** New Delhi:BPB.
2. KanetkarYashwanth. 1995. **Let us C.** New Delhi:BPB.
3. Gottfried Byron. 2010. **Programming with C (**Schaum‘s Outline Series**).** 3rd Edition. New Delhi: McGraw Hill Education

WORK SHEETS LAB

Credits : 1 **Semester : I**
Subject Code : CSC23105 **No. of Practical Hours: 30**

Objective: To develop applications using Visual Basic and understand Excel functions
Outcome: Students will be able to apply Excel using VBA code.

No. of Hrs	Topic
1-2	Programs on functions like text, math, logical, statistical
3	Programs on graphs and charts
4-5	Programs on subtotals, lookup, engineering, information functions
6-7	Programs on what-if analysis, sorting, filtering
8-9	Programs on validation, consolidation, pivot tables
10	Programs on basic concepts of visual basic
11	Programs on loops, conditional statements, strings, arrays, subroutines and Macros in VB
12	Programs using form controls and MsgBox() and InputBox()
13	Programs on BMI calculator, Financial and Investment calculator in Excel using VBA code.
14	Prime Number Tester, Selective summation
15	Working with charts using Excel VBA.

C PROGRAMING LAB

Credits: 1 **Semester: I**

Subject Code: CSC23107 **No. of Practical Hours:**

30 Objective: To develop applications using structured programming.

Outcome: Students will be able to write, compile and debug programs in C language.

No. of Hours	Topic
1-2	Implementation of various arithmetic operators
3-4	Programs using If –condition statement
5-6	Programs using loop control structures
7-8	Programs using pointers and simple arrays
9-10	Programs using strings and functions
11-12	Programs using structures and union
13-15	Programs to implement various file opening modes.

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SECOND SEMESTER
ACADEMIC YEAR 2023-24 OF 2023-26 BATCH
(CBCS)

Sl. No.	Part	Subject Code	Title of the Subject	Hours /Week	Duration of Exam (hrs.)	Marks			Credits
						Internal	External	Total	
1	I	EN18201	General English-II (AECC-3)	3	3	40	60	100	3
2	I	IC19201	Indian Heritage & Culture (AECC-4)	2	2	40	60	100	2
3	II	CSC23201	Server Adminstration (SEC-2)	4	3	40	60	100	3
4	II	CSC20202	Mathematics for Cognitive Science (CORE-4)	5	3	40	60	100	4
5	II	CSC20203	Computer Networks (CORE-5)	5	3	40	60	100	4
6	II	CSC23202	Data structures through C(CORE-6)	5	3	40	60	100	4
PRACTICALS									
6	II	CSC23205	Server Adminstration Lab (SEC-2)	2	3	40	60	100	1
7	II	CSC20206	Computer Networks Lab (CORE-5)	2	3	40	60	100	1
8	II	CSC23207	Data Structures with C Lab (CORE-6)	2	3	40	60	100	1
9	III	PL18001	PLANET * (Outreach)	-	-	-	-	-	1
	Total			**29**	**-**	360	540	900	**23**

*Ability Enhancement Compulsory Course (AECC) * Skill Enhancement Course (SEC)
*Programme of Loyola Academy for Neighbourhood Empowerment and Transformation (PLANET)

GENERAL ENGLISH –II

Credits: 3 **Semester: II**
Subject Code: EN18201 **No. of Lecture Hours: 45**

Objectives:

- To enhance the learners‘ communication skills by giving adequate exposure in reading, writing, listening and speaking skills and the related sub-skills.
- To develop oral and written communicative skills among the students so that their employability enhances and English becomes the medium of their livelihood and personality.

Outcome:

CO1: To **identify** a sound understanding on the formation of words and to demonstrate the functional grammatical component in the sentence.
CO2: To **paraphrase** ideas and thoughts in a coherent, neat and organized manner in order to utilize the writing skills for sound writing propagandas.
CO3: To **create** an understanding on Indian Literature, alongside to develop and chisel their communication skills.
CO4:To **recognize** the moral element which underlies in the short story; an exposure to informal language.
CO5: To **develop** listening and speaking skills through effective sentence constructions and efficient delivery.

UNIT - I **9 Hrs**

Biography

From the text ―MokshagundamVisvesvaraya‖

Explanation of the text,	2
● Grammar –---- Conjunctions, Adverbs	2
● Vocabulary ----- Prefixes and Suffixes	2
● Writing Skill ------Paragraph Writing	2
● Speaking Skill—Role Plays	1

UNIT - II **9 Hrs**

Health

From the text ―Three Days to See‖

Explanation of the text	2
● Grammar -------Usage of Modal Auxiliary Verbs	2
● Vocabulary --- Collective Nouns ,Technical Vocabulary	2
● Writing Skill ------Report Writing	2
● Speaking Skill -----Jam	1

UNIT - III **9 Hrs**

Short Story

From the text ―Leela‘s Friend‖ by R.K.Narayan

- Explanation of the text 2
- Grammar----Phrasal Verbs, Wh- Questions 2
- Vocabulary----Noun and Verb Suffixes 2
- Writing Skill------Writing a Narrative 2
- Speaking Skill --- Debates 1

UNIT - IV **9 Hrs**

Inspiration

From the text ―The Last Leaf‖ by O. Henry

- Explanation of the text 2
- Grammar----- Prepositions 2
- Vocabulary-----Idioms 2
- Writing Skill----- Précis Writing 2
- Speaking Skill--- Presentations 1

UNIT - V **9 Hrs**

Human Interest

From the text‖ The Convocation Speech‖

Explanation of the text 2

- Grammar---- Active and Passive Voice 2
- Vocabulary-----One-word Substitutes 2
- Writing skill------ Essay Writing 2
- Speaking Skill---- Group Discussion 1

ESSENTIAL READING

1. Epitome of Wisdom, Maruthi Publications.

SUGGESTED READING

1. Krishna Mohan and Meera Banerjee, 1990.**Developing Communication Skills**. Macmillan India Ltd. New Delhi.
2. Krishnaswamy.N. and Sriraman, T. 1995. **Current English for Colleges**. Macmillan India Ltd. Madras
3. Narayanaswamy, V.R. 1979. **Strengthen Your Writing**. Orient Longman, New Delhi
4. Sharma, R.C. and Krishna Mohan. 1978. **Business Correspondence**. Tata McGraw-Hill Publishing Co., New Delhi.

INDIAN HERITAGE & CULTURE

Credits : 2 **Semester: II**
Course Code : IC19201 **No. of lecture hours: 30**

Objectives:

- To apprise the students with a sound background of Indian Culture.
- To equip the students with social & community problems of India.
- To prepare the student for civil service exams where Indian Heritage & Culture paper is compulsory for all the streams.

Outcome:

CO1: The student can **understand** better about the origin of ancient Indian culture and the contributions of great rulers from both north and south India for Indian culture in ancient days

CO2: Students will **analyse** how Persian culture entered into India and how it influenced the Fine Arts of Indian society like Classical Music, Dance and Architecture.

CO3: Student can able to **assess** how the Indian orthodox society turn into modern and western society in the 19th century .It also edifies the students with spiritual doctrines of various Religions.

CO4: Students will **evaluate** various challenges face by the youth and the evil affects of terrorism on society.

CO5: The topics in the unit create belongingness among the students by bringing awareness of the rights and duties to make the world a better place and it throw light on gender sensitization issues of women, Children and LGBT.

UNIT I **No of hours: 6**

INTRODUCTION – IMPACT OF GEOGRAPHY ON INDIAN CULTURE

- Meaning of culture – Characteristics of Indian Culture and Caste system
- Indus Valley Civilization and Vedic/Aryan Culture
- Golden Age of Indian Culture– Mauryas and Guptas, Satavahavas, Pallavas, Cholas.

UNIT II **No of hours: 6**

MEDIEVAL INDIA – INFLUENCE OF ISLAM ON INDIAN CULTURE

- Cultural Development under the Delhi Sultanate and Mughals
- Contribution of Sher Shah and Akbar to Indian Administrative System
- Cultural Achievements of Kakatiya and Vijayanagara rulers
- Indian Fine Arts –Painting, Music, Dance and Sculpture

UNIT III **No of hours: 6**

IMPACT OF WEST AND REFORM MOVEMENTS

- Influence of Western culture on Indian Society
- 19th century Socio Religious Reform Movement –Raja Ram Mohan,Ishwara Chandra Vidyasagar and Veerasalingam
- Rise of Subaltern Movements in India– JyothiraoPhule-SavitribaiPhule,E.VRamaswamyNaikar – Narayana Guru-Dr.B.R.Ambedkar

- Rise of Indian National movement-Moderate, Extremist and Gandhian Era

UNIT IV **No of hours: 6**

IMPACT OF RELIGION AND COSTITUTIONAL INSTITUTIONS

- Hinduism – Islam – Christianity – Jainism and Buddhism -Sikhism – Zoroastrianism
- Democratic system in India- -Parliament and Judiciary- Election Commission
- Impact of Press and Social Pressure groups on Indian Culture
- Know your Rights – Classification of Rights and Importance

UNIT V **No of hours: 6**

IMPACT OF CONTEMPORARY GENDER ISSUES

- Woman and Child rights- Violence against Women and Children
- Gender issues - LGBT
- Youth Unrest and Reasons- Alcoholism, Drug Addiction and other Addictions
- Terrorism – Causes and Consequences

REFERENCE BOOKS:

1. Jha, Dr K.N. 2006. **Studies in ancient & Medieval India**. COSMOS Book hive Ltd: Gurgaon.
2. Mahajan, V.D. 2008. **Ancient India**. S.Chand, New Delhi.
3. Manasseh, Dr P. 2010. **An Overview of Indian Culture**. Gamaleil Publishers, Hyderabad.
4. Malpani, Madanlal&Malpani, Shamsunder. 2014. **Indian Heritage and Culture**. Kalyani Publishers, Ludhiana.
5. Mhaske, Dr R.H. 2012. **Human Rights, Social Justice and Political Challenges**. ChandralokPrakashau, Kanpur.
6. Singh, Gurdip&Ahuja, V.K. 2012. **Human Rights in 21st Century**. Universal Law Publisher, New Delhi.

SERVER ADMINISTRATION

Credits : 4 **Semester: II**
Course Code : CSC23201 **No. of Lecture Hours: 60**

Objectives:

- To study the concepts of Windows Server OS
- To learn the installation procedure of servers and different server services

Outcomes:

CO1: **Choose** different editions of operating system
CO2: **Organize** topologies in active directory
CO3: **Compare** different services in active directory
CO4: **Compare** networking services
CO5: **Plan** installation of required services in organization

UNIT – I	**12Hrs**
1. Introduction to Windows server 2012, windows server 2012 Editions & Features	2
2. Installation of Windows server 2012 OS , creating local user accounts	2
3. Networking : IP Addressing, Active Directory , Structure of Active Directory	3
4. Client and Member Server and User management	2
5. Permissions and types of permissions and User Profiles and home folders	3

UNIT -II	**12Hrs**
1. Logical Structure of Active directory :Trees, Forest, Organizational Unit	3
2. Logical topologies (Work Group & Domain), ADC and Child Domain	2
3. Roles of Active directory and transfer and seizing of FSMO Roles	3
4. Group policy, Scope of Group Policy and Hierarchy of Group Policy	2
5. Delegating of Control, Software Deployment Policy and Folder Redirection	2

UNIT-III	**12Hrs**
1. Trust Relationships, Types of Trusts ,Domain and forest level Functions	3
2. Physical structure of Active directory , Global Catalog and RODC	3
3. Active directory domain services	3
4. Introduction to Rights Management Services, Federation Services	2
5. Overview of Light weight directory services	1

UNIT-IV	**12Hrs**
1. Introduction to Dynamic Host Configuration Protocol (DHCP)	2
2. Introduction to Domain Naming System (DNS)	2
3. Internet Information Services (IIS) – Web Server , HTTP,FTP Server	3
4. Routing, Working of Network Address Translation	2
5. Remote Access Services (RAS), Working Principle of VPN	3

UNIT-V	12Hrs
1. Network Access Protection, ICS and WSUS	3
2. Windows deployment services, Boot Images and Install Images	2
3. Disk Management: FAT, FAT 32, NTFS and Fault Tolerance	3
4. Backup and Recovery using Windows server backup	2
5. Distributed File System and Groups	2

ESSENTIAL READING

1. William Panek **MCSA Windows Server 2012 R2 Complete Study Guide: Exams 70-410, 70-411, 70-412** 2nd Edition

2. Rand Morimoto, Michael Noel, Guy Yardeni, Omar Droubi, Andrew Abbate, Chris Amaris **Windows Server 2012 Unleashed** 1st Edition

SUGGESTED READING

1. William Stanek. **Windows Server 2012 Pocket Consultant.** 1st Edition

MATHEMATICS FOR COGNITIVE SCIENCE

Credits: 4 **Semester: II**
Subject Code: CSC20202 **No. of Lecture Hours: 75**

Objective: Acquaintance with the basic mathematical implication for computer science, applications of mathematics in computer science.

Outcomes:

CO1: Construct simple mathematical proofs and possess the ability to verify them.

CO2: Apply basic counting techniques to solve combinatorial problems.

CO3: Solve problems using recurrence relations and recursion to analyze algorithms and programs such as finding Fibonacci numbers and Tower of Hanoi problems.

CO4: Understand to find the rank of a matrix and to solve systems of linear equations applying matrix techniques.

CO5: Determine Eigen values and eigenvectors.

UNIT I	**15 Hrs**
Sets – The basics of logic- Statements	2
Compound Statements (Conjunction-Disjunction-implication-Biconditional- Negation)	3
Logical Equivalence- Tautology-Contradiction and contingency	3
Proving Methods in mathematics	2
Constructive proof, Direct proof and Indirect/ contra positive proof- Contradiction	5

UNIT II	**15 Hrs**
Basics of Counting:	
Basic of Counting, Permutations and Combinations, Derangements	5
Permutations with Repetition of Objects, Circular Permutations,	2
Restricted Permutations, Restricted Combinations Combinatorial Proofs.	5
Pigeonhole Principle and its Application.	1
Principle of Inclusion and Exclusion and its applications.	2

UNIT III	**15 Hrs**
Advanced counting techniques	
Recurrence Relations	2
Solving Linear recurrence relation	2
Solving linear homogeneous recurrence Relations by substitution method	2
Solving linear homogeneous recurrence Relations by generating functions	3
The Method of Characteristic Roots	3
Solving non homogeneous Recurrence Relations	3

UNIT IV	**15 Hrs**
Systems Linear Equations of equations:	
Rank Of a Matrix Rank-Echelon form	5
Normal form – Solution of Linear Systems	5
Homogeneous and Non-Homogeneous Equations.	5

UNIT V	**15 Hrs**
Eigen values - Eigen vectors	
Eigen values-Eigenvectors–Properties–Cayley-Hamilton Theorem(Without Proof)	5
Inverse and powers of a matrix by using Cayley-Hamilton theorem	5
Quadratic forms- Reduction of quadratic form to canonical form	5

ESSENTIAL READING:

1. Discrete Mathematics for Computer Scientists & Mathematicians, 2/e, Mott, Kandel, Baker, PHI
2. Matrices By A.R.Vasistha Krishna prakashan mandir ,Meerut

SUGGESTED READING:

1. Discrete Mathematical Structures with Applications to Computer Science, Tremblay, Manohar, TMH
2. Discrete Mathematics, Swapan Kumar chakrborthy, Bikashkantisarkar, OXFORD
3. Discrete Mathematics and its Applications with Combinatorics and graph theory, 7^{th}ed, Rosen, TMH
4. Discrete Mathematics, Proofs, Structures and applications, 3^{rd}ed, CRCPress
5. Discrete Mathematics, S.Santha,Cengage
6. Discrete Mathematics with Applications, Thomas Koshy, Elsevier
7. Discrete Mathematics,2/e, JK Sharma, Macmilla

COMPUTER NETWORKS

Credits: 4 **Semesters: II**
Course Code: CSC20203 **No. of Lecture Hours: 60**

UNIT 1: Need of Network **(12 Hours)**

1. Networks Introduction, Data Communication Components,
2. Network classifications LAN, MAN, WAN, Topologies in Networks
3. Connection Oriented, Connection less services
4. Network models - OSI Reference Model and their functions, TCP/IP protocol suite.
5. OSI Reference Model vs TCP/IP

UNIT 2: Bandwidth Utilization and Multiplexing **(12 Hours)**

1. Multiplexing - FDM, TDM,
2. Transmission Media-Guided Media, Unguided Media 3.Switching message, circuit and packet switched networks,
4. Datagram networks and virtual circuit networks.

UNIT 3: IP Addressing **(12 Hours)**

1. IP Addressing Version 4 – IP Addressing Version 6,
2. Subnetting
3.CISCO switch,connecting,startup process,configuring and managing
4. Data Link Layer Error Detection and Error Correction

UNIT 4: Routing Algorithms **(12 Hours)**

1.Routing algorithms – Congestion Control Algorithms,
2.CISCO IOS / Managing / Password recovery,
3. Routing,
4. Dynamic Routing Algorithms-DVR,LSR, OSPF,RIP.

UNIT 5: Monitoring Network Devices **(12 Hours)**

Networking and Interconnecting Devices:
HUB, Repeaters, Switch, Bridge, Router, Brouters, Gateways
Transport Layer Multiplexing & De-Multiplexing

Recommended Books:

- B A Forouzan, Data Communications and Networking, 4th Ed,, M C Graw Hill Publications
- David J.Wetherall, Andrew S.Tanenbaum, "Computer Networks", 5th Edition, Pearson Education, 2012

DATA STRUCTURES THROUGH 'C'

Credits: 4 **Semester: II**

Subject Code: CSC23201 No. of Lecture Hours:75

Objective: To focus on different methods of sorting, searching,storing data and understanding time and storage efficiency.

Outcomes: Students will be able to

CO1: Choose appropriate data structures to represent data items in real world problems

CO2: **Illustrate** non-linear data structures like linked list

CO3: **Organize** the data using sorting in various linear data structures and determine time complexity

CO4: **Construct** data with nonlinear data structure using trees.

CO5: **Explain** the concept of graphs and b trees

UNIT – I 15hrs

1.Introduction to Data Structures 1

2.Stacks

3. Queues
   - Definition and various operations performed on stacks 5
   - Definition and various operations performed on queues 5

4.Stack applications

a.Notations - Prefix, Postfix , Infix 1

b.Conversions – Infix to Postfix , Infix to Prefix 3

UNIT – II 15hrs

1. Data Representation, Concept of linked list 2
2. Advantages of Linked List, Types of linked list 1
3. Linear Linked list
   - Various operations performed on singly linked list 4
4. Doubly Linked List
   - Various operations performed on singly linked list 4
5. Circular Linked List 2
   - Applications of Linked Lists 2

UNIT – III 15hrs

1. **Trees**

a. Definition and properties 2

2. Binary Trees
   a. Definition and Representation of Binary trees 2
   b. Operations: insertion, deletion, search 2

c. Tree traversal techniques- in order, pre order, post order 3

3. AVL trees
   a. Definition and representation of AVL Trees 3
   b. Operations on AVL trees- insertion, deletion 3

UNIT – IV **15hrs**

1. Sorting methods
   a. Bubble sort 2
   b. Insertion sort 2
   c. Selection sort 2
   d. Merge sort 2
   e. Quick sort 2
2. Searching methods
   a. Linear search 2
   b. Binary search 2
3. Comparison and analysis 1

UNIT – V **15hrs**

1. Graphs
   a. Terminology & Representations 1
   b. Definition and representation of graph 2
   c. Graph Traversal -BFS, DFS 3
2. B-Trees
   a. Definition and representation of B-Trees 2
   b. Operations on B- Tree-insertion, deletion, search 2
3. File Structures - Physical Storage Media File Organization 2
   Sequential Files, Indexing and Hashing, Primary indices, Secondary indices 2
   Indexing and Hashing Comparisons. 1

ESSENTIALREADING

1. Kanetkar Yashvanth .2008. **Data Structures through C**.India: BPB Publications.
2.Tanenbaum, A.M.Langsam,Y.Augenstein, M.J.**Data Structures Using C**.
New Delhi:Pearson Education.

SUGGESTED READING

1. Balagurusamy, E. **C Programming& Data Structures**. Tata McGrawHill.
   Krishna Moorthy, R.Indirani Kumaravel, G. 2008.
2. **Data Structures Using C**.TataMcGrawHill Publishing Company Ltd

SERVER ADMINISTRATION LAB

Credits : 1 **Semester: II**
Course Code : CSC23205 **No. of Practical Hours: 30**

Objective: To get hands on experience on installations, configurations of server service roles and troubleshooting procedures.

Outcome: Students will be able to implement, troubleshoot different server service roles in Windows server operating system

No. of Hours	Topics
1.	Installation of Windows server 2012 Operating system and Assigning IP Address.
2.	Installation of Active Directory in Windows server 2012, Installing Client OS Windows 7/8.
3.	Configuring Member server, Creating Domain User Accounts and Changing Default Password Policy
4.	Creating Profiles and Configuring Home Folder
5.	Configuring Additional Domain controller and child domain.
6.	Creating an Organizational Unit and Applying group policy on OU Level
7.	Raising Functional Levels and creating Forest Trust
8.	Configuring Terminal Server in Remote Administration Mode
9.	Installing DHCP Service and Creating Scope and DHCP Reservations
10.	Installation of DNS Service and Creating Forward Lookup zones and Reverse Lookup zones
11.	Installation of IIS Web server and Hosting a Website
12.	Installation and Configuration of IIS FTP Server
13-14.	Establishing Virtual Private Network IN windows server
15.	Installation and Configuration of WDS Server

COMPUTER NETWORKS LAB

Credits: 1 **Semester: II**
Subject Code: CSC20206 **No. of Practical Hours: 30**

Objective:

- To study of routers and switches

Outcome:

Demonstrate basic switching concepts, VLAN, routing, dynamic and static routing protocols using **Cisco packet tracer software (Freeware)**

.

No.ofHrs	Topic
1-3.	Switch basic VLAN
4-7.	Routing Static
8-10.	Switch basic commands
11-13.	Switch basic STP
14-15.	Dynamic Routing protocols OSPF- RIP

DATA STRUCTURES THROUGH C LAB

Credits : 1 **Semester: II**

Subject Code: CSC20207 **No. of Practical Hours: 30**

Objective: To develop applications using data structure concepts.

Outcome: Students will be able to identify, design, implement, test and debug the appropriate data structure for a given problem.

Programs

1. Program to find transpose of a sparse matrix
2. Program to find the sum of two 2-D arrays of order 2X2
3. Program to find the transpose of a matrix
4. Program to find the upper triangle of an array
5. Program to find the trace of a 2-D array
6. Program to find the lower triangle of an array
7. Program to find the addition of two sparse matric
8. Program to perform linear search
9. Program to implement binary search
10. Program to implement bubble sort
11. Program to implement insertion sort
12. Program to implement selection sort
13. Program to implement quick sort
14. Program to implement merge sort on 2 sorted lists
15. Program to implement stack operations using array
16. Program to implement queue operations using array
17. Program to implement stack operations using linked list
18. Program to implement queue operations using linked list
19. Program to convert infix expression to postfix
20. Program to evaluate a postfix expression
21. Program to create a linked list
22. Programs to perform insertion and deletion operations on the linked list
23. Program to concatenate two lists
24. Program to copy a list into another list
25. Program to split a list into two linked lists
26. Program to search for a node in the list.
27. Program to find the number of elements in the list
28. Program to illustrate tree traversal techniques.
29. Program to implement graph traversals