



Structure for First Year M.Sc. (CA&IT) Semester-I
[Five Years' (Full-time) M.Sc. (CA&IT) Integrated Degree Course]

Offered in

**K. S. School of Business Management and
Information Technology**

Gujarat University

2023 – 2024

**As per NEP 2020 CURRICULUM AND CREDIT FRAMEWORK
FOR UNDERGRADUATE PROGRAMMES, UGC**

&

Resolution No. KCG/admin/2023-24/0607/kh.1

of

Education Department, Govt. of Gujarat

MAJOR	COMPUTER SCIENCE				
MINOR	1. ARTIFICIAL INTELLIGENCE & MACHINE LEARNING				
ANY ONE TRACK	2. WEB TECHNOLOGY				
	3. INFORMATION SECURITY				
		Exam Marks			
Code	Course	Credits	Internal Marks	External Marks	Total Marks
DSC-C-IMSCIT-111T	FUNDAMENTALS OF PROGRAMMING	4	50	50	100
DSC-C- IMSCIT-112P	FUNDAMENTALS OF PROGRAMMING-PRACTICALS	4	50	50	100
MINOR					
DSC-M- IMSCIT-113T	ELEMENTARY MATHEMATICS	2	25	25	50
DSC-M- IMSCIT-113P	WORKING WITH SPREADSHEET	2	25	25	50
OR					
DSC-M- IMSCIT-113T	MATHEMATICAL CONCEPTS	2	25	25	50
DSC-M- IMSCIT-113P	AUTOMATION OF OFFICE APPLICATION	2	25	25	50
OR					
DSC-M- IMSCIT-113T	ANALYTIC GEOMETRY AND TRIGONOMETRY	2	25	25	50
DSC-M- IMSCIT-113P	DATA ANALYTICS USING SPREADSHEETS	2	25	25	50
INTER DISCIPLINARY / MULTI DISCIPLINARY					
(1 Theory and 1 Practical Course has to be chosen. Courses can also be chosen from Basket)					
IDC-IMSCIT-114T	FUNDAMENTAL OF COMPUTER ARCHITECTURE & ELECTRONICS	2	25	25	50
IDC-IMSCIT-114P	FUNDAMENTAL OF COMPUTER ARCHITECTURE & ELECTRONICS-PRACTICALS	2	25	25	50
ABILITY ENHANCEMENT COURSE					
AEC- IMSCIT-115	(TO BE SELECTED FROM BASKET)	2	25	25	50
SKILL ENHANCEMENT COURSE					
(Any ONE Course to be selected from the Basket)					
SEC-IMSCIT-116	FUNDAMENTALS OF OPEN SOURCE TECHNOLOGY	2	25	25	50
COMMON VALUE ADDED COURSES					
VAC-IMSCIT-117	(Any ONE Course to be selected from the Basket)	2	25	25	50
TOTAL CREDITS		22	375	375	750

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Fundamental of Programming

Course code: DSC-C-IMSCIT-111T

Course Credit: 4

Course Outcomes:

- Able to formulate algorithm / flowchart for given problem.
- Able to understand basic concepts of programming.
- Able to handle possible errors during program execution.
- Develop modular applications using C programming language.

Contents:

Unit No.	Course Content	Hours	Credits
1	<p>Basics of C:</p> <p>Introduction To Programming: Understanding logic using flowchart, Algorithms.</p> <p>Programming With C: History of C, Basic Structure of C, Execution of C using Flowchart. Constant, Variables and Data types, character set & C tokens, Keywords & Identifiers, Comments, operators & expressions, Type Casting.</p> <p>Decision Making Structure: Simple if Statements, if-else, Nested if-else, else if ladder, Conditional Operators, switch, break And continue, goto statement.</p>	15	1
2	<p>Looping and Array:</p> <p>Loop Control Structure: While Statement, Do-While Statement, For Statement , Nested Loop, Jumps in Loops.</p> <p>Array: Concept of array, declaration & Initialization of Array, One Dimensional, Two Dimensional.</p> <p>Character Arrays and Strings: String handling and different operation on String.</p>	15	1
3	<p>Function and Structure, unions:</p> <p>Function: Concepts of user defined functions, call by value, call by reference, recursion.</p> <p>Structure: Defining Structure, Declaring Structure Variables, Accessing Structure Members, Structure Initialization, Structure Within Structures, union.</p>	15	1

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

4	Pointers and File Management: Pointers: Concept of pointers, pointer variables, Pointer Expressions, Array of Pointers. File Management: Introduction to File management, Creating a file, Reading and Writing Data from file. Command line Arguments	15	1
----------	--	-----------	----------

Reference Books:

1. Programming ANSI C
By E Balagurusamy, Tata McGraw-Hill Publication and GCC manuals available on UNIX/LINUX
2. C Complete Reference
By Herbert Scheidt, Tata McGraw-Hill Publication.
3. Programming With C,
By Gottfried, Tata McGraw-Hill Publishing.
4. 'C How to program'
By Deitel and Deitel, Pearson.
5. Programming For Problem Solving.
By Dr. S. M. Shah and Dr. P. P. Kotak.

Accomplishments of the student after completing the Course:

After completion of this course Student would be able to

- Gain a comprehensive understanding of the C programming language and its foundational concepts.
- Be adept at writing, debugging, and optimizing C programs for a variety of tasks.
- Have the ability to translate real-world problems into efficient algorithms and then implement them using C.
- Be proficient in using advanced data structures like structures, unions, pointers, and arrays.
- Have the skills to manage files and handle various file operations using C.

Gujarat University

K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Fundamental of Programming Practicals

Course Code: DSC-C- IMSCIT-112P

Course Credit: - 4

Objective:

The objective of this course is to provide practical implementation of programming skills in the C language. It aims to enhance basic skills in programming, understanding the principles and concepts of structured programming, and the ability to write, compile, debug, and run programs in C.

Course Outcomes:

Upon completion of this course, students will be able to:

- Seamlessly translate theoretical concepts into optimized C programs, showcasing hands-on expertise in coding, debugging, and problem-solving.
- Exhibit practical skills in manipulating complex data structures and conducting efficient file operations in C, reflecting a deep understanding of applied data operations.

Unit No.	Course Content	Hours	Credits
1	Basics of C and Decision-Making Controls <ul style="list-style-type: none">• Basic Programs in C: Implementations of Data types, Operators, and Mathematical built-in functions.• Decision-Making Structures: Implementations of Simple if statements, if-else statements, nested if-else statements, else-if ladder, Conditional Operators, switch-case, and go to statements.	30	1
2	Looping, Arrays, and Strings <ul style="list-style-type: none">• Loop Control Structures: Implementation of for loop statements, while loop statements, Do while loop statements, Nested Loops, Jumps in Loops.• Arrays: Concept of an array, declaration & initialization of an Array, Implementations of One-Dimensional Array, Two-Dimensional Array.• Strings: Implementations of different operations on strings.	30	1

Gujarat University

K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

3	Functions, Structures, and Unions. <ul style="list-style-type: none">• Functions: Implementations of user-defined functions (with and without recursion), Functions with and without parameters and return values.• Implementations of call by reference and call by value.• Implementations of Recursion.• Structures: Implementations of structures, structures within structures, Array of structure, Array within structure, Structures using functions.	30	1
4	Pointers and File Management: <ul style="list-style-type: none">• Pointers: Implementations of a simple program using pointers, Implementation of pointers using arrays.• File Handling: File operations (opening, reading, writing, and closing files), Implementations of text file processing line by line, Reading and writing text data, Handling binary files, Reading and writing binary data.	30	1

Reference Books:

1. Programming ANSI C" by E. Balagurusamy,
Tata McGraw-Hill Publication and GCC manuals available on UNIX/LINUX.
2. C Complete Reference
By Herbert Scheildt, Tata McGraw-Hill Publication.
3. Programming With C
By Gottfried, Tata McGraw-Hill Publishing.
4. C How to Program
By Deitel and Deitel, Pearson.
5. Programming For Problem Solving
By Dr. S. M. Shah and Dr. P. P. Kotak.

Accomplishments of the student after completing the Course:

- Demonstrate proficiency in writing, debugging, and optimizing C programs, transforming theoretical knowledge into tangible coding solutions.
- Translate real-world challenges into algorithms and then craft efficient programs in C to address those challenges, showcasing applied problem-solving abilities.

Gujarat University

K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Practical - Automation of Office Applications

Course Code: DSC-M- IMSCIT-113P

Course Credit: 2

Course Outcomes:

Upon successful completion of this practical course, students will be:

- Proficient in using advanced features of office applications.
- Able to automate repetitive tasks in office applications.
- Able to create, design, and manage databases.
- Capable of utilizing office software for professional presentation, documentation, and data analysis.

Contents:

Unit No.	Course Content	Hours	Credits
1	Advanced Word Processing: <ul style="list-style-type: none">• Creating and Formatting Complex Documents• Mail Merge, Macros, and Templates• Integration with other Office Applications	30	1
2	Spreadsheet and Database Management: <ul style="list-style-type: none">• Advanced Functions and Formulas• Charts, PivotTables, and Data Analysis• Introduction to Database, Creating, and Managing Databases	30	1

Reference Books:

1. Microsoft Office 2019 Step by Step
By Joan Lambert
2. Microsoft Excel 2019 Formulas and Functions
By Paul McFedries
3. Microsoft Access 2019 Programming by Example with VBA, XML, and ASP"
By Julitta Korol

Accomplishments After Completing the Course:

Upon successful completion of the Practical - Automation of Office Applications course, students will be able to:

- Students will be skilled in utilizing advanced features of word processing and spreadsheet software for creating complex documents, performing data analysis, and creating professional presentations.
- Students will be adept in using macros and templates to automate repetitive tasks, enhancing productivity and efficiency in office tasks.

Handle Databases Proficiently:

Utilize Office Software for Professional Tasks:

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Practical - Data Analytics using Spreadsheet

Course Code: DSC-M- IMSCIT-113P

Course Credit: 2

Course Outcomes:

Upon successful completion of this practical course, students will be:

- Adept in using spreadsheet tools for data analytics.
- Able to perform data cleaning, preparation, and transformation using spreadsheets.
- Proficient in using various data analytics techniques in a spreadsheet environment.
- Skilled in visualizing data and generating insights using spreadsheets.

Contents:

Unit No.	Course Content	Hours	Credits
1	Introduction to Data Analytics using Spreadsheets: <ul style="list-style-type: none">• Overview of Data Analytics• Basics of Spreadsheet for Data Analytics• Data Import and Export	30	1
2	Advanced Data Analytics Techniques: <ul style="list-style-type: none">• Data Cleaning and Preparation in Spreadsheet• Use of Advanced Analytical Functions and Formulas• Data Visualization: Creating Charts and Graphs• PivotTables and Data Analysis Tools	30	1

Reference Books:

1. Excel Data Analysis For Dummies
By Paul McFedries
2. Data Analysis Using Microsoft Excel: Updated for Office XP
By Michael R. Middleton
3. Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking
By Foster Provost and Tom Fawcett

Accomplishments after Completing the Course:

Upon successful completion of the Practical - Data Analytics using Spreadsheet course, students will be able to:

- Students will be adept in performing various data analysis tasks using spreadsheet software, including data cleaning, transformation, and analytical computations.
- Students will be skilled in employing advanced functions and formulas in spreadsheets for data analysis, allowing for efficient and insightful analysis of data.
- Create Effective Data Visualizations
- Generate Insights from Data

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Practical - Working with Spreadsheet

Course Code: DSC-M- IMSCIT-113P

Course Credit: 2

Course Outcomes:

Upon successful completion of this practical course, students will be:

- Proficient in utilizing spreadsheets for various computational and analytical tasks.
- Able to design, format, and manage complex spreadsheet documents.
- Skilled in using advanced functions, formulas, and data analysis tools.
- Capable of creating, interpreting, and analyzing charts, graphs, and PivotTables.

Contents:

Unit No.	Course Content	Hours	Credits
1	Introduction to Spreadsheets: <ul style="list-style-type: none">• Overview of Spreadsheet Software• Basic Functions and Formulas• Formatting Cells and Sheets	30	1
2	Advanced Spreadsheet Techniques: <ul style="list-style-type: none">• Working with Advanced Formulas and Functions• Data Analysis Tools• Creating Charts, Graphs, and PivotTables• Working with Macros and Automating Tasks	30	1

Reference Books:

1. Microsoft Excel 2019 Inside Out
By Mark Dodge
2. Advanced Excel for Productivity
By Chris Webb
3. Excel 2019 All-in-One For Dummies
By Michael Alexander and Dick Kusleika

Accomplishments after Completing the Course:

Upon successful completion of the Practical - Working with Spreadsheet course, students will be able to:

- Students will have a robust understanding of spreadsheet functionalities and will be adept in using spreadsheets for various tasks, including computation, data management, and analysis.
- Students will be skilled in employing advanced functions and formulas to perform complex computations and data analysis.
- Create and Analyze Graphical Data Representations:
- Automate Spreadsheet Tasks

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Analytic Geometry and Trigonometry

Course Code: DSC-M- IMSCIT-113T

Course Credit: 2

Course Outcomes:

By completing this course a student will:

- Develop a good insight of basic 2 and 3 dimensional geometry.
- Learn about dot product of vectors and cross product of vectors.
- Be able to determine whether the given lines are intersecting or not.
- Know about trigonometric functions and their inter-relationships.
- Learn some useful identities involving trigonometric functions.

Contents:

Unit No.	Course Content	Hours	Credits
1	<p>Geometry</p> <ul style="list-style-type: none"> • Distance formula, section formula, area of triangle, concurrent points: centroid, incenter and circumcenter of a triangle. • Line and its equation (point slope form, two point form, double intercept form, angle of inclination form), angle between two lines, condition for the set of lines to be parallel, perpendicular, overlapping or intersecting. • Geometric understanding of 3D space and coordinate point representation, distance formula, dot product, cross product, equation of line in space, direction ratio and direction cosines of a line, condition for the set of lines in space to be parallel, perpendicular, overlapping or intersecting. 	15	1
2	<p>Trigonometry</p> <ul style="list-style-type: none"> • Definition of trigonometric functions, its domain range and graph, identities, formulae for $\sin(A + B)$, $\sin(A - B)$ etc., formulae for $\sin A \cos B$, $\sin A \sin B$ and $\cos A \cos B$, formulae for $\sin 2A$, $\sin 3A$ etc., problems on heights and distances. • Introduction to inverse trigonometric functions, its domain range and graph, some identities involving inverse trigonometric functions (all formulae in this module are without proof). 	15	1

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Reference Books:

1. 11th Science Gujarat Board textbook and 12th Science Gujarat Board textbook
2. Coordinate geometry,
By S.K. Goyal, Arihant publications.
3. Analytic geometry of two and three dimensions,
By Hema Vasavada.
4. Plane trigonometry part-1 and part-2,
By SL Loney, Arihant Prakashan.
5. How to memorize formula in Mathematics: Book 2 Trigonometry,
By Rajesh Sarswat, kindle ebook.
6. Trigonometry,
By Ted Sundstrom and Steven Schlicker, Grand valley state university.
7. Algebra and trigonometry: Functions and applications,
By Paul A. Foerster, Prentice Hall.

Accomplishments of the student after completing the Course:

Upon successful completion of the "Analytic Geometry and Trigonometry" course, students will be able to:

- Calculate and interpret distances, sections, and areas using appropriate formulas, such as the distance formula and section formula.
- Formulate equations of lines using different methods and analyze the relationship between two lines, determining whether they are parallel, perpendicular, overlapping, or intersecting.
- Understand and apply the concepts of dot product and cross product for vectors, especially in the context of geometric representation in 3D space.
- Formulate and interpret the equation of a line in three-dimensional space, including understanding direction ratios and direction cosines of such lines.
- Gain knowledge about the foundational trigonometric functions, their domains, ranges, and graphical representations.
- Apply trigonometry in practical problems, especially those related to heights and distances, showcasing real-world applicability of trigonometric principles.

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Elementary Mathematics

Course Code: DSC-M-IMSCIT-113T

Course Credit: 2

Course Outcomes:

This is a fundamental course in mathematics. It will be very useful for the subjects like Discrete Mathematics, GIS, Image processing.

By completing this course a student will:

- Know about basic set theoretic operations.
- Learn about relations and its types.
- Learn about different types of functions and its domain and range.
- Be able to work with matrices, find inverse and perform some operations on matrix.
- Be able to solve system of linear equations using matrix theory.
- Learn to find rank of any matrix.

Contents:

Unit No.	Course Content	Hours	Credits
1	Relation and function <ul style="list-style-type: none">• Basic notion of set, operations on sets, power set, De Morgan's law, relation, types of relations, partial order relation, equivalence relation.• Functions, types of functions, invertible function, operation on functions, domain and range of algebraic functions, trigonometric functions, exponential and logarithmic functions, rational functions, zeroes of functions, continuity of functions and the concept of tangent line and asymptote in reference to above functions.	15	1
2	Theory of Matrices <ul style="list-style-type: none">• Matrix and its types, operations on matrices, adjoint of a matrix, elementary row operations, row reduced echelon form of a matrix, rank of matrix, matrix inversion by adjoint method, matrix inversion by row operations, determinant, properties of determinant, solution of simultaneous system of linear equations by adjoint method, Gauss Jordan method, Gauss elimination method.	15	1

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Reference Books:

1. 11th Science Gujarat Board textbook and 12th Science Gujarat Board textbook
2. Set theory: A First Course,
By Daniel W. Cunningham, Cambridge University press.
3. Guide to discrete mathematics,
By Gerald O'Regan, Springer.
4. Engineering mathematics,
By B.S. Grewal, Khanna publishers, New Delhi.
5. Advanced engineering mathematics,
By H.K. Dass, S. Chand.

Accomplishments of the student after completing the Course:

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

- Have a solid grasp of basic set theoretic operations.
- Demonstrate an understanding of the power set, operations on sets, and De Morgan's law.
- Identify and classify various types of relations, including partial order and equivalence relations.
- Distinguish among different types of functions such as algebraic, trigonometric, exponential, logarithmic, and rational functions.
- Identify the domain and range of various functions.
- Understand the operational aspects of functions, including the invertible function.
- Appreciate concepts like zeroes of functions, continuity of functions, and associated tangents and asymptotes.
- Identify and differentiate between various types of matrices.
- Execute operations on matrices efficiently.
- Transform matrices using elementary row operations and achieve the row reduced echelon form.
- Ascertain the rank of matrices.
- Calculate determinants and appreciate their properties.

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Mathematical Concepts.

Course code: DSC-M-IMSCIT-113T

Course Credit: 2

Course Outcomes:

The aim of this course is to enable students to

- Develop a good insight of basic two and three dimensional geometry.
- Be able to evaluate area of triangle whose vertices are given.
- Learn about dot product of vectors and cross product of vectors.
- Be able to determine whether the given lines are intersecting or not.
- Be able to work with matrices, find inverse and perform some operations on matrix.
- Be able to solve system of linear equations using matrix theory.
- Learn to find rank of any matrix.

Contents:

Unit No.	Course Content	Hours	Credits
1	Geometry Introduction to two dimensional co-ordinate geometry: Distance formula, section formula, area of triangle, concurrent points: centroid, incenter and circumcenter of a triangle. Straight lines in two dimensional space: Line and its equation (point slope form, two-point form, double intercept form, angle of inclination form), angle between two lines, condition for the set of lines to be parallel, perpendicular, overlapping or intersecting. Straight lines in three dimensional space: Geometric understanding of 3D space and coordinate point representation, distance formula, dot product, cross product, equation of line in space, direction ratio and direction cosines of a line, condition for the set of lines in space to be parallel, perpendicular, overlapping or intersecting.	15	1

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

2	Theory of matrices Introduction to matrices: Matrix and its types, operations on matrices, adjoint of a matrix Elementary row operations on a matrix and RRE form of a matrix: elementary row operations, row reduced echelon form of a matrix, rank of matrix, matrix inversion by adjoint method, matrix inversion by row operations, determinant, properties of determinant Solution of system of linear equations using RRE form: solution of simultaneous system of linear equations by adjoint method, Gauss Jordan method, Gauss elimination method.	15	1
----------	---	-----------	----------

Reference Books:

1. Syllabus is roughly entirely covered from 11th Science Gujarat Board textbook and 12th Science Gujarat Board textbook
2. Coordinate geometry, S.K. Goyal, Arihant publications.
3. Analytic geometry of two and three dimensions by Hema Vasavada.
4. Engineering mathematics, B.S. Grewal, Khanna publishers, New Delhi
5. Advanced engineering mathematics, H.K. Dass, S. Chand.

Accomplishments of the student after completing the Course:

After completion of this course Student would be able to

- Calculate distance between points given in 2-D and 3-D space.
- Visualize line in 2-D and 3-D space.
- Perform various operations like addition, subtraction, multiplication on matrices.
- Solve system of linear equations.

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Fundamentals of Computer Architecture and Electronics - Practicals

Course Code: IDC-IMSCIT-114P

Course Credit: 2

Course Outcomes:

- To instil foundational knowledge of electronics, emphasizing the design and analysis of simple circuits and understanding of digital logic.
- To introduce students to the intricacies of assembly language programming, shedding light on low-level program representation and its transition from high-level languages.
- To develop practical skills in circuit construction, logic gate operations, and assembly programming.
- To ensure students can set up and operate in an assembly programming environment, developing an understanding of control structures and operations at the assembly level

Contents:

Unit No.	Course Content	Hours	Credits
1	Assembly Language Programming <ul style="list-style-type: none">• Setup and Environment Initialization<ul style="list-style-type: none">• Setting up an Assembly Programming Environment using tools like MASM or NASM.• Writing and executing a simple "Hello World" program in assembly.• Basic Operations<ul style="list-style-type: none">• Implement arithmetic and logical operations using assembly instructions.• Manipulate data in registers and memory• Control Structures Implementation<ul style="list-style-type: none">• Design simple programs demonstrating loops and conditional structures in assembly.• Develop procedures and function calls for modular code design	30	1
2	Digital Logic Circuits <ul style="list-style-type: none">• Building Simple Circuits<ul style="list-style-type: none">• Recognize components like resistors, capacitors, diodes, and transistors.• Construct basic series and parallel circuits using breadboards.	30	1

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

	<ul style="list-style-type: none">• Measure and analyze voltage, current, and resistance using multimeters• Introduction to Digital Electronics<ul style="list-style-type: none">• Understand the concept of binary logic: 0s and 1s, high and low voltages.• Explore and test the operations of fundamental logic gates: AND, OR, NOT, NAND, NOR, and XOR.• Design basic combinational circuits, such as half adders, full adders, and multiplexers, using the provided logic gates		
--	--	--	--

Reference Books:

1. Computer System Architecture –
By M. Morris Mano – PHI/Pearson Education
2. Digital Computer Fundamentals –
By Thomas C. Bartee – Tata McGraw- Hill

Accomplishments after Completing the Course:

Upon successful completion of the "Fundamental of Computer Organization and Electronics- Practicals" course, students will be able to:

- Be proficient in setting up an assembly language programming environment using popular tools like MASM or NASM.
- Demonstrate competence in writing, assembling, and executing assembly language programs.
- Implement and test arithmetic and logical operations at the assembly level.
- Manipulate data storage in both registers and memory, understanding the nuances of each.
- Design and execute assembly programs with control structures, such as loops and conditionals.
- Have hands-on experience with basic electronic components like resistors, capacitors, diodes, and transistors.
- Possess the ability to construct, test, and troubleshoot simple series and parallel circuits.
- Understand the fundamental concepts of binary logic, representing data in high and low voltage signals.
- Have practical experience with essential digital logic gates like AND, OR, NOT, NAND, NOR, and XOR.
- Design, implement, and test basic digital circuits, including combinational circuits like half adders and full adders.

Gujarat University

K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Fundamental of Computer Architecture and Electronics

Course Code: IDC-IMSCIT-114T

Course Credit: 2

Course Outcomes:

Upon successful completion of this course, students will be:

- Acquainted with the basic structure and operation of digital computers.
- Able to understand the fundamental concepts of electronic circuits and devices.
- Knowledgeable about computer organization including the architecture and operation.
- Equipped with a basic understanding of microprocessor and microcontroller operation.

Contents:

Unit No.	Course Content	Hours	Credits
1	Basics of Computer Organization: <ul style="list-style-type: none">• Overview of Computer Architecture and Organization• Data Representation: Binary, Octal, Hexadecimal• Basics of Boolean Algebra and Logic Gates• CPU Organization• Memory Hierarchy, Types, and Organization• Input / Output Organization	15	1
2	Introduction to Electronics: <ul style="list-style-type: none">• Fundamentals of Electronic Circuits• Introduction to Analog and Digital Electronics• Basic Electronic Components and Their Characteristics• Introduction to Microprocessors and Microcontrollers	15	1

Reference Books:

1. Digital Design and Computer Architecture
by Sarah Harris and David Harris
2. Fundamentals of Digital Circuits
by A. Anand Kumar
3. Microprocessor 8085 and Its Interfacing
by Sunil Mathur
4. Principles of Computer System Design
by Jerome Saltzer and M. Frans Kaashoek

Accomplishments after Completing the Course:

Upon successful completion of the "Fundamental of Computer Organization and Electronics" course, students will be able to:

- Students will have a clear understanding of the basic architecture and organization of computers.
- Students will comprehend the fundamental concepts of digital circuits and Boolean algebra.
- Students will have basic knowledge about the functioning of microprocessors and microcontrollers.

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: COMMUNICATION SKILL

Course Code: AEC- IMSCIT-115

Credits: 2

Course Outcomes:

- The course is designed to enhance the writing skill of the students in the standard commercial field.
- It will elaborate their understanding for the basic business letter writing skill.

Prerequisites: No Prerequisites

Unit No.	Course Content	Hours	Credits
1	Introduction to Communication (Theory) <ul style="list-style-type: none">• Definition of Communication• Importance of Communication• Process of Communication• Objectives of Communication• Barriers to effective Communication• Verbal: Written, Oral• Non-Verbal: Kinesis, Paralanguage, Proxemics• Direction of Communication: Downward, Upward, Lateral or Horizontal, Diagonal	15	1
2	Grammar & Reading (Practical) <ul style="list-style-type: none">• Articles, Preposition, Verbs, Tenses, Part of speech, Auxiliary, Vocabulary Words• Short Stories (Subject to change every year)	15	1

References Books:

1. Business Communication
By V. K. Jain and Omprakash Biyani.
2. Business Communication
By Rajendra pal and korlahally.
3. Business Communication
By Urmila Rai and S. M. Rai.
4. Modern Commercial Correspondence
By R. S. N. Pillai and Bagavathi.
5. Murphy's English Grammar
By Raymond Murphy
6. A Textbook of English phonetics for Indian students
By T. Balasubramanian

Accomplishments of the student after completing the Course:

After completion of this course Student would be able to

- Communicate commercially in the formal setup.

Gujarat University

K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Fundamental of Open Source Technology

Course code: SEC-IMSCIT-116

Course Credit: 2

Course Outcomes:

Upon completing this course, students will be:

- Aware of the concepts, history, and philosophy behind open source technology.
- Able to understand and differentiate various open-source operating systems, software, and licensing models.
- Familiar with the communities, communication, and contribution to open-source projects.
- Introduced to the basics of implementing and working with open-source technology and tools.

Unit No.	Course Content	Hours	Credits
1	Introduction to Open Source <ul style="list-style-type: none">• Definition and Overview of Open Source.• History and Evolution of Open Source.• Benefits and Challenges of Open Source.• Overview of Open Source Licensing.	15	1
2	Open Source Software and Operating Systems <ul style="list-style-type: none">• Overview of Open Source Software.• Introduction to Various Open Source Operating Systems (e.g., Linux, Ubuntu).• Open Source Software Examples (e.g., LibreOffice, GIMP).• Installing and Configuring Open Source Software.	15	1

Reference Books:

The Open Source Way" by The Open Source Way community

1. Producing Open Source Software
By Karl Fogel
2. Open Source Licensing: Software Freedom and Intellectual Property Law
By Lawrence Rosen
3. Understanding Open Source and Free Software Licensing
By Andrew M. St. Laurent
4. Introduction to Linux - A Hands on Guide
By Machtelt Garrels

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Accomplishments of the student after completing the Course:

After completion of this course Student would be able to

Understand the Open-Source Ecosystem:

- Students will have an in-depth understanding of the history, philosophies, and various licensing types in the open-source world.

Identify and Use Open-Source Software:

- Students will be familiar with various open-source software and operating systems, and will be proficient in installing, configuring, and using them effectively.
- Participate in Open Source Communities:
- Apply Open Source Principles:
- Problem-Solving Skills

Gujarat University
K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

Course Name: Indic Knowledge System (IKS)

Course code: VAC-IMSCIT-117

Course Credit: 2

Unit	Topic	Credit
1	Introduction to IKS <ul style="list-style-type: none">• Introduction to IKS & Its importance• Various IKS Systems• Shashtra – Foundational Literature of Bharatvarsha<ul style="list-style-type: none">• What is Shashtra?• Importance of Shashtra• Classification of Shashtra – Vaidic & Aavidic (with examples of imp. Literature)• Base of IKS proliferation<ul style="list-style-type: none">• Bhartiya Education System and its philosophy• History of BES from Ancient to Modern• Domains of Education: Gurukul, Pathshala, Vidyalay, Vishvavidyalay	1
2	Contribution of IKS to the World <ul style="list-style-type: none">• Mathematics & Astronomy<ul style="list-style-type: none">• Number System• Algebra & Arithmetic• Geometry• Trigonometry• Planetary System• Speed of Light• Eclipse• Life sciences<ul style="list-style-type: none">• Physics• Chemistry• Botany• Metal Technology<ul style="list-style-type: none">• Mining Techniques• Types of Metals• Tools & Techniques for Metal Smelting with examples	1

Gujarat University

K. S. School of Business Management and Information Technology
[Five Years' (Full – Time) M.Sc. (CA&IT) Integrated Degree Course]
First Year M.Sc. (CA&IT) (Semester - I)

	<ul style="list-style-type: none">• Town planning & Temple Architecture<ul style="list-style-type: none">• Indigenous tools & technologies for townplanning & Temple Architecture• Science of Architecture• Lothal, Mohan Jo Daro, Dholavira• Angkorvat, Lepakshi Temple, Jagannath Puri Temple, Thanjavur Temple, Modhera and Konark Sun Temple, Hampi Temple Etc.• Ayurveda<ul style="list-style-type: none">• Introduction of Ayurveda- Definition, Branches of Ayurveda, Books and Pioneers• Concept of Tri Dosh and importance of its Balance in the body• Indic Medical Science Achievement: Tools & Technology• Art & Traditions<ul style="list-style-type: none">• History and Origin• Skill Enhancement with 64 Kala• Science behind our traditions and rituals	
--	---	--