Draft Teaching Scheme and Syllabus

Bachelor of Computer Applications (BCA)
and
Integrated MCA (IMCA)

1st Semester (w.e.f 2024-25)

Gujarat Technological University
Nr. Visat Three Roads, Visat - Gandhinagar Highway
Chandkheda, Ahmedabad – 382424 – Gujarat

BCA/IMCA Semester -1 Teaching Scheme

Semester	subjectName	Category	L_hours	T_hours	P_hours	Credit	E_max	M_Max	I_Max	V_Max	Total_mark
1	Fundamental of Computer Organization	Core Course	3	0	2	4	70	30	20	30	150
1	Fundamental of Programming	Core Course	3	0	2	4	70	30	20	30	150
1	Fundamentals of Web Technology	Minor Elective Subject (Any One)	3	0	2	4	70	30	20	30	150
1	Fundamentals of Statistical Methods	Minor Elective Subject (Any One)	3	0	2	4	70	30	20	30	150
1	Mathematics-1	Multidisciplinary Course	4	0	0	4	70	30	0	0	100
1	Office Automotation	Skill Enhancement Courses (SEC)	0	0	4	2	0	0	50	50	100
1	Communication Skills	Ability Enhancement Courses (AEC)	2	0	0	2	70	30	0	0	100
1	Indian Knowladge System	Indian Knowledge System(IKS)	2	0	0	2	70	30	0	0	100

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code:

Course / Subject Name: Fundamental of Computer Organization

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Core Course

Prerequisite: A foundational understanding of mathematics including algebra and basic arithmetic is required. Additionally, familiarity with basic concepts in computer science such as data types, variables, and basic programming constructs would be beneficial.

Rationale:	The course on Computer Application is crucial for undergraduate students in Computer Science due to its foundational role in understanding essential computing principles and systems. Covering topics such as number systems, logic gates, computer architecture, arithmetic operations, and memory systems, the course provides students with fundamental knowledge that forms the basis for advanced studies and practical applications. By emphasizing logical thinking, analytical skills, and hands-on experience with computing components, the course prepares students to tackle real-world challenges in software development, system design, and IT management. It aligns with industry demands for proficient professionals who can innovate and adapt to the evolving technological landscape, ensuring graduates are well-equipped for diverse careers in computing and related fields.

Course Outcome:

After completion of the course, student will able to:

No	Course Outcomes	RBT Level
01	Perform conversions between various number systems, execute binary arithmetic operations, and utilize basic logic gates to evaluate logical expressions.	R, U, A
02	Identify different types of computers and their components, explain fundamental operational concepts, and assess factors influencing computer performance.	R, U
03	Describe the concepts of register transfer language and micro operations and analyze the instruction cycle and various instruction formats.	R, U, N
04	Perform arithmetic operations using different addition, subtraction, multiplication, and division algorithms, including floating-point arithmetic.	R, U, A
05	Explain the architecture and functioning of different memory systems, including RAM, ROM, cache, and virtual memory, and understand the basics of RAID systems.	R, U

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code:

Course / Subject Name: Fundamental of Computer Organization

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	UNIT I: NUMBER SYSTEM AND LOGIC GATES Number System: Decimal System, Two-state Devices, Counting in Binary System, Binary Addition and Subtraction, Converting Decimal Number to Binary Numbers, Use of Complements to represent negative numbers in binary and other number systems, Octal and Hexadecimal Number System. Basic Logic Gates: Logic Gates, Logical Multiplication, AND Gate and OR Gate, Complementation and Inverts Evaluation of logical Expression, Evaluation of an Expression containing Parenthesis. NAND Gates and NOR Gates.	8	20
2.	UNIT II BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional units, Basic OPERATIONAL concepts, Bus structures, Software, Performance, multiprocessors, and multi-computers. Data Representation. Fixed Point Representation. Floating–Point Representation. Error Detection codes.	7	15
3.	UNIT III: REGISTER TRANSFER LANGUAGE AND MICRO-OPERATIONS: Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Micro-operations, logic micro-operations, shift micro-operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions – Instruction cycle. Memory – Reference Instructions. Input – Output and Interrupt. Instruction formats. Addressing modes.	11	25
4.	UNIT IV: COMPUTER ARITHMETIC:	8	20

	Addition and subtraction, multiplication Algorithms, Division Algorithms, floating–point Arithmetic operations. Decimal Arithmetic unit Decimal Arithmetic operations.		
5.	UNIT V: THE MEMORY SYSTEM: Basic concepts semiconductor RAM memories. Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Introduction to RAID.	8	20
	Total	**42**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
30	30	20	20	0	0

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Computer System Architecture by Morris Mano, Third Edition, Pearson Publications
2. Computer Fundamentals by P.K. Sinha, Sixth Edition, BPB Publications
3. Computer Installation and Servicing By D Balasubramanium, McGraw Hill Education Private Limited
4. Digital Principles and Applications by A P Malvino, and D P Leach, 8th Edition, McGraw-Hill Education

(b) Open source software and website:

1. Open source software Logisim is suggested for practical works and better theoretical understanding

Suggested Course Practical List:

1. Identify basic terms and components of the computer and make a summary report.
2. Study different slots on the motherboard with its working and the use of front & back panel connections of a computer.
3. Identify and understand the workings of various ports, such as sockets, connectors, cables, and

various types of expansion cards.

4. To study and verify the truth table of logic gates
5. To realize Half Adder, Full Adder, Half Subtractor, and Full Subtractor by using Basic gates and NAND gates
6. To simplify the given expression and to realize it using Basic gates and Universal gates
7. To design and set up the following circuit using IC 7483. i) A 4-bit binary parallel adder. ii) A 4-bit binary parallel subtractor.
8. Study physical and logical components of hard disk and SSD and their interfaces.
9. Study working of keyboard, mouse, scanner, monitor and printer with its interface types. Study the troubleshooting of motherboard, keyboard, and mouse.
10. Install Windows operating system and understand Control Panel.
11. Install Linux operating system
12. Understand working of SMPS.

CO- PO Mapping:

Semester 1	**Fundamental of Computer Organization (10610101)**										
	POs										
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	1	-	2	-	-	-	-	-	-
CO2	2	1	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-
CO4	3	3	1	-	2	-	-	-	-	-	-
CO5	2	1	-	-	-	-	-	-	-	-	-

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code:

Course / Subject Name: Fundamental of Programming

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Core Course

Prerequisite: Basic Mathematics and knowledge about number systems

Rationale:	The course content outlined encompasses fundamental concepts and practical skills essential for anyone aspiring to understand and develop proficiency in programming using the C language. Beginning with the basics of programming languages, students will grasp the foundational concepts of compilers, interpreters, linkers, and loaders, which are crucial for translating and executing code. This knowledge provides a solid groundwork for understanding how programs are processed and executed by computers, fostering a deeper appreciation of software development principles. Moving into the specifics of C programming, the curriculum covers essential elements such as data types, variables, operators, and expressions. These topics are fundamental to constructing meaningful algorithms and executing logical operations within programs. Understanding decision control statements and iterative constructs equips learners with the ability to create programs that can make decisions and iterate through tasks efficiently. These skills are further honed through hands-on practice in implementing arrays, strings, and user-defined functions, enhancing both problem-solving abilities and code organization skills. Moreover, the inclusion of pointers and structures introduces students to more advanced concepts in memory management and data structuring. Pointers, arrays, and structures enable efficient manipulation and organization of data, essential for optimizing program performance and managing complex data structures effectively. Additionally, the course provides practical experience in file handling, including reading from and writing to files, which is crucial for developing applications that require persistent data storage and retrieval. Overall, this comprehensive course not only covers the syntax and semantics of the C programming language but also emphasizes practical application through numerous coding exercises and projects. By mastering these concepts and techniques, students gain a solid foundation in C programming, empowering them to tackle real-world programming challenges with confidence and proficiency.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level*
1	Formulate algorithm/ flowchart for given arithmetic and logical problem.	UN
2	Translate algorithm/flowchart into C program using correct syntax of Operator, conditional, branching, iteration and execute it.	AP
3	Write programs using the concepts of array and functions.	AP
4	Write programs using the concepts of pointers, structure and union.	AP
5	Develop an application using the concepts file management to solve problems	CR

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Programming Language, Compiler, Interpreter, Liker, Loader, Classification of Programming, Algorithm, Flowchart, Structure of a C Program, First C Program, Comments, C Tokens, Basic data types in C, Variables, Operators & Expression in C, Type conversion and Typecasting.	**7**	**15**
2.	Basic Screen & Keyboard Input & Output, Introduction to Decision Control Statements, Conditional execution & selection statements, Iterative Statements, Nested Loops, Special Control Statement.	**9**	**20%**
3.	Introduction to Array, One Dimensional Array, Multi-Dimensional Array, Introduction to String, Character & string Functions, Array of String Introduction to User Defined Functions, Using Functions, Function Declaration/Function Prototype, Function Definition, Function call, return statement, Passing Parameters to the function, scope of variables, Storage classes, Recursive Functions.	**9**	**20%**
4.	Introduction, Understanding Memory Addresses, Address Operator (&), Introduction to Pointers, void Pointer, Null Pointer, Use of Pointers, Arrays and Pointers, Pointer and String, Pointer Arithmetic, Pointers to Pointers, Array of Pointers, Pointers to an Array, Pointers to Functions. Structure, Structure Declaration, Assessing member of structure, Initialization of Structure, Nesting of Structure, Array of Structure, Array within structure, Structure and Function, Structure and Pointer,	**9**	**25%**

	Union.		
5.	Using Files in C, Declaration, Opening and Closing of a File, Working with Text Files and Binary Files, Character Input and Output, End of File (EOF), feof() Function, Files of Records, Random Access to Files of Records.	**8**	**20%**
	Total	**42**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
0	20	60	0	0	20

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
Text Books:

1. PradipDey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6.

Reference Books:

2. E. Balaguruswamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
3. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978- 93-8728-449-4.
4. ReemaThareja. "Programming in C", 2nd Edition, Oxford University Press.
5. C: The Complete Reference, by Herbert Schildt, Publisher – Tata McGraw Hill.

Suggested Course Practical List:

1. Write a program to that performs as calculator (addition, multiplication, division, subtraction).
2. Write a program to find area of triangle(a=h*b*.5)
   a = area h= height b = base.
3. Write a program to calculate simple interest (i = (p*r*n)/100)
   i = Simple interest p= Principal amount r= Rate of interest n=Number of years.
4. Write a C program to inter change two numbers.
5. WriteaCprogramtoenteradistanceintokilometreandconvertitintometer, feet, inches and centimeter.
6. Write a program to compute Fahrenheit from centigrade(f=1.8*c +32).
7. Write a C program to find that the accept ednumber isNegative, Positive or Zero.
8. Writeaprogramtoreadmarksofastudentfromkeyboardwhetherthestudentis pass or fail (using

ifelse)

9. Write a program to read three numbers from keyboard and find out maximum out of these three.(nested ifelse)
10. Write a c program to prepare pay slip using following data. Da = 10% of basic, Hra = 7.50% of basic, MA= 300, Pf= 12.50%ofbasic, Gross=basic+Da+ Hra+Ma,Nt= Gross–Pf.
11. WriteaCprogramtofindouttheMaximumandMinimumnumberfromgiven10 numbers
12. Write a C program to find factorial of a given number.
13. Write a program to reverse a number.
14. Write a program to generate first *n* number of Fibonacci series
15. Write a program to calculate average and total of5 studentsfor3subjects(use nested *for* loops)
16. Read five persons height and weight and count the number of person having height greater than 170andweightlessthan 50,
17. Write a program to check whether the give n number is prime or not.
18. Write a program to evaluate the series 1^2+2^2+3^2+……+n^2
19. Write a program to print following patterns:

i)
```
*
* *
* * *
* * **
* * ** *
```

ii)
```
*****
****
***
**
*
```

20. Write a program to print following patterns:

i)
```
1
12
123
1234
12345
```

ii)
```
12345
1234
123
12
1
```

21. Write a program to print following patterns:

i)
```
AAAAA
BBBB
CCC
DD
E
```

ii)
```
ABCDE
ABCD
ABC
AB
A
```

22. Write a C program to read and store the rollno and marks of 20students using array.
23. Write a program to findmaximumelementfrom1-Dimensionalarray.
24. Write a program to sort given array in ascending order.
25. Write a program to reverse string.
26. Write a program that defines a function to add first *n* numbers.
27. Writeafunctionintheprogramtoreturn1ifnumberisprimeotherwisereturn0

28. Write a program to find factorial of a number using recursion.
29. Write a function that will scan a character string passed as an argument and convert all lowercase character into their upper case equivalents
30. Define a structure type *struct* personal that would contain person name, joining date and salary using this structure to read this information of 5 people and print the same on screen.
31. Define structure data type called time_struct containing three member's integer hour, integer minute and integer second. Develop a program that would assign values to the individual number and display the time inthefollowingformat:16:40:51
32. Design a structure student record to contain name, branch and total mark obtained. Develop aprogramtoreaddatafor10studentsinaclass and print them.
33. Write a program to print address of variable using pointer.
34. Write a C program to swap the two values using pointers.
35. Write a program to access elements using pointer.
36. Write a program to read, print and addition of two Matrices using pointer and user define functions.
37. Write a program for sorting using pointer.
38. Write a program to read n integer number from keyboard and store them into a file All.txt. Read All.txt file, separate even and odd numbers and store them into files Even.txt and Odd.txt respectively and display contents of all the three files.
39. Write a program to accept the contents from the user and store it in the file one line at a time and print the contents of the file.
40. Write a program to merge two files into the third file.

CO- PO Mapping:

Semester-1	**Fundamental of Programming (10610102)**										
	POs										
Course Outcomes	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO1	3	3	3	-	3	-	-	-	-	-	-
CO2	3	3	3	-	3	-	-	-	-	-	-
CO3	3	3	3	-	3	-	-	-	-	-	-
CO4	3	3	3	-	2	-	-	-	-	-	-
CO5	3	3	3	3	3	-	-	-	-	-	-
Ave	3.00	3.00	3.00	3.00	2.80	-	-	-	-	-	-

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code :

Course / Subject Name : Fundamentals of Web Technology

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Minor Elective Subject (Any One)

Prerequisite:	Basic computer knowledge
Rationale:	• The aim of the course is to provide knowledge of web as a tool in presenting information. • Understand basic web languages and its components. • Students can develop a dynamic webpage by the use of HTML, JavaScript and DHTML.

Course Outcome:

After Completion of the Course, Student will able to:

No.	Course Outcomes	RBT Level*
1	Describe basics of web and concept of web server in web technology.	RM, UN
2	Explain and develop web pages using HTML tags and validators.	RM,UN,AP
3	Describe and apply styling using CSS to HTML web pages.	RM,UN,AP
4	Implement client side scripting using Javascript.	RM,UN,AP
5	Explain JSON data format and parsing of JSON string.	RM,UN,AP

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introduction to Web Technology** **Web Basics**: Internet, World Wide Web, HTTP, HTTPs, FTP, Web Client, Browsers Functions, URL's **Web Server:** Features, History, Logging, Access Control	**4**	**15**

2.	**HTML, XHTML & HTML5** **Introduction:** HTML,Tags and Attributes, HTML File Structure, Meta, Title, Body **Common HTML Tags:** Headings, Anchor, Links, Lists, Table, Frames, Forms **XHTML:** HTML Validator, Block and Inline Elements **Introduction to HTML5**	**10**	**25**
3.	**Page Designing with CSS** CSS Declarations, Using CSS, Sample CSS File, Selectors, Box Model Concept, Padding, Float and Clear, Z-Index, Websites Benefits of CSS	**8**	**20**
4.	**Client-side Scripting** Introduction to JavaScript, Basic Syntax, Variables, Identifiers, Data Types and Values, Scope, Literals, Reserved Words, Operators and Statements, Functions, Objects (Math, String, Date) Regular Expressions, DOM Event Handling	**12**	**25**
5.	**JSON** Overview, Syntax, Data Types, Objects, Schema, Serializing into JSON, Parsing JSON	**8**	**15**
	Total	**42**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**20**	**70**	**-**	**-**	**-**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

Text Books:

1. Jeffrey C. Jackson (Duquesne University), WEB TECHNOLOGIES A Computer Science Perspective -Pearson Education.
2. M. Srinivasan, Web Technology: Theory and Practice, Pearson India
3. Jeremy McPeak, Paul Wilton, Beginning JavaScript Wrox Publication

Reference Books:

1. Murach's HTML5 & CSS3", Zak Ruvalcaba & Anne Boehm
2. "JavaScript: The Definitive Guide", 6th Edition, David Flanagan, O'Reilly Media
3. "Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, & Web Graphics", Jennifer Niederst Robbins, O'Rielly

4. "HTML5 Programming with JavaScript", John Paul Mueller, Wiley
5. "HTML5 & CSS3 for the Real World", Estelle Weyl, Louis Lazaris, Alexis Goldstein, Sitepoint

Suggested Course Practical List:

1 Write codes to create a web page using the following tags:
   a) Text
   b) Marquee
   c) Character formatting tags such as B , I , U
2 Write codes to create a web page using font Ex-2 Color, font face, font size, and background color.
3 Write codes to create a web page using Paragraph tags such as P tag and BR tag.
4 Write codes to create a web page using Nesting of lists.
5 Write codes to create a web page using Table tags
   a) Create a table of 3 rows and Columns
   b) Having border, border size, border-color
   c) Insert an image in a particular cell.
6 Write codes to create a web page using the Form tag. Example: - Admission Form.
7 Create a JavaScript code to display any message.
8 Create a JavaScript code using Control Statements.
9 Create a JavaScript code using an Arithmetic Operator, Assignment Operator, Comparison Operator, Logical Operator, and String Operator.
10 Create a JavaScript code to display 5 * 1 = 5 5 * 2 = 10. . 5 * 10 = 50 using 'for loop'.
11 Create a JavaScript code using the User Defined Function, which will calculate the area of a circle.
12 Write a JavaScript code to change the Web Page's background color.
13 Write a JavaScript code to display the Factorial of the given number.

CO- PO Mapping:

Semester ___	**Course Name (Course Code:)**										
	POs										
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11
CO1	3										
CO2	3	1	3		3						
CO3	3	3	3		3						
CO4	3	3	3		3						
CO5	3	3	1		3						

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code :

Course / Subject Name : Fundamental of Statistical Methods

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Minor Elective Subject (Any One)

Prerequisite:	Basic mathematical skills, understanding of data representation, and familiarity with fundamental probability concepts.
Rationale:	Statistics and probability are foundational disciplines essential for understanding and interpreting data in various fields such as business, science, economics, and social sciences. This course aims to equip learners with essential statistical tools and concepts necessary for effective decision-making and analysis. By delving into topics such as descriptive statistics, graphical representation of data, measures of central tendency and variability, and probability theory, students will develop the skills to analyze data systematically and draw meaningful conclusions. Understanding these concepts not only enhances quantitative reasoning but also fosters critical thinking by enabling students to assess the reliability and significance of data-driven insights. Furthermore, the exploration of probability distributions, both discrete (e.g., binomial, Poisson) and continuous (e.g., normal, exponential), provides a robust framework for modeling real-world uncertainties and predicting outcomes. This course emphasizes practical applications through examples and exercises, reinforcing the theoretical foundation with hands-on experience. By the end of the course, learners will have gained the proficiency to interpret statistical findings, apply probability principles to decision-making processes, and communicate insights effectively, thereby preparing them for advanced studies or professional roles where statistical and probabilistic knowledge is crucial.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Explain the basics of statistics and construct/interpret frequency distributions of data sets	AN
02	Apply various concepts, techniques, and methods used in Descriptive Statistics in carrying out preliminary Data analytics tasks	AP
03	Analyse and calculate probabilities using various methods(laws)	AN
04	Solve problems using discrete probability distributions	AP
05	Solve problems using continuous probability distributions	AP

Teaching and Examination Scheme:

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code :

Course / Subject Name : Fundamental of Statistical Methods

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	**Introduction to Statistics:** Statistics in Business, Basic Statistical Concepts, Data Measurement **Charts and Graphs:** Frequency Distributions, Graphical depiction of data (one and two variable)	**6**	14%
2	**Descriptive Statistics:** Measure of central tendency – mean, median, quartile, mode (for Group and ungrouped data) Measure of variability – Range, interquartile range, standard deviation, variance, coefficient of variation (for Group and ungrouped data) Measures of shape – kurtosis, skewness, boxplot Measures of association – Pearson's correlation	**8**	20%
3	**Probability:** Introduction to probability Methods of assigning probabilities Structure of probability Marginal, Union, Joint and Conditional probability Addition Laws Multiplication Laws Conditional probability Revision of probabilities: Bayes' Rule	8	20%
4	**Discrete Probability Distributions:** Binomial Distribution Poisson Distribution	10	23%

	Hypergeometric Distribution		
5	**Continuous Probability Distributions:** Uniform Distribution Normal Distribution Exponential Distribution	10	23%
	Total	**42**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**10**	**60**	**20**	**-**	**-**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Business Statistics by Sanjiv Jaggia and Alison Kelly; McGraw Hill Publication
2. Statistics for Management by Richard I. Levin and David S. Rubin; Pearson Publication
3. Statistics for Managers by D. P. Apte; Excel Publication
4. Business Statistics by Gerald Keller and Hitesh Arora; Cengage Publication
5. M. S. Excel: Statistical Tools for Managers by D. P. Apte; Excel Publication
6. Business Statistics by Naval Bajpai; Pearson Publicaiton

Suggested Course Practical List:

No	Title
1	Graphical representation of data.
2	Problems based on measures of central tendency.
3	Problems based on measures of dispersion.
4	Problems based on combined mean and variance and coefficient of variation.
5	Problems based on moments, skewness and kurtosis.
6	Fitting of binomial distributions after computing mean and variance.
7	Application problems based on binomial distribution.
8	Application problems based on Poisson distribution.
9	Application problems based on negative binomial distribution.
10	To find the ordinate for a given area for normal distribution.
11	Application based problems using normal distribution
12	Fitting of normal distribution when parameters are given.
13	Fitting of normal distribution when parameters are not given.

CO- PO Mapping:

Semester 1	Fundamentals of Statistical Methods (10610104)										
	POs										
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	-	-	3	-	-	-	-	-	-
CO2	3	3	-	3	3	-	-	-	-	-	-
CO3	3	2	-	-	2	-	-	-	-	-	-
CO4	3	-	3	-	3	-	-	-	-	-	-
CO5	3	-	3	-	3	-	-	-	-	-	-
	3	**2.33**	**3**	**3**	**2.8**	**-**	**-**	**-**	**-**	**-**	**-**

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code:

Course / Subject Name: Mathematics -1

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Multidisciplinary Course

Prerequisite:	Students must have a basic mathematical understanding of basic algebra, arithmetic, introductory geometry, graphs, and logical reasoning studied up to 12th standard
Rationale:	This course is crucial for an undergraduate program in Computer Applications, as it provides essential mathematical foundations that underpin key concepts in computer science and information technology. Set theory, functions, matrices, and coordinate geometry are integral to understanding and developing algorithms, data structures, and various computational applications. For instance, set theory is fundamental to database management and algorithm design, while functions and their properties are central to programming and data transformations. Matrices are pivotal in areas such as computer graphics, cryptography, and machine learning, and coordinate geometry is vital for rendering graphics and spatial data analysis. By mastering these mathematical concepts, students gain the tools needed for practical applications in algorithm design, database management, computer graphics, and cryptography. This course also prepares students for advanced topics in computer science, such as data structures, machine learning, and software development. Integrating theoretical knowledge with practical applications ensures that students are well-equipped to tackle complex computational problems and innovate in the dynamic field of computer science and information technology.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Demonstrate proficiency in performing and analyzing set operations, applying properties of set operations, and utilizing Venn diagrams to solve practical problems.	AP
02	Define, represent, and analyze various functions, including exponential, logarithmic, and trigonometric functions, using appropriate graphs and properties.	AP
03	Execute matrix arithmetic, determine the properties of determinants, and apply these concepts to solve linear equations using Cramer's rule and matrix inversion methods.	AP

04	Apply coordinate geometry principles to analyze and solve problems involving distances, areas, and equations of lines, including understanding the relationships between parallel and perpendicular lines.	AP

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
4	0	0	4	70	30	-	-	100

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Set Theory:** • Concept of Set Theory • Methods of representation of Set • Types and operations of Set operations (Union, Intersection, Complement of a set, Difference of sets, Symmetric difference, Cartesian product of sets) • Properties of set operations (Commutative, Associative, Distributive, De- Morgan's laws) • Power set and Cardinality of sets. • Venn Diagram • Practical Applications of Set theory	14	25
2.	**Functions:** • Introduction and Definition of Function • Domain, Co-domain, and Range of a function • Graph of a functions • Types of Functions (Linear, Quadratic, Polynomial, Implicit and - Explicit functions and examples related with it) • Exponential and Logarithmic with their properties and related examples, Introduction to Trigonometric functions.	14	25
3.	**Matrix and Determinant:** • Definition of Matrix • Types of Matrices (Square, Row, Column, Zero, Diagonal, Scalar, Identity, Transpose, Symmetric, Skew – symmetric)	14	25

	• Arithmetic operations of Matrices (Addition, Scalar Multiplication, Matrix Multiplication) • Introduction to Determinants • Invertible matrix • Matrix inversion using adjoint matrix method • Derive solution of set of Linear equations for 2 variables using Cramer's – Rule • Row and column operation on Matrix • Rank of Matrix		
4.	**Co-ordinate Geometry:** • Introduction to Co-ordinates • Quadrants and Lines • Distance formula in R^2 (without proof) • Section Formula (without proof) • Area of a triangle (without proof) and related examples • General Equation of a Straight line • Slope and intercepts of a line • Parallel Lines • Perpendicular Lines • Angle between two lines (without proof) and related examples	14	25
	Total	**56**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**20**	**70**	**-**	**-**	**-**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Business Mathematics by D C Sancheti and V K Kapoor, S. Chand and Sons Publication, Publication Year 2011
2. Business Mathematics by J K Singh, 3rd Edition, Himalaya Publication
3. A Textbook of Business Mathematics by Padmalochan Hazarika, 4th Edition, S. Chand and Sons Publication

4. Engineering Mathematics by Anthony Croft, Robert Davison, Martin Hargreaves; 5th Edition; Pearson Publication

(b) Open source software and website:

1. SciLAB is an excellent opensource software for mathematics simulation and solution. It can be downloaded from https://www.scilab.org/

CO- PO Mapping:

Semester ___	Course Name : Mathematics-1											
	POs											
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	-	-	2	-	-	-	-	-
CO2	2	3	3	2	-	-	1	-	-	-	-	-
CO3	2	3	3	3	-	-	2	-	-	-	-	-
CO4	1	3	3	3	-	-	2	-	-	-	-	-

Legend: '3' for high, '2' for medium, '1' for low and '-' for *no correlation of each CO with PO.*

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code:

Course / Subject Name: Office Automation

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Skill Enhancement Courses (SEC)

Prerequisite:	Basic Computer Literacy: Students should be comfortable using a computer, including basic operations such as file management, web browsing, and using common software applications.
Rationale:	In today's rapidly evolving digital landscape, the effective utilization of office automation tools is paramount for increased productivity, streamlined workflows, and enhanced collaboration within organizations. The "Office Automation" course is designed to equip participants with the knowledge and skills necessary to harness the power of open-source office automation tools to optimize office tasks and processes. The "Office Automation" course provides participants a comprehensive understanding of open-source office automation tools and their applications in modern workplaces. By mastering these tools, participants will be better equipped to navigate the digital landscape, optimize office workflows, and drive innovation within their organizations. This course is valuable in personal and professional development, empowering students to thrive in today's digital-first world.

Course Outcome:

After completion of the course, the student will able to:

No	Course Outcomes	RBT Level
01	demonstrate proficiency using open-source office automation tools such as LibreOffice or Apache OpenOffice.	AP
02	automate repetitive office tasks using open-source automation features.	AP
03	demonstrate the ability to collaborate effectively on documents using open-source collaborative features.	AP
04	analyze data and generate reports using open-source spreadsheet and database tools.	AP
05	apply office automation skills to real-world scenarios and projects.	AP

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	

0	0	4	2	0	0	50	50	100

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introduction to Office Automation and Open-Source Tools** • Overview of office automation concepts • Introduction to open-source tools (LibreOffice, Apache OpenOffice) • Hands-on: Installing and getting started with LibreOffice or Apache OpenOffice	4	7
2.	**Word Processing Basics** • Introduction to word processing • Basic formatting and editing in LibreOffice Writer or Apache OpenOffice Writer • Hands-on: Creating, editing, and formatting documents	4	7
3.	**Advanced Word Processing** • Advanced formatting techniques (styles, templates, tables) • Inserting images, graphs, and other objects • Hands-on: Creating complex documents with advanced formatting	4	7
4.	**Spreadsheet Fundamentals** • Introduction to spreadsheets and their uses • Basic formulas and functions in LibreOffice Calc or Apache OpenOffice Calc • Hands-on: Creating and formatting simple spreadsheets	4	7
5.	**Advanced Spreadsheet Functions** • Advanced formulas and functions (IF, VLOOKUP, SUMIF, etc.) • Data analysis and visualization • Hands-on: Performing data analysis and creating charts	4	7
6.	**Presentation Basics** • Introduction to presentations and their importance • Creating slides and basic formatting in LibreOffice Impress or Apache OpenOffice Impress • Hands-on: Designing and delivering simple presentations	4	7
7.	**Advanced Presentation Techniques** • Advanced formatting options (animations, transitions, master slides) • Incorporating multimedia elements (audio, video) • Hands-on: Creating dynamic and engaging presentations	4	7
8.	**Database Management Basics**	4	7

	• Introduction to databases and their uses • Creating and managing databases in LibreOffice Base or similar open-source tools • Hands-on: Designing and populating a simple database		
9.	**Querying and Reporting** • Basic querying techniques • Generating reports and forms • Hands-on: Creating queries and reports from the database	4	7
10.	**Collaboration Tools** • Introduction to collaborative office tools (Google Workspace, Nextcloud) • Real-time collaboration features • Hands-on: Collaborating on documents, spreadsheets, and presentations	4	7
11.	**Document Automation** • Introduction to document automation tools (Mail Merge, Document Templates) • Automating repetitive tasks • Hands-on: Creating mail merge documents and templates	4	7
12.	**Workflow Automation** • Introduction to workflow automation tools (Zapier, IFTTT) • Creating automated workflows for office tasks • Hands-on: Setting up and testing automated workflows	4	7
13.	**Project Management Tools** • Introduction to project management tools (Trello, Asana) • Task management and collaboration features • Hands-on: Managing projects and tasks using project management tools	4	7
14.	**Final Project and Review** • Students work on a final project integrating skills learned throughout the course • Presentation of final projects • Course review and feedback	4	9
	Total	**56**	**100**

Note: In addition to the above 14 sessions, there will be 2 more sessions for internal assessment

Suggested Specification Table with Marks (Theory/Practical):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**10**	**80**	**-**	**-**	**-**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. "LibreOffice 6.4 Writer Guide" by LibreOffice Documentation Team
   (Note: This official guide provides comprehensive coverage of LibreOffice Writer, covering everything from basic to advanced features.)
2. "Using OpenOffice.org: Special Edition" by Solveig Haugland and Floyd Jones
   (Note: This book offers practical guidance on using OpenOffice.org (now Apache OpenOffice), covering Writer, Calc, Impress, and Base.)

(b) Open source software and website:

1. **LibreOffice:** Website: https://www.libreoffice.org/download/
   LibreOffice is a powerful open-source office suite that includes Writer (word processing), Calc (spreadsheets), Impress (presentations), Base (databases), and more.
2. **Apache OpenOffice:** Website: https://www.openoffice.org/download/
   Apache OpenOffice is another popular open-source office suite, providing similar functionalities to LibreOffice, including Writer, Calc, Impress, Base, and more.
3. For LibreOffice and Apache OpenOffice, you can refer to the Spoken Tutorial by IIT Bombay: https://spoken-tutorial.org/
   (Note: These tutorials cover various topics, from basic to advanced features, and are designed to help users learn how to use LibreOffice and Apache OpenOffice effectively. You can browse the tutorials and choose the ones that match your learning objectives and skill level.)

Suggested Course Practical List: As given in course content, 14 sessions

List of Laboratory/Learning Resources Required:

1. **Computers:**
   - Desktop computers or laptops with sufficient hardware specifications to run office automation software smoothly.
2. **Operating Systems:**
   - Installations of operating systems compatible with the chosen open-source office suite (e.g., Windows, macOS, or Linux).
3. **Office Software:**
   - Install the open-source Office Suite software such as LibreOffice or Apache OpenOffice on each computer.
4. **Internet Access:**
   - Reliable internet connectivity for accessing online resources, downloading software updates, and facilitating collaborative activities.
5. **Projectors or Screens:**
   - Projectors or large screens for presenting demonstrations and tutorials to the class.
6. **Interactive Whiteboard or Smartboard:**
   - Interactive whiteboards or smartboards for interactive teaching and collaborative activities.
7. **Collaborative Tools:**
   - Collaboration tools such as Google Workspace or Nextcloud for facilitating real-time collaboration on documents and projects.

Suggested Project List:

Students should work on projects such as –

1. **Document Template Library:**
   - Create a library of document templates for various purposes (e.g., business letters, resumes, meeting agendas) using LibreOffice Writer or Apache OpenOffice Writer.
2. **Budget Tracker Spreadsheet:**
   - Develop a budget tracker spreadsheet using LibreOffice Calc or Apache OpenOffice Calc to track income, expenses, and savings over time, with automated calculations and visualizations.
3. **Interactive Presentation:**
   - Design an interactive presentation using LibreOffice Impress or Apache OpenOffice Impress, incorporating multimedia elements, hyperlinks, and interactive quizzes or polls.

4. **Database Management System:**
   - Create a simple database management system using LibreOffice Base or similar open-source tools to store and manage information such as inventory, customer records, or student data.
5. **Mail Merge Automation:**
   - Implement a mail merge automation system using LibreOffice Writer or Apache OpenOffice Writer to generate personalized letters or emails for a mailing list from a database of contacts.
6. **Project Management Dashboard:**
   - Develop a project management dashboard using LibreOffice Calc or Apache OpenOffice Calc to track project tasks, timelines, milestones, and resource allocation.
7. **Data Analysis Report:**
   - Analyze a dataset using LibreOffice Calc or Apache OpenOffice Calc and create a comprehensive data analysis report with descriptive statistics, charts, and insights.
8. **Collaborative Document Editing:**
   - Collaborate with classmates to create a collaborative document (e.g., a group project report or presentation) using real-time collaboration features in LibreOffice Writer, Calc, or Impress.
9. **Workflow Automation Tool:**
   - Develop a workflow automation tool using open-source automation platforms like Zapier or IFTTT to streamline common office tasks and processes (e.g., email notifications, file backups).
10. **Inventory Management System:**
    - Design an inventory management system using LibreOffice Base or similar open-source tools to track inventory levels, reorder quantities, and supplier information for a small business or organization.
11. **Document Version Control System:**
    - Create a document version control system using LibreOffice or Apache OpenOffice, allowing users to track changes, compare revisions, and revert to previous versions of documents.
12. **Interactive Form Generator:**
    - Design an interactive form generator using LibreOffice Writer or Apache OpenOffice Writer to create customizable forms (e.g., surveys, feedback forms) with fillable fields, checkboxes, and dropdown menus.

Suggested Activities for Students:

Some hands-on activities that participants can engage in to reinforce their learning and practical skills in office automation using open-source tools:

1. **Formatting Challenge:**

- Participants are given a document with inconsistent formatting and are tasked with standardizing the formatting (e.g., fonts, styles, margins) using LibreOffice Writer or Apache OpenOffice Writer.

2. **Spreadsheet Formulas Practice:**
   - Participants work on spreadsheet exercises involving various formulas and functions (e.g., SUM, IF, VLOOKUP) in LibreOffice Calc or Apache OpenOffice Calc to perform calculations and data analysis tasks.
3. **Presentation Design Workshop:**
   - Participants collaborate to design and deliver a presentation on a given topic using LibreOffice Impress or Apache OpenOffice Impress, focusing on effective slide design, content organization, and visual aids.
4. **Database Query Challenge:**
   - Participants practice writing SQL queries to retrieve specific information from a database created in LibreOffice Base or similar open-source tools, such as querying customer information or product inventory data.
5. **Collaborative Document Editing Session:**
   - Participants pair up or work in small groups to collaboratively edit a document using real-time collaboration features in LibreOffice Writer, Calc, or Impress, practicing simultaneous editing, commenting, and version tracking.
6. **Mail Merge Exercise:**
   - Participants perform a mail merge exercise using LibreOffice Writer or Apache OpenOffice Writer, merging data from a spreadsheet or database into personalized letters or emails for a mailing list.
7. **Data Analysis Challenge:**
   - Participants analyze a dataset provided by the instructor using LibreOffice Calc or Apache OpenOffice Calc, applying data analysis techniques such as sorting, filtering, and creating pivot tables to extract insights and generate reports.
8. **Workflow Automation Demo:**
   - The instructor demonstrates how to set up and automate a common office task or process using open-source automation platforms like Zapier or IFTTT, with participants following along and creating their own automated workflows.
9. **Project Management Simulation:**
   - Participants simulate managing a project using LibreOffice Calc or Apache OpenOffice Calc, creating project timelines, assigning tasks, tracking progress, and generating reports to monitor project performance.
10. **Document Version Control Exercise:**
    - Participants practice using document version control features in LibreOffice or Apache OpenOffice to track changes, compare revisions, and collaborate on a shared document, ensuring document integrity and consistency.
11. **Interactive Form Creation Workshop:**
    - Participants design interactive forms (e.g., surveys, feedback forms) using LibreOffice Writer or Apache OpenOffice Writer, incorporating fillable fields, checkboxes, and dropdown menus to create user-friendly forms.
12. **Troubleshooting Challenge:**

- Participants troubleshoot common issues or errors encountered while using open-source office tools, using online resources, documentation, and peer collaboration to diagnose and resolve problems.

These activities provide hands-on opportunities for participants to practice using open-source office automation tools in various scenarios, reinforcing their learning and building their confidence in applying these tools effectively in real-world situations.

CO- PO Mapping:

Semester 1	**Course Name**										
	POs										
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11
CO1	-	-	-	-	3	-	3	-	1	-	-
CO2	-	-	-	-	3	1	3	-	1	-	1
CO3	-	-	-	-	3	1	3	-	1	-	1
CO4	-	-	-	-	3	2	3	-	2	-	2
CO5	-	-	-	-	3	2	3	-	2	-	2

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications

Level: Under Graduate

Course / Subject Code:

Course / Subject Name: Communication Skills

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Ability Enhancement Courses (AEC)

Prerequisite:	Motivation to learn
Rationale:	In today's interconnected world, effective communication skills are vital for success in both personal and professional spheres. Whether it's conveying ideas, building relationships, or resolving conflicts, communicating clearly, confidently, and empathetically is paramount. Communication Skills are considered one of the most important skills in the 21st century. Therefore, a communication skills course is beneficial and essential in equipping individuals with the tools they need to navigate various social and professional situations.

Course Outcome:

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

No	Course Outcomes	RBT Level
01	Communicate effectively orally and in writing	R, U
02	Develop skills necessary for facing job interviews and group communication	R, U, A
03	Write letters, emails, and reports	U, A
04	Understand the effectiveness of technology-based communication	R, U
05	Understand the basics of vocabulary and English grammar	R, U

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
2	0	0	2	70	30	-	-	100

Course Content:

Unit No.	Content	No. of Hours	% of Weightage

1.	**Basics of Technical Communication** Introduction to the Basics of Technical Communication, Objectives and Characteristics of Technical Communication, Process of Communication, Levels of Communication, Flow of Communication, Communication Networks, Visual Aids in Technical Communication	4	10
2.	**Effective Presentation strategies, Interviews, and Group Communication** **Effective Presentation strategies:** Introduction, Planning, Outlining and Structuring, Nuances of Delivery, Controlling Nervousness and Stage Fright, Visual Aids in Presentations **Interviews:** Introduction to Interviews, Objectives of Interviews, Types of Interviews, Job Interviews, Media Interviews, Press Conferences **Group Communications:** Introduction to Group Communication, Forms of Group Communication, Use of Body Language, Discussions, Group Discussions, Organizational GD, GD as Part of Selection Process, Meetings, Conferences, Symposia and Seminars, Negotiations	8	30
3.	**Letters, Memos, Emails, Reports** **Letters, Memos, Emails:** Introduction to Letters, Memos and Emails, Letter Writing, Business Letters, Cover Letters, Resumes, Memos, Emails, Introduction to Reports, Characteristics of a Report, Categories of Reports, Formats **Reports:** Prewriting, Structure of Reports, Types of Reports, Writing the Report, Structure of software project report	8	30
4.	**Introduction to Modern Communication Media:** Modern Communication Media, Technology-Based Communication Tools, Positive Impact of Technology-enabled Communication, Negative Impact of Technology-enabled Communication, Selection of Appropriate Technology, Effectiveness in Technology-based Communication	4	15
5.	**Vocabulary:** **Introduction:** A Brief History of Words, Using the Dictionary and Thesaurus, Changing Words from One Form to Another **Word Formation:** Prefixes and Suffixes, Synonyms and Antonyms, Idioms, Confusable, One-Word Substitutes, Homonyms, Homophones, Eponyms, Phrasal Verbs, Common Errors in English	4	15
	Total	**28**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
50	**50**	**-**	**-**	**-**	**-**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Meenakshi Raman & Sangeeta Sharma, "Technical Communication–Principles and Practice" 3rd Edition, Oxford University Press, 20155.
2. Herta A Murphy, Herbert W. Hilderbrandt, Jane P Thomas, "Effective Business Communication" 7th Edition, Tata McGraw Hill Publication
3. Meenakshi Raman & Prakash Singh, "Business Communication" Oxford University Press
4. Aruna Koneru, "Professional Communication" McGraw-Hill Publication
5. C S Raydu, "Communication" Himalaya Publishing House
6. Hedwig Lewis, "Body Language", Response Books
7. Ashraf Rizvi, "Effective Technical Communication" TMGH Publication
8. Andrea J. Rutherford, "Basic Communication Skills for Technology" Pearson Education
9. LeenaSen, "Communication Skills" PHI
10. Wren &Martin, "High School English Grammar and Composition"……

Suggested Activities for Students:

- Group Discussion
- Mock Interviews
- Job Application &Resume Building
- Report Writing & Memo Writing

CO- PO Mapping:

Semester 1	**Communication Skills (10610107)**										
	POs										
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	2	-	3	-	-
CO2	-	-	-	-	-	-	2	-	3	-	-
CO3	-	-	-	-	-	-	2	-	3	-	-
CO4	-	-	-	-	-	-	2	-	3	-	-
CO5	-	-	-	-	-	-	2	-	3	-	-

Legend: '3' for high, '2' for medium, '1' for low and '-' for no correlation of each CO with PO.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Computer Applications
Level: Under Graduate
Course / Subject Code:
Course / Subject Name: Indian Knowledge System

w. e. f. Academic Year:	June-2024
Semester:	1
Category of the Course:	Indian Knowledge System (IKS)

Prerequisite:	Motivation to learn and explore great Indian heritage
Rationale:	INDIAN civilization has permanently attached great value to knowledge. In Bhagavad Gita, Shree Krishna says – "**न हि ज्ञानेन सदृशं पवित्रमिह विद्यते।**" - Indeed, there is nothing purifying here comparable to Knowledge. The Indian Knowledge System talks about two types of knowledge (**विध्या**), one **अपराविध्या** (worldly knowledge) and **पराविध्या/ब्रह्मविध्या** (knowledge which liberate). However, it is a common perception that the body of knowledge represented in our Indian Scriptures only relates to some ritual practices. On the contrary, there is an amazingly large body of intellectual texts, the world's largest collection of manuscripts, and its attested tradition of texts, thinkers, and schools in so many domains of knowledge. It is an exciting and fascinating aspect of knowledge in India that it prevails in diverse ways and is expressed at varied levels. In many areas such as Medicine, Mathematics, Science and Technology, Psychology, Philosophy, Agriculture, Grammar, Language, Dance, Music, and Astrology, to name just a few, there is wide and extensive knowledge both at the level of the classical texts and the folk traditions. They are often referred to as "Shastra" and "Lok Parampara" respectively. This course aims to introduce this great tradition of knowledge to BCA students. This module will introduce scientific and technological aspects of the great Indian Knowledge System.

Course Outcome:

After completion of the course, the student will able to:

No	Course Outcomes	RBT Level
01	Explain about various texts and traditions of the Indian Knowledge System.	U
02	Explain the scientific aspects of Sanskrit and its Grammar.	U
03	Explain Indian contribution to mathematics, science, technology, philosophy, health, and psychology.	U

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
2	0	0	2	70	30	-	-	100

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Introduction to IKS	2	5
2.	The Vedic Corpus	2	5
3.	Indian Philosophical System	3	10
4.	Scientific Foundation in Linguistics	3	10
5.	Indian Number System and Units of Measurement	3	10
6.	Knowledge: Framework and Classification	3	10
7	Indian Mathematics: Vedic Mathematics and other ancient mathematical work	8	40
8	Astronomy	2	5
9	Health, Wellness, and Psychology	2	5
	Total	28	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
50	50	-	-	-	-

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Introduction to Indian Knowledge System: Concepts and Applications by B. Mahadevan, Vinayak Rajat Bhat, and Nagendra Pavana R.N.; Publisher: Prentice Hall India
2. Set of five books published by School of IKS (**धरोहर**),

CO- PO Mapping:

Semester 1	Indian Knowledge System (10610108)										
	POs										
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	2	-	-	-	1
CO2	2	-	-	-	-	-	2	-	3	-	1
CO3	-	-	-	-	-	-	2	-	-	3	1

GTU *Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

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