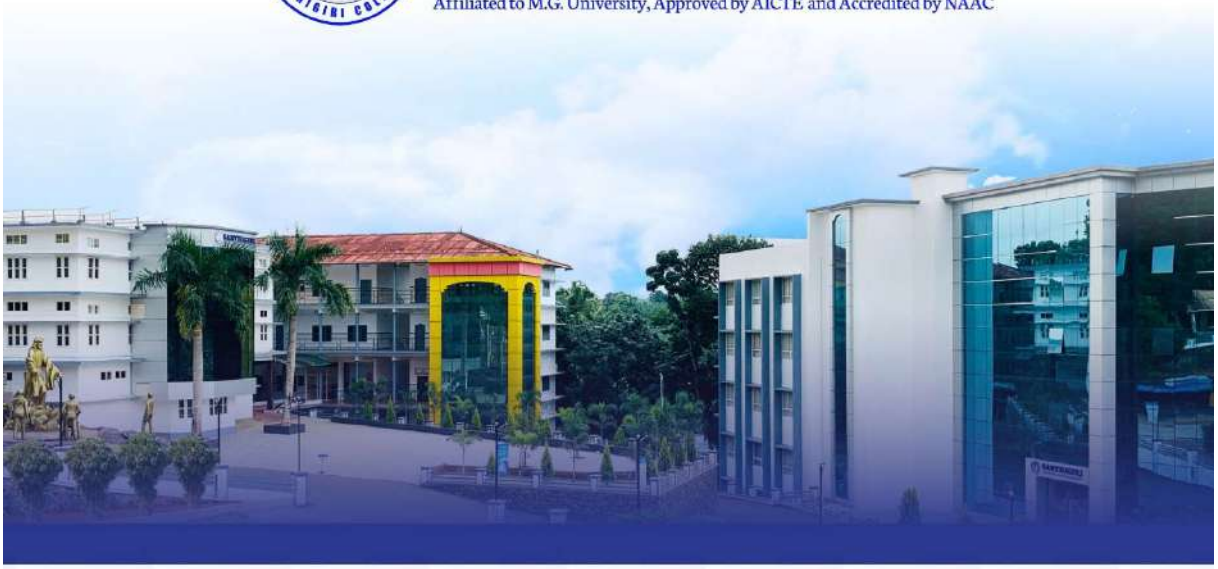
AQAR 2023 - 2024

SANTHIGIRI COLLEGE OF COMPUTER SCIENCES

Affiliated to M.G. University, Approved by AICTE and Accredited by NAAC



2.6.1 Hand Book

SANTHIGIRI COLLEGE

Affiliated to MG University and Approved by AICTE

DEPARTMENT OF COMPUTER SCIENCE
STUDENTS MANUAL-BCA
FIRST SEMESTER (A BATCH)

OUR VISION

Awakening to the Future. Awaken this generation to the gauntlet of tomorrow.

OUR MISSION

Holistic and Integral development of the individual rooted in faith in God, justice, knowledge and human values.

OUR MOTO

Quality and Excellence

CORE VALUES OF SANTHIGIRI COLLEGE

As individuals we have our fundamental beliefs and ideals. So too every organization or institution should have certain guiding principles that paves the way for greater success. They are the Core values. Holistic and integral development of the students of Santhigiri College is actualized through the core values of our institution. By internalizing and living the core values our students are enabled to attain the mission of our college. Their personal values will be made consistent with the core values of the college.

1. Faith in God

Faith is the conscious knowledge and ultimate acceptance of the divine authority of God. Faith is based on a deep personal understanding of religious teachings. Santhigiri College exhorts the students to practice the religion to which they belong ardently. Faith in God and practice of one's religion will emulate deep spirituality that is inherent in Indian culture, which will make them more humane.

2. Commitment

Commitment is the willingness to give your time and energy to a job, activity, or something that you believe in: something that you must do. The commitment of the teachers and students of Santhigiri College in their own fields of activity is promoted and ensured.

3. Integrity

Adhering to ethical principles in life is integral to the personality of an individual and this is integrity. We do what we say. Our students are trained to behave ethically and practice honesty and justice in all their inter-personal interactions and maintain integrity in their lives.

4. Excellence

'Be the best among the best' is an ambitious goal. Santhigiri College strives assiduously for excellence. Excellence with tangible results that trespasses the mediocrity at all levels of education is our goal. It can be attained by providing an experience of high quality through the promotion of excellence in teaching and learning

5. Social Responsibility

Santhigiri College with its unique background of evolution in alignment with rehabilitation of persons with disabilities proves the unparalleled social responsibility it has inherited from its inception. Serving the community, especially the marginalized sections of the society by responding to social issues is a critical component of a socially responsible institution. We imbue our students to involve in charitable interventions to acquire social awareness and social responsibility

MANAGER

Fr. Paul Parakattel CMI

PRINCIPAL

Rev. Fr. Prof. Dr. Baby Joseph CMI
(Fr. Peter Kuzhikandathil CMI)

BURSAR

Fr. Shinto Kannukettiyil CMI

PROGRAM OUTCOME (PO'S)

By the time of graduation, graduates will attain the following.

PO1 Computational Knowledge: Understand and apply mathematical foundation, computing and domain knowledge for the conceptualization of computing models from defined problems.

PO2 Communication Efficacy: Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations.

PO3 Logical and Analytical skill: Enhances Logical reasoning skills, arithmetic skills, and aptitude skills communication skills, self-confidence for better employability in IT field.

PO4 Modern Tool Usage: Ability to select modern computing tools, skills and techniques necessary for innovative software solutions

PO5 Design / Development of Solutions: Ability to transform complex business scenarios and contemporary issues into problems, investigate, understand and propose integrated solutions using emerging technologies and manage projects in multidisciplinary environments.

PO6 Critical Thinking: Apply knowledge of Computer Science to identify, analyze problems and to provide effective solution in the area of Computing.

PO7 Societal & Environmental Concern: Ability to recognize economic, environmental, social, health, legal, ethical issues, cyber regulations involved in the use of computer technology and develops the youth with social commitments.

PO8 Professional skills& Team Work: Ability to work as a member or leader in diverse teams in multidisciplinary environment and practice the responsibilities relevant to professional practice.

PO9 Self directed and Life-long Learning: Engaged in lifelong learning to equip them to the changing environment and be prepared to take-up masters, and Inculcate skills to excel in the fields of Information Technology, Government and Private sectors, teaching and Research.

Head of Department

Ms. Amitha Joseph

Class Tutor

Mr. Gibin George

Program Specific Outcome (PSOs)

The student will be able to:-

PSO1 Apply probability, statistics, mathematics through differential and integral calculus, use algorithms, data structures/management, software design, concepts of programming languages and computer organization & architecture.

PSO2 Develop Communication Skills both oral and written Communication and about students to communicate effectively and to improve their competency skills to solve real time problems.

PSO3 Analyze a problem, Ability to design, and define the computing requirements, develop algorithms and provide software solutions to cater the industrial needs.

PSO4 The program prepares the young professional for a range of Computer Applications, Computer Network, E-commerce Application, Web Designing, Big Data, IOT, Python and Advance JAVA by mastering the Programming Languages such as C, CPP, JAVA, PHP and Python.

PSO5 Be acquainted with the contemporary issues and latest trends in technological development, attain the ability to design and develop computer applications, evaluate and recognize potential risks and provide innovative new ideas and solutions to existing problems.

PSO6 Demonstrate critical thinking skills in understanding problems and technical issues related to the various subjects and training Programs conducted during the period of study.

PSO7 The students will become integral human being in the society with Human Values, Ethics and moral Principles and have a concern over the society and are able to design and develop reliable software applications for social needs.

PSO8 To enrich team work, professional and leadership skill, assessment skills, problem solving skills, respect for diversity, intervention skills, documentation skills, organizational skills, understanding of human relationships and perform professionally with social, cultural and ethical responsibility as an individual as well as in multifaceted teams with positive attitude.

Welcome to the first semester of BCA degree course at Santhigiri College of Computer Sciences. It is only about three decades since man started taking a serious note of the potentials offered by computers. Within a short span of time, computers have carved out an alcove in the history of mankind and changed the entire gamut of human life at a devastating pace. The changes in the field of information technology have been so rapid and widespread that there are hardly any areas of human activity that can be exempted from its influence. Our course is intended to train students keeping in mind the new IT revolution. Being expertise in technical aspects alone may not possibly facilitate us a lot, so we are augmenting IT seminars, Professional talks, Industry visits etc. together with our official curriculum. Management may introduce new programmes that can help in developing various aspects of student's soft skills and their personality.

Our Best Practices in Teaching-Learning Process

- ***Regular Seminars and presentations***
- ***Remedial Teaching***
- ***Frequent Alumni interaction programs***
- ***Placement Training programs as part of Time Table.***
- ***Mock interviews***
- ***Experts Talks***
- ***Mentoring***
- ***Awards to meritorious students, Branch Toppers & Best Outgoing students***
- ***National and International Conferences***
- ***Idea competitions***
- ***Technovation-State level project competition***
- ***Coding competitions***
- ***Centre for research and Learning(CRL)***

- ***Technically Innovative Computer Science Association of Santhigiri(TICSAS),***
- ***NPTEL: Large MOOC supported by IIT Chennai***
- ***Holistic education classes***
- ***Training on Soft skills and Professional Skills***
- ***Guest Lectures by Industry Experts***

Organization of classes

The regular sessions are scheduled between 9.30 AM and 4.30 PM, Monday through Friday. Saturday and Sunday will be a holiday. The college authorities may introduce special sessions as and when required, which will be notified on time to time.

Assignments

At least one assignment must submit for each subject. The Assignment must be handwritten. The marks are awarded on the basis of timely submission, neatness, content etc.

Seminars

A student shall present at least one seminar in this semester. The students are divided into groups for the seminar presentation. A subject is allotted to each group, and the student must collect the seminar topic from the corresponding subject teachers. The marks will be awarded for the students based on the subject knowledge, clarity of presentation, viva, seminar report etc.

Consolidated Scheme of BCA – I to VI Semesters

Semester 1

No	Title	Course Category
1	English-I	Common
2	Mathematics	Complementary
3	Basic Statistics	Complementary
4	Computer Fundamentals and Digital Principles	Core
5	Methodology of Programming and C Language	Core
6	Software Lab I	Core

Semester II

No	Title	Course Category
1	English-II	Common

2	Discrete Mathematics	Complementary
3	Data Base Management Systems	Core
4	Computer Organization and Architecture	Core
5	Object oriented programming using C++	Core
6	Software Lab II	Core

Semester III

No	Title	Course Category
1	Advanced Statistical Methods	Complementary
2	Computer Graphics	Core
3	Microprocessor and PC Hardware	Core
4	Operating Systems	Core
5	Data Structure using C++	Core
6	Software Lab III	Core

Semester IV

No	Title	Course Category
1	Operational Research	Complementary
2	Design and Analysis of Algorithm	Core
3	System Analysis & Software Engineering	Core
4	Linux Administration	Core
5	Web Programming using PHP	Core
6	Software Lab IV	Core

Semester V

No	Title	Course Category
1	Computer Networks	Core
2	IT and Environment	Core
3	Java Programming using Linux	Core
4	Open Course	Core

5	Software Lab V	Core
6	Software Development Lab I (Mini Project)	Core

Semester VI

No	Title	Course Category
1	Cloud Computing	Core
2	Mobile Application Development- Android	Core
3	Elective	Core
4	Software Lab VI and Seminar	Core
5	Software Development Lab I (Main Project)	Core
6	Viva Voce	Core

Training, Placement and Co-Curricular Activities Specific to BCA

Semester I

- Training Program for icebreaking and adaptability and Public Speaking Skills (Two day)
- Essay writing Competition (TICSAS)
- Training on Microsoft office by S5 BCA
- Post Admission Test
- Bridge course by teachers handling C and CFDP
- Subject Seminar
- NSS camp
- 2 IAEs & 1 Model exam
- Individual mentoring session for every student
- Individual presentations on a general topic of current affairs/News
- A session on counselling
- Individual Counselling
- Remedial sessions
- Individual Parents meeting
- Hardware workshop by MCA students

Semester II

- NPTEL Course 1
- Training Program on Personality development- Role of positive Thinking in life (one day) by a trainer
- A fun packed competition (a game/troll/puzzle) to enhance current affairs and thought process of students organised by teachers (TICSAS)
- 2 IAE's
- Remedial sessions
- Individual mentoring session for every student
- Individual presentations on a general topic related to Computer Science
- Counselling sessions
- PTA meeting
- Alumni interactions

Semester III

- NPTEL Course 2
- A seminar presentation competition on a technical topic for 5 minutes with one minute for self-introduction. (TICSAS)
- Welcome Programme for juniors
- A training programme (one day) with trainers
- A workshop on Photoshop(TICSAS)
- Aptitude training for Placement 30 hours
- An Individual presentation on a specific Technical Topic in Computer Science
- 2 IAE's and improvement exam
- Remedial sessions
- Holistic Education Classes
- Counselling sessions
- Individual Parents meeting

Semester IV

- A training program in English to Enhance Presentation Skills, Body Language.
- 2 IAE's and improvement exam
- Industry Visit
- Remedial sessions and peer teaching
- Individual presentations on a topic given on the spot
- Counselling sessions
- PTA meeting
- Alumni interactions

Semester V

- Mini project training weekly/7hours
- Academic seminar topic selection.
- Video Synopsis for sixth semester academic seminar
- Seminar synopsis submission.
- Placement training interview tips and mock interviews
- 2IAE'S
- Remedial sessions.
- Individual on stage conversation on a topic given on the spot between two students.
- Counselling sessions
- Individual Parents meeting
- Mentoring
- Alumni interactions
- Study Tour

Semester VI

- Mini project demonstration for juniors
- 2 IAE, improvement exam
- Remedial sessions
- Counselling sessions
- PTA meeting and Career Guidance for Students
- CRL presentation
- Main project 3 internal reviews (2 with guide and one with a faculty other than guide)
- Alumni interactions
- Viva Voce

- Mentoring
- Seminars
- Cloud Computing Workshop

Examination System

- **Marks of external Examination : 80**
- **Marks of internal evaluation : 20**

All the below given three components of the internal assessment are mandatory.

Components of Internal Evaluation	**Marks**
Attendance	5
Assignment + Seminar	5
Test paper **(2x5=10)**	10
Total	**20**

Marks of Practical- Internal Evaluation: 20

Components of Practical-Internal evaluation	**Marks**
Attendance	4
Record	8
Lab involvement	8
Total	**20**

Attendance Evaluation

- **Theory**

% of Attendance	**Marks**
90 and above	5
85 – 89	4
80-84	3
76-79	2
75	1

2) Practical

% of Attendance	**Marks**
90 and above	4
85—89	3
80—84	2
75-79	1

First Semester
Duration and Subjects

This semester is planned to commence on 10/07/2023 and the regular classes supposed to be conclude by the end of 17/11/2023

This semester comprises of six subjects

1. **Fine-tune Your English**
2. **Discrete Mathematics-1**
3. **Basic Statistics and Introductory Probability Theory**
4. **Computer Fundamentals and Digital Principles**
5. **Methodology of Programming and C Language**
6. **Software Lab I (C Lab)**

BRIDGE COURSE- Revised Syllabus for 2022-2025 Admission

Objective of the course This programme aims to introduce the basics in operating a computer and commonly used computer terminologies to BCA entrants, from streams other than computer science in their higher secondary level.

Part 1- Must know IT Terminologies

- Data and information, Databases, Storage, Data Center, data mining, big data.
- Browser, Web Page, URL, HTTP and HTTPS, HTML and XML, Downloading, uploading.
- Operating Systems, Networking, IP Address, internet, ISP, Router, Wifi.
- Email, Encryption and Cryptography, Social Media, E-Commerce, Blogs and Vlogs.
- Security, Hacking, Firewall, Virus, Malware, Trojan, Phishing
- Hardware, Drivers, Wearables, Software, Freeware, Open Source, software piracy.
- Programming, Software engineering, debugging, Mobile apps, GUI, FAQ.
- Biometrics, Artificial Intelligence, Machine Learning, Robotics, Cloud Computing.

Part 2- Logic development and Algorithm Design

- How computer works
- How computer do arithmetic and logical operations
- Logic to print "Hello".
- Logic to Add Two Integers
- Logic to do all arithmetic operations
- Logic to do calculate the average of numbers
- Logic to Compute Quotient and Remainder
- Logic to Swap Two Numbers
- Logic to Check Whether a Number is Even or Odd
- Convert temperature from degree centigrade to Fahrenheit
- Logic to Calculate the Simple Interest
- Logic to Check Whether a Character is a Vowel or Consonant
- Logic to Find the Largest Number Among Three Numbers
- Logic to Find the Roots of a Quadratic Equation
- Logic to Check Leap Year
- Logic to Check Whether a Number is Positive or Negative
- Logic to Check Whether a Character is an Alphabet or not
- Logic to Calculate the Sum of Natural Numbers
- Logic to do calculate the average of n numbers
- Logic to Find Factorial of a Number

- Logic to Generate Multiplication Table
- Logic to Display Fibonacci Sequence
- Logic to Find GCD of two Numbers
- Logic to Find LCM of two Numbers
- Logic to Display Characters from A to Z Using Loop
- Logic to Count Number of Digits in an Integer
- Logic to Reverse a Number
- Logic to Calculate the Power of a Number
- Logic to Check Whether a Number is Palindrome or Not
- Logic to Check Whether a Number is Prime or Not
- Logic to Display Prime Numbers Between Two Intervals
- Logic to Check Armstrong Number
- Logic to Display Armstrong Number between Two Intervals
- Logic to Display Factors of a Number
- Logic to Find the Perimeter of a Circle, Rectangle and Triangle

Part 3- C Programming

(Interactive sessions to weaker students after 20 regular C programming Classes)

Basic C programming practices as per university syllabus of Subject C programming.

English I - Fine-tune Your English

COURSE OUTCOME (CO'S)

CO1- Recognize the terms and concepts of elementary grammar
CO2- Analyze the situation where different grammatical units are used.
CO3- Identify the principles of language.
CO4- Contrast and determine the different usages with a grasp of their applications.
CO5- Outline the methods of using various levels of languages for conversation, documenting, speaking, and other forms of communication and correspondence.

Facilitator

Mr. Shawn Oommen Anil
9633831286

Syllabus

Module 1

The Sentence and Its Structure - How to Write Effective Sentences – Phrases- What Are They? The Noun Clauses ,The Adverb Clause,"If All the Trees Were Bread and Cheese", The Relative Clause, How the Clauses Are Conjoined, Word Classes and Related Topics - Understanding the Verb, Understanding the Auxiliary Verb -.Understanding the Adverbs, Understanding the Pronoun The Reflexive Pronoun , Articles I , The Articles II , The Adjective , Phrasal Verbs, Mind Your Preposition

Module 2

To Err Is Human - Concord , A Political Crisis , Errors, Common and Uncommon, False Witnesses - The world of words- word formation, Using the specific word, Body vocabulary

Module 3

The Tense and Related Topics, Presentness and Present Tenses-ThePresentness of a Past Action

Futurity in English Passivization- Idiomatic Language- Animal Expressions Idiomatic Phrases

Module 4

Interrogatives and Negatives - Negatives , How to Frame Questions , What's What? The Question Tag, Conversational English - Is John There Please?

Module 5
Letter Writing

Discrete Mathematics-I

COURSE OUTCOME (CO'S)

CO1 - Construct skills required to analyze and solve problems in discrete mathematics.
CO2 - Improve problem solving and critical thinking.
CO3 - Understand Boolean algebra and truth tables.
CO4 - Formulate a logic sentence in terms of predicates, quantifiers, and logical connectives.
CO5 - Point out and manipulate basic mathematical objects such as sets, functions and relations.

Facilitator

Ms. Deepa Joseph
8547775640

Syllabus

MODULE I: LOGIC

Introduction ,Propositional logic, Conditional statements, Biconditional statements ,Logic and bit operations. Propositinal equivalence ,using De-Morgan's law, Constructing logical equivalences.

Predicates and quantifiers-examples and problems. Types of quantifiers, Logical equivalence involving quantifiers. Rules of inference, Valid arguments, using rules of inference to build arguments .Fallacies: examples and problems.

MODULE II: BASIC STRUCTURES

Sets ,Cartesian products. Set operations :union, intersection, complement, Set identities.

Functions, Types of functions Graphs of functions. Sequences, Special integer sequences, Summations, examples.

MODULE III: NUMBER THEORY&CRYPTOSYSTEM

Division, Division algorithm. Congruences, Application of congruences. Primes, Fundamental theorem of arithmetic, Prime number theorem, Greatest common divisors. Application to number theory: linear congruences. The Chinese Remainder theorem, Fermat Little theorem, RSA Cryptosystem.

MODULE IV: RELATIONS

Relation-definition, Properties of relations. Combinig relations, Representing relations using matrices and digraphs. Equivalence relations, equivalence classes, Examples. Partitions, Partial ordering: definition and examples. Principle of Well Ordered Induction, Hasse Diagram. Maximal and Minimal elements, Lattices.

Basic Statistics

COURSE OUTCOME (CO'S)

CO1 - Describe a data set graphically and numerically with a meaningful numeric summary.
CO2 - Understand of the basic concepts of probability and random variables.
CO3 - Apply fundamental concepts in exploratory data analysis.
CO4 - Use random phenomena in life sciences using probability distributions.
CO5 - Compute and interpret sample correlation coefficient and report findings for Simple Linear Regression.

Facilitator

Ms. Siji Antony
9947868535

Syllabus

BRIDGE COURSE(This topics is for internal evaluation only. **Quick review** and give internal assessment from this topics. **Not included in the external examination**)

Introduction to Statistics, Population and Sample, Collection of Data, Census and Sampling, Methods of Sampling Simple Random Sampling (with and without replacement) stratified sampling systematic sampling (Method only), Types of data quantitative, qualitative, Classification and Tabulation, Diagrammatic representation - Bar diagram, Pie diagram;

Module I

Graphical representation histogram; frequency polygon; frequency curve; ogives and stem and leaf chart. Measures of Central Tendency -Mean, Median, Mode, Quantile points-quartiles, Percentiles, Deciles. Measures of Dispersion - Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation. Box Plot

Module II

Introduction to bivariate data , Scatter Diagram ,Curve Fitting by the Method of Least Squares (without proof) Fitting of Straight Lines, Exponential Curve, Power Curve, Linear Correlation Covariance Method(formula only) and simple problems, Linear Regression-Regression Equations identification of regressionlines and properties

Module III

Probability Concepts Random Experiment, Sample Space, Events, Probability Measure, Approaches to Probability- Classical, Statistical and Axiomatic, Addition Theorem (upto 3 events) Conditional Probability, Independence of events, Multiplication theorem (upto 3 events), Total Probability Law, Bayes Theorem and its applications

Module IV

Random variables and distribution functions Random variables, probability density (mass) function, distribution function- properties, expectation of a discrete and continuous random variables-properties (without proof) mean and standard deviation of different probability density function, moment generating function, important properties (without proof)

Computer Fundamentals and Digital Principles.

COURSE OUTCOME (CO'S)

CO1 - Understand the types of computers, the methods to process information and how individual computers interact with other computing systems and devices.
CO2 - Compare the operating systems and its different versions.
CO3 - Evaluate types of networks such as LAN, MAN WAN, HAN, CAN and Internet.
CO4 - Explain the number systems with conversions from one to another.
CO5 - Formulate Boolean algebra and other techniques to express and simplify logic expressions.
CO6 - Analyze the different flip-flops, counters, registers, encoders, decoders, multiplexers and demultiplexers.

Facilitator

Ms. Sigma Sathyan
8281472045

Syllabus

Module I

Introduction: Functional units of a computer system, Different types of computers, Computer Softwareand Hardware,Types of software-System software and Application programme. Characteristic of computers.Input Devices – Keyboard, Mouse, Optical input devices, Output devices – Monitors and Printers.

Module II

Introduction to Operating Systems and Networking: Definition of an Operating System - Differenttypes of PC Operating Systems.Computer Networks- categories of networks - LAN, WAN,MAN,The Internet - Working of Internet - Major Features of Internet.

Module III

Number Systems: Base or radix ,Positional number system, Popular number systems(Decimal, Binary, Octal and Hexadecimal),Conversion-From one number system to another, Concept of binary addition and subtraction, Complements in binary number systems,1^s Complement, 2^s Complement and their applications, Signed magnitude form, BCD numbers- concept and addition.

Module IV

Boolean Algebra and Gate Networks: Logic gates- AND, OR, NOT, NAND and NOR Truth tables and graphical representation, Basic laws of Boolean Algebra, Simplification of Expressions,

De-Morgans theorems, Dual expressions, Canonical expressions, Min terms and Max terms, SOP and POS expressions, Simplification of expression using K-MAP (up to 4 variables), Representation of simplified expressions using NAND/NOR Gates, Don't care conditions, XOR and its applications, parity generator and checker.

Module V

Sequential and Combinational Logic. Flip flops- Latch, Clocked, RS, JK, T, D and Master slave, Adders-Half adder, Full adder, Encoders, Decodes, Multiplexers and Demultiplexers.Analog to digital and digital to analog converters , Concept of Registers, Shift Registers

Books of study :

1. Peter Nortons- Introduction to Computers, Sixth Edition, Published by Tata McGraw Hill
2. P K Sinha & Priti Sinha - Computer Fundamentals , Fourth Edition, BPB Publications. 3.
M Morris Mano-Digital Logic and Computer design, Fourth Edition, Prentice Hall.

References Text:

1. Thomas C Bartee- Digital computer Fundamentals, Sixth Edition, TATA McGraw Hill Edition 2. Thomas L Floyd- Digital Fundamentals, Ninth edition, PEARSON Prentice Hall. 3. Malvino & Leach- Digital Principles and Applications, Sixth Edition, Tata McGraw Hill, 2006

Methodology of Programming and C Language

COURSE OUTCOME (CO'S)

CO1 - Identify the different computer languages and language translators and their purpose.
CO2 - Demonstrate algorithm and flowchart through different examples.
CO3 - Describe the C tokens, data types and operators.
CO4 - Analyze the different decision making statements and looping statements.
CO5 - Identify the use of arrays and concepts regarding strings.
CO6 - Understand the concepts such as functions, pointers, structures and unions, its purpose and syntax through different examples.

Facilitator

Mr. Gibin George
9744524459

SYLLABUS

Module I

Introduction to programming, Classification of computer languages, Language translators (Assembler, Compiler, Interpreter), Linker, Characteristics of a good programming language, Factors for selecting a language, Subprogram, Purpose of program planning, Algorithm, Flowchart, Pseudo code, Control structures (sequence, selection, Iteration), Testing and debugging.

Module II

C Character Set, Delimiters, Types of Tokens, C Keywords, Identifiers, Constants, Variables, Rules for defining variables, Data types, C data types, Declaring and initialization of variables, Type modifiers, Type conversion, Operators and Expressions- Properties of operators, Priority of operators, Comma and conditional operator, Arithmetic operators, Relational operators, Assignment operators and expressions, Logical Operators, Bitwise operators.

Module III

Input and Output in C – Formatted functions, unformatted functions, commonly used library functions, Decision Statements If, if-else, nested if-else, if-else-if ladder, break, continue, goto switch, nested switch, switch case and nested if. Loop control- for loops, nested for loops, while loops, do while loop.

Module IV

Array, initialization, array terminology, characteristics of an array, one dimensional array and operations, two dimensional arrays and operations. Strings and standard functions, Pointers, Features of Pointer, Pointer and address, Pointer declaration, void wild constant pointers. Arithmetic operations with pointers, pointer and

arrays, pointers and two dimensional arrays.

Module V

Basics of a function, function definition, return statement, Types of functions, call by value and reference. Recursion -Types of recursion, Rules for recursive function, direct and indirect recursion, recursion vs iterations, Advantages and disadvantages of recursion. Storage class, Structure and union, Features of structures, Declaration and initialization of structures, array of structures, Pointer to structure, structure and functions, typedef ,bitfields , enumerated data types, Union, Dynamic memory allocation, memory models, memory allocation functions.

Book Of Study:

1. Ashok Kamthane - Programming in C, Third Edition, Pearson Education

2. P K Sinha & Priti Sinha - Computer Fundamentals , Fourth Edition, BPB Publications.

Reference Text

1. E. Balaguruswamy -Programming in ANSI C ,Seventh Edition , McGraw Hill Education 2. Byron Gotfried - Programming with C, Second Edition, Schaums Outline series. McGraw Hill

Software Lab II

CO1 - Design programs including the concepts of decision making and looping.
CO2 - Apply methods to use one and two dimensional array in programming.
CO3 - Evaluate problems related to strings.
CO4 - Create problems that use pointers with arrays, pointers with strings and dynamic memory allocation.
CO5 - Construct to divide the main problem into different sub functions.
CO6 - Assess problems with structure and arrays, structure and pointers and union.

Facilitator

Mr. Gibin George
9744524459

Syllabus

1. Programs to familiarize printf() and scanf() functions.
2. Programs Based on Decision statements , break, goto, continue, switch and Loop controls statements.
3. Programs Based on One dimensional and two dimensional arrays.
4. Programs on Strings and string handling functions.
5. Programs based on Pointers, operations on pointers, Arrays & Pointers,
6. Programs based on functions, Call by value, Call by reference, Recursion,
7. Programs based on structure and union, array of structures, Pointer to structure, structure and functions
8. Simple programs using pointers and malloc().

Division of Marks (Practical - 3 hours External)
First program from part 1& 2 - 25 marks
1.Flowchart - 5 marks
2.Logic – 10 marks
3.Successful compilation – 5 marks
4.Result – 5 marks
Second program should be based on advanced concepts ,part 3 to part 8 - 35 marks
1.Logic – 20 marks
2.Successful compilation – 10 marks

3. Result – 5 marks)
Viva Voce - 10 marks
Lab Record (minimum of 25 Programs) - 10 marks
Total Marks - 80 marks

Academic Calendar

Date			Activities
01-07-2023	Saturday		
02-07-2023	Sunday		
03-07-2023	Monday		Feast of St. Thomas, Apostle
04-07-2023	Tuesday		Holy Mass
05-07-2023	Wednesday		
06-07-2023	Thursday		
07-07-2023	Friday		
08-07-2023	Saturday		Second Saturday
09-07-2023	Sunday		
10-07-2023	Monday	1	UG S1 Semester Begins
11-07-2023	Tuesday	2	
12-07-2023	Wednesday	3	
13-07-2023	Thursday	4	
14-07-2023	Friday	5	
15-07-2023	Saturday		World Youth Skills Day
16-07-2023	Sunday		Our Lady of Mount Carmel
17-07-2023	Monday		Karkidavav
18-07-2023	Tuesday	6	
19-07-2023	Wednesday	7	
20-07-2023	Thursday	8	
21-07-2023	Friday	9	
22-07-2023	Saturday		
23-07-2023	Sunday		
24-07-2023	Monday	10	Assignment Submission: Fine Tune Your English
25-07-2023	Tuesday	11	
26-07-2023	Wednesday	12	
27-07-2023	Thursday	13	
28-07-2023	Friday		Muharam
29-07-2023	Saturday		
30-07-2023	Sunday		
31-07-2023	Monday	14	
01-08-2023	Tuesday	15	Holy Mass
02-08-2023	Wednesday	16	
03-08-2023	Thursday	17	
04-08-2023	Friday	18	
05-08-2023	Saturday		
06-08-2023	Sunday		
07-08-2023	Monday	19	Assignment Submission: Discrete Mathematics
08-08-2023	Tuesday	20	
09-08-2023	Wednesday	21	

10-08-2023	Thursday	22	
11-08-2023	Friday	23	
12-08-2023	Saturday		Second Saturday
13-08-2023	Sunday		
14-08-2023	Monday	24	
15-08-2023	Tuesday		Independence Day, Assumption of our Lady
16-08-2023	Wednesday	25	
17-08-2023	Thursday	26	
18-08-2023	Friday	27	
19-08-2023	Saturday		
20-08-2023	Sunday		
21-08-2023	Monday	28	Assignment Submission: Basic Statistics and Introductory Probability Theory
22-08-2023	Tuesday	29	
23-08-2023	Wednesday	30	
24-08-2023	Thursday	31	
25-08-2023	Friday	32	Onam Celebrations
26-08-2023	Saturday		Onam Holidays
27-08-2023	Sunday		Onam Holidays
28-08-2023	Monday		Onam Holidays
29-08-2023	Tuesday		Onam Holidays, Saint Euphrasia, Thiruonam
30-08-2023	Wednesday		Onam Holidays
31-08-2023	Thursday		Onam Holidays, Sri Narayana Guru Jayanthi
01-09-2023	Friday		Onam Holidays
02-09-2023	Saturday		Onam Holidays
03-09-2023	Sunday		Onam Holidays
04-09-2023	Monday	33	College Reopening after Onam Vacation
05-09-2023	Tuesday	34	Holy Mass, Teachers' Day
06-09-2023	Wednesday		Sree Krishna Jayanthi
07-09-2023	Thursday	35	IAE -I - Fine-tune Your English
08-09-2023	Friday	36	IAE -I -Discrete Mathematics-1
09-09-2023	Saturday		Second Saturday
10-09-2023	Sunday		
11-09-2023	Monday	37	IAE -I -Basic Statistics and Introductory Probability Theory
12-09-2023	Tuesday	38	IAE -I -Computer Fundamentals and Digital Principles
13-09-2023	Wednesday	39	IAE -I -Methodology of Programming and C Language
14-09-2023	Thursday	40	IAE -I -Software Lab I
15-09-2023	Friday	41	
16-09-2023	Saturday		
17-09-2023	Sunday		
18-09-2023	Monday	42	Assignment Submission: Computer Fundamentals and Digital Principles
19-09-2023	Tuesday	43	
20-09-2023	Wednesday	44	
21-09-2023	Thursday	45	
22-09-2023	Friday		Sri Narayana Guru Samadhi
23-09-2023	Saturday		

24-09-2023	Sunday		
25-09-2023	Monday	46	IAE1 Result Publishing Assignment Submission: Methodology of Programming and C Language
26-09-2023	Tuesday	47	
27-09-2023	Wednesday		Id-e-Milad
28-09-2023	Thursday	48	
29-09-2023	Friday	49	
30-09-2023	Saturday		
01-10-2023	Sunday		
02-10-2023	Monday		Gandhi Jayanti
03-10-2023	Tuesday	50	Holy Mass
04-10-2023	Wednesday	51	
05-10-2023	Thursday	52	
06-10-2023	Friday	53	
07-10-2023	Saturday		
08-10-2023	Sunday		
09-10-2023	Monday	54	
10-10-2023	Tuesday	55	
11-10-2023	Wednesday	56	
12-10-2023	Thursday	57	
13-10-2023	Friday	58	
14-10-2023	Saturday		
15-10-2023	Sunday		
16-10-2023	Monday	59	IAE -II - Fine-tune Your English
17-10-2023	Tuesday	60	IAE -II -Discrete Mathematics-1
18-10-2023	Wednesday	61	IAE -II -Basic Statistics and Introductory Probability Theory
19-10-2023	Thursday	62	IAE -II -Computer Fundamentals and Digital Principles
20-10-2023	Friday	63	IAE -II-Methodology of Programming and C Language
21-10-2023	Saturday		
22-10-2023	Sunday		Pooja Holidays
23-10-2023	Monday		Pooja Holidays
24-10-2023	Tuesday		Pooja Holidays
25-10-2023	Wednesday	64	
26-10-2023	Thursday	65	
27-10-2023	Friday	66	
28-10-2023	Saturday		
29-10-2023	Sunday		
30-10-2023	Monday	67	
31-10-2023	Tuesday	68	
01-11-2023	Wednesday	69	Feast of all Saints, Keralapiravi
02-11-2023	Thursday	70	
03-11-2023	Friday	71	
04-11-2023	Saturday		
05-11-2023	Sunday		
06-11-2023	Monday	72	IAE II Result Publishing
07-11-2023	Tuesday	73	Holy Mass

08-11-2023	Wednesday	74	
09-11-2023	Thursday	75	
10-11-2023	Friday	76	
11-11-2023	Saturday		Second Saturday
12-11-2023	Sunday		Deepavali
13-11-2023	Monday	77	Model Examination-Fine-tune Your English
14-11-2023	Tuesday	78	Model Examination-Discrete Mathematics 1
15-11-2023	Wednesday	79	Model Examination- Basic Statistics and Introductory Probability Theory
16-11-2023	Thursday	80	Model Examination- Computer Fundamentals and Digital Principles
17-11-2023	Friday	81	Model Examination- Methodology Of Programming And C Language
18-11-2023	Saturday		
19-11-2023	Sunday		
20-11-2023	Monday	82	Model Examination- Software Lab I
21-11-2023	Tuesday	83	Semester Ends
22-11-2023	Wednesday		
23-11-2023	Thursday		
24-11-2023	Friday		
25-11-2023	Saturday		
26-11-2023	Sunday		
27-11-2023	Monday		
28-11-2023	Tuesday		
29-11-2023	Wednesday		
30-11-2023	Thursday		
01-12-2023	Friday		Model Examination Result Publishing
02-12-2023	Saturday		
03-12-2023	Sunday		International Day of Persons with Disabilities
04-12-2023	Monday		
05-12-2023	Tuesday		Holy Mass
06-12-2023	Wednesday		
07-12-2023	Thursday		
08-12-2023	Friday		S1 UG University Exam Starts