Course: B.Sc. (IT) **Semester:** 1

Prerequisite: Basic approach of problem solving methods

Rationale : The objective of this course is to familiarize students with concepts of fundamentals of information technology along with developing the logic for solving a given problem using the procedure oriented language C for construction of code.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	0	0	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Overview of C**History,Algorithmandflowchart,StructureofC ElementsofC: Characterset, CTokens, Keywords Identifiers, Variables, Constant DataTypes, Comments CProgramming Applications and Importance, Operators: Whatisoperator?, Typesofoperator. Built-inOperators: Input/outputoperators,Conceptofheaderfiles.	13	6
2	**Pre-processors, Storage Classes** Introduction,Differentpre-processors:#include,#define•Importance. Storage Classes: Automatic, External, Static and Register Variables,Decision Making / Control Statements: If, If Else, Nested if, Switch,Loopingstatements:For,Nestedfor,While,Dowhile, Otherstatements:Break,Continue,Goto,exit.	13	6
3	**Array** Declaration,Initialization,Accessofonedimensional&twodimensionalarrays,Programs using one and two dimensional arrays: Adding, multiplying, Transposingmatrices:sortingandsearchingarrays.	16	7
4	**Function, Structure and Union** Definition, Need of function, Types of function, Built-in and User define Functions, User define Functions,Categories of functions: With/without arguments, With/without return values, Recursion, Functions with arrays, Thescope, visibility&lifetimeofvariables. Structuredefinition,Givingvaluestomembers,Structureinitialization,Comparison of structure variables, Arrays of structures, Arrays within structures, Structures within structures, Structures & functions, UnionsSizeofstructures.	22	10
5	**Pointer and Working with Strings** Understanding pointers, Accessing the address of a variable, Declaring & initializing pointers, Accessing a variablethrough its pointer,Pointer expression, Pointer increments & scale factor,Pointers & arrays,Passing pointervariablesasfunctionarguments. Declaring & initializing string variables, Reading strings from terminal, writing strings to screen, Arithmeticoperationsoncharacters,puttingstringstogether,comparisonoftwostrings,stringhandlingfunctions,tableofstrings.	18	8
6	**Files: Introduction, File operations** i. Opening a File, ii. Reading a File iii. Closing a File Text modes I/O operations on files Binary modes CommandlineargumentsFilefunctionfprintf()ii.fscanf()iii.getc()iv.putc()v.fgetc()vi.fputc()vii.fseek()viii.feof()	18	8
	Total	100	45

Course Outcome

After Learning the Course the students shall be able to:

1. Interpret syntax and semantics of c programming language.
2. Develop, execute and debug programs.
3. Display output on the console.
4. Explain the differences between syntax errors, runtime errors, and logic errors Printed

Course: B.Sc. (IT) **Semester:** 1

Prerequisite: Basic approach of problem solving methods

Rationale : The objective of this course is to familiarize students with concepts of fundamentals of information technology along with developing the logic for solving a given problem using the procedure oriented language C for construction of code.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	20	-	30	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Outcome

After Learning the Course the students shall be able to:
1. To demonstrate given problem through flow chart and algorithm.
2. To develop, basic understating of c programming language structure.
3. To create problem solving codes using c constructs.
4. To enhance logical and analytical thinking using c language concepts.
5. To apply array, pointer and structure concepts in programming.
6. To design and develop programs for file handling.

List of Practical	
1.	**Write a Following Programs:** a. Find Add Two Integers b. Find Floating Point Numbers c. Find ASCII Value of a Character d. Find Quotient and Remainder
2.	**Write a Following Programs:** a. Swap Two Numbers b. Find Area of Circle c. Find Simple interest d. Find a Number is Even or Odd
3.	**Write a Following Programs:** a. Find Gross salary of an employee b. Sum of 5 subjects and find total and percentage c. Find Roots of a Quadratic equation
4.	**Write a Following Programs:** a. Find Sum of Natural Number b. Find Factorial of a Number
5.	**Write a Following Programs:** a. Print Fibonacci Series b. Find GCD of two Numbers c. Find LCM of two Numbers
6.	**Write a Following Programs:** a. Menu-driven program using Switch case to create calculator b. Write menu-driven program using Switch case to calculate the following Area of circle Area of square Area of sphere.
7.	**Write a Following Programs:** a. Check Whether a Number is Palindrome or Not b. Find Prime Numbers Between Two Intervals c. Check Number is perfect d. Create Pyramid and Structure
8.	**Write a Following Programs of Array:** a. Calculate sum of elements of 1D array using function b. Find factorial of a number using function c. Add two 2D arrays using function d. Print and display records of employee details using array of structure
9.	**Write a C program to create a structure student, containing name and roll. Ask user the name and roll of a student in main function. Pass this structure to a function and display the information in that function.**
10.	**Write a Following Programs of Pointers:** a. Access addresses of different types of variable using pointer. (Include all type ofvariables) b. Swap two integers using pointers c. Compute area and perimeter of rectangle using pointers as parameter to function d. Store values of array and display it using pointers
11.	**WAP to display marks of 3 subjects for 3 students and then calculate total for subject wise and then make grand total.**
12.	**WAP to display Id, name and percentage of a student using structure and function passing by value.**
13.	**Write a C program to read string from terminal. Using scanf() , gets to read a string.**

Course: B.Sc. (IT) **Semester:** 1

Prerequisite: Knowledge about basic electronics

Rationale : The rationale behind digital electronics lies in its ability to process and transmit information in the form of discrete signals, typically represented as binary digits (0s and 1s).

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	0	0	0	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Number System** Introduction– Introduction to Decimal, Octal, Binary and Hexadecimal number systems and their interconversions. ,Binary Arithmetic: Binary addition, Binary Subtraction using 1's complement and 2's complement., classification of codes- weighted codes, binary coded decimal number	15	9
2	**Digital codes** Non-weighted codes, Excess – 3 code, Gray code, Alphanumeric codes – ASCII Code, BCD, Excess -3, Gray code, alphanumeric codes (ASCII, EBCDIC, UNICODE), Error detecting and error correcting codes Gray to Binary and Binary to Gray conversion	10	8
3	**Logic gates**Introduction- Introduction to Basic gates (AND, OR, NOT gates), Universal gates (NAND and NOR gates), other gates (XOR, XNOR gates).	10	8
4	**Boolean Algebra** Boolean identities, De Morgan Laws , Minterm, Maxterm and Karnaugh Maps-Introduction ,Minterm sum of Minterm Form and Product of Maxterm ,Reduction technique using Karnaugh Map-2/3/4 variable K-maps, Grouping of variables in K-maps for Product of sum Form, Minimize Boolean Expression using K-map and Obtain K-map Form Boolean Expression. Digital designing using K Map for: Gray to Binary and Binary to Gray conversion.	20	10
5	**Sequential Logic** Latch, Flip Flops, difference between latch and flip flop, Triggering of Flip flops, Analysis of clocked sequential circuits, State reduction & assignment, Flip Flop Excitation tables, Design of Sequential circuits, Design of counters, Design using state equations.	15	10
6	**Combinational Circuits** Introduction- Multi-input,Multi-output combinational Circuits, code converters Design and Implementations. , Arithmetic Circuits - Introduction, Adder, Half adder and full adder, Multiplier, Comparator, Applications of Ex-OR gates as parity checker and generator , Multiplexer, Demultiplexer ,ALU, Encoders and Decoder -Introduction Multiplexer(2:1,4:1,) Demultiplexer (1:2,1:4),ALU ,Encoders - Decimal/BCD to binary, 3X4 matrix keyboard encoder, priority encoder, Decoder- BCD to seven segment decoder, Digital comparator	30	15
	Total	100	60

Reference Books	
1.	**Digital Electronics and Logic Design** By N. G. Palan , Technova
2.	**Make Electronics** By Charles Platt, O'Reilly
3.	**Modern Digital Electronics** By R. P. Jain | Tata McGraw-Hill Education
4.	**Digital Principles and Applications** By Anil K. Maini, Wiley

Course Outcome

After Learning the Course the students shall be able to:

After learning the course, the students will be able to:
1. Explain the fundamentals of digital electronics, including binary number systems, Boolean algebra, and logic gates.
2. Analyze and design combinational and sequential logic circuits.
3. Draw the digital components like logic gates, flip-flops, counters, registers, and memory devices.
4. Develop problem-solving skills related to digital circuit design, troubleshooting, and debugging.
5. Describe the combinational circuits, like Adder, Half adder, full adder, Decoders encoders, etc.

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Subject Syllabus

00019301AE02 - Basic Hindi-I

Course: BCA

Semester: 1

Prerequisite: Basic communication skills in Hindi

Rationale : Basic comprehensive skills Hindi

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**□□□□□ □□□□□□□□ (Hindi Alphabets)** □□□□□ □□□□□□□□□ (Hindi Alphabets) Relate with English Alphabets □□□□ (vowel) □□□□□□ (consonant)	13	4
2	**□□□□□ □□□□□□□ (Hindi Phonetics)** □□□□□ □□□□□□□ (Hindi Phonetics) □□□□□□□ □□□□□ (Joint words) kha, sva etc.	13	4
3	**□□□□ □□□□□□□ (Word Formation)**□□/□□□ □□□□□ □□ □□□□ □□□□□□□ (two/three letter word formation)	13	4
4	**□□□□□ □□□□□□□ (Hindi Grammar)□□□□□ □□□□□□□ (Hindi Grammar)** □□□□□□ (Noun) □□□□□□□□ (Pronoun) □□□□□□(Verb) □□□□□□ □□□□□□ (Adverb) □□□□□□ (Adjective)	34	10
5	**□□□□□ □□□□□□□□ (Hindi Vocabulary)□□□□□ □□□□□□□□ (Hindi Vocabulary)** □□□□□□ (Numbers) (1 to 50) □□□□□□ □□ □□□ (Days of the week) □□□ (Colors)	27	8
	Total	100	30

Course Outcome

After Learning the Course the students shall be able to:

After Learning the course, the students shall be able to:

1. Read and write Hindi alphabets
2. Understand the different sounds on Hindi Phonetics.
3. To make two to three letter words in Hindi.
4. To make short/basic sentences in Hindi.
5. To understand and use daily words in Hindi.

Parul® University

Subject Syllabus

00019301AE03 - Basic Gujarati-I

Course: BCA

Semester: 1

Prerequisite: Basic communication skills in Gujarati

Rationale : Basic comprehensive skills in Gujarati

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**□□□□□□□ □□□□□□□□ (Gujarati Alphabets)** □□□□□□□ □□□□□□□□ (Gujarati Alphabets) Relate with English Alphabets □□□□ (vowel) □□□□□□ (consonant)	13	4
2	**□□□□□□□□□ (Gujarati Phonetics)** □□□□□□□□□ (Gujarati Phonetics) □□□□□□□ □□□□□ (Joint words) kha, sva etc.	13	4
3	**□□□□ □□□□ (Word Formation)**□□/□□□□ □□□□□□□ □□□□ □□□□ (two/three letter word formation)	13	4
4	**□□□□□□□ □□□□□□□ (Gujarati Grammar)□□□□□□□ □□□□□□□ (Gujarati Grammar)** □□□□□□ (Noun) □□□□□□□ (Pronoun) □□□□□□□□ (Verb) □□□□□□□□□□□□ (adverb) □□□□□□ (adjective)	34	10
5	**□□□□□□□ □□□□□□□□ (Gujarati Vocabulary)□□□□□□□ □□□□□□□□ (Gujarati Vocabulary)** □□□□□□□ (Numbers) (1 to 50) □□□□□□□□□□ □□□□□ (Days of the week) □□□□ (Colors)	27	8
	Total	100	30

Course Outcome

After Learning the Course the students shall be able to:

After Learning the course, the students shall be able to:

1. Read and write Gujarati alphabets
2. Understand the different sounds on Gujarati Phonetics.
3. To make two to three letter words in Gujarati.
4. To make short/basic sentences in Gujarati.
5. To understand and use daily words in Gujarati.

Course: BCA **Semester:** 1

Prerequisite: Knowledge of English Language till 12th standard.

Rationale : This course builds basic communication competence in grammar, reading, writing, and speaking for academic and professional contexts.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
1	-	2	-	2	-	-	-	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Time Sense (Using Timeline) & Introduction to Phonetics** Concept of time sense and tenses Present, past, and future tense forms Use of timelines to explain tenses Introduction to Phonetics and IPA English Speech Sounds	13	2
2	**Articles, Determiners & Prepositions** Types and rules of articles and determiners Classification of prepositions Usage rules and exceptions	13	2
3	**Subject–Verb Agreement** Basic rules of subject–verb agreement Agreement with special subjects Common errors in agreement	13	2
4	**Active & Passive Voice** Concept and structure of voice Rules for active–passive conversion Voice usage across tenses	13	2
5	**Meetings & Greetings** Types of greetings and meetings Language used in meetings Meeting etiquette	7	1
6	**Just A Minute (JAM)** Purpose and structure of JAM Elements of effective speaking Common speaking barriers	7	1
7	**Story Writing Using Hints** Understanding given hints Story structure and sequencing Use of tenses and connectors	13	2
8	**Notice, Memo & Circular** Purpose and format Language and tone	7	1
9	**Paragraph Development** Elements of a paragraph	7	1

	Unity and coherence Types of paragraphs		
10	**Reading Comprehension (Level of Difficulty – Basic)** Types of reading skills Understanding main ideas and details Vocabulary in context	**7**	**1**
	Total	**100**	**15**

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyze	Create
Weightage	13	13	4	7	13

Reference Books

1.	**English Grammar in Use. Cambridge University Press.** By Murphy, R.
2.	**Effective Technical Communication. McGraw Hill (India)/Tata McGraw-Hill.** By Rizvi, M. A.
3.	**Business Communication. PHI Learning,** By Kaul, Asha.
4.	**Developing Communication Skills. Macmillan India,** By Krishna, Mohan, and Meera Banerji.
5.	**The Art of Public Speaking. McGraw-Hill Education,** By Lucas, Stephen E.
6.	**Objective General English. S. Chand,** By Aggarwal, R. S.
7.	**Business Communication Today. Pearson India,** By Bovee, Courtland L., and John V. Thill.

Course Outcomes

At the end of this course Students Will be able to:	
1	Remember the rules of time sense using timelines, phonetics, articles, determiners, prepositions, and subject–verb agreement for accurate grammatical usage.
2	Understand the structure and usage of active and passive voice, paragraph organization, and the formats of notices, memos, and circulars.
3	Analyse grammatical rules and reading strategies to construct meaningful paragraphs and respond to basic reading comprehension passages.
4	Apply oral communication strategies effectively during Just a Minute (JAM) activities, meetings, and greeting situations using appropriate language and etiquette.
5	Create short stories using given hints by organizing ideas logically, creatively, and coherently.

Course Outcome

After Learning the Course the students shall be able to:

CLO 1 Remember the rules of time sense using timelines, phonetics, articles, determiners, prepositions, and subject–verb agreement for accurate grammatical usage.

CLO 2 Understand the structure and usage of active and passive voice, paragraph organization, and the formats of notices, memos, and circulars.

CLO 3 Analyse grammatical rules and reading strategies to construct meaningful paragraphs and respond to basic reading comprehension passages.

CLO 4 Apply oral communication strategies effectively during Just a Minute (JAM) activities, meetings, and greeting situations using appropriate language and etiquette.

CLO 5 Create short stories using given hints by organizing ideas logically, creatively, and coherently.

List of Practical

1.	**Time Sense (Using Timeline) & Introduction to Phonetics** • Timeline-based sentence construction activity • Tense identification exercise • Error correction task • Pronunciation Practice
2.	**Articles, Determiners & Prepositions** • Types and rules of articles and determiners • Classification of prepositions • Usage rules and exceptions
3.	**Subject–Verb Agreement** • Basic rules of subject–verb agreement • Agreement with special subjects • Common errors in agreement
4.	**Active & Passive Voice** • Concept and structure of voice • Rules for active–passive conversion • Voice usage across tenses
5.	**Meetings & Greetings** • Types of greetings and meetings • Language used in meetings • Meeting etiquette
6.	**Just A Minute (JAM)** • Purpose and structure of JAM • Elements of effective speaking • Common speaking barriers
7.	**Story Writing Using Hints** • Understanding given hints • Story structure and sequencing • Use of tenses and connectors
8.	**Notice, Memo & Circular** • Purpose and format • Language and tone
9.	**Paragraph Development** • Elements of a paragraph • Unity and coherence • Types of paragraphs
10.	**Reading Comprehension (Level of Difficulty – Basic)** • Types of reading skills • Understanding main ideas and details • Vocabulary in context

Course: BCA **Semester:** 1

Prerequisite: Basic knowledge of Artificial Intelligence and Machine learning

Rationale : To review and strengthen important mathematical concepts required for AI and ML.Introduce the concept of learning patterns from data and develop a strong theoretical foundation for understanding state-of-the-art machine learning algorithms.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	-	-	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to AI_ML** Defining Artificial Intelligence, Defining AI techniques, Using Predicate Logic and Representing Knowledge as Rules, Representing simple facts in logic, Computable functions and predicates, Procedural vs Declarative knowledge, Logic Programming, Mathematical foundations: Matrix Theory and Statistics for Machine Learning.	25	12
2	**Types of Machine Learning**Idea of Machines learning from data, Classification of problem –Regression and Classification, Supervised and Unsupervised learning, reinforcement learning	20	9
3	**Linear Regression**Model representation for single variable, Single variable Cost Function, Gradient Decent for Linear Regression, Gradient Decent in practice.	20	9
4	**Logistic Regression** Classification, Hypothesis Representation, Decision Boundary, Cost function, Advanced Optimization, Multi-classification (One vs All), Problem of Overfitting.	20	8
5	**Clustering**Discussion on clustering algorithms and use-cases cantered around clustering and classification	15	7
	Total	100	45

Reference Books

1.	**Artificial Intelligence, Cengage Learning,** By Saroj Kaushik, | 1st, Pub. Year 2011
2.	**“Practical Workbook Artificial Intelligence and Soft Computing for beginners** By Anindita Das Bhattacharjee | Shroff Publisher-X team Publisher
3.	**“Python Machine Learning by Example”** By Yuxi (Hayden) Liu | Packet Publishing Limited, Pub. Year 2017
4.	**Machine Learning, McGraw Hill,2017** By Tom Mitchell, Pub. Year 2017
5.	**Christopher M. Bishop, —Pattern Recognition and Machine Learning‖, Springer 2011 Edition.**
6.	**The Elements of Statistical Learning,2011** By T. Hastie, R. Tibshirani, J. Friedman | 2nd, Pub. Year 2011

Course Outcome

After Learning the Course the students shall be able to:

1. Explain the fundamental concepts and applications of artificial intelligence and machine learning.
2. Analyze various machine learning techniques and their suitability for different problems.
3. Apply linear regression techniques to analyze and predict relationships between variables.
4. Evaluate the effectiveness of logistic regression and clustering methods in solving classification and grouping problems, respectively.

Course: BCA **Semester:** 1

Prerequisite: Basic knowledge of Computer and IT

Rationale : To review and strengthen important mathematical concepts required for AI & ML. Introduce the concept of learning patterns from data and develop a strong theoretical foundation for understanding state of the art Machine Learning algorithms.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	20	-	30	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Outcome

After Learning the Course the students shall be able to:

After learning the course, the students shall be able to:
1. Develop and implement basic programming logic using Python for data analysis and problem solving.
2. Apply and demonstrate machine learning techniques such as linear regression, gradient descent, and logistic regression for predictive modeling.
3. Implement clustering algorithms and analyze patterns in real-time datasets.
4. Simulate and analyze various machine learning components and models for practical applications.

List of Practical

1.	**Implementation of Basic Program in Python- I** 1. WAP VOLUME OF CUBOID 2. WAP VOLUME OF CUBE 3. WAP AREA OF RECTANGLE 4. WAP AREA OF CIRCLE 5. simple python program to convert celsius to fahrenheit
2.	**Implementation of Basic Program in Python- II (operator uses)** 1. Arithmetic Operators. 2. Comparison (Relational) Operators. 3. Assignment Operators. 4. Logical Operators. 5. Bitwise Operators. 6. Membership Operators. 7. Identity Operators.
3.	**Implementation of Basic Program in Python- III (conditional Operation)** 1. if statement. 2. if-else statement. 3. if-elif-else ladder.
4.	**Implementation of Basic Program in Python- IV (Loop Operation).** 1. while loop, 2. for loop, 3. nested loops.
5.	**Implementation of Function Program in Python.**
6.	**Implementation of Math functionsin Python**
7.	**Implementation of Adding new functions, Definitions and uses, Parameters and arguments, Variables and parameters are local**
8.	**Implementation of Fruitful functions and void functions, Recursion Function.**
9.	**Implementation of List operations, List slices, List methods, Map, Filter and reduce, deleting elements, List arguments.**
10.	**Implementation of Python Tuples, Accessing values in Tuples, update and delete tuples Basic tuples operation**
11.	**Implementation of Python to create and accessing values in a set, set Methods, Frozenset**
12.	**Implementation of Python to perform Opening, closing and read/write operations in file.**
13.	**Implement matplotlib operation**

Course: BCA **Semester:** 1

Prerequisite: Basic Cyber Security And Forensics

Rationale : The objective of this course is to Aware Students About Cyber Security, Advantages Of Cyber Security And To Gain The Knowledge In This Field.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction To Basic Networking Fundamentals**In This Chapter Students Will Learn The Basics Of Networking, Like What Is Networking, Ip Address, Mac Address, Tcp Ip Model & Udp Model, Optical Fibers, ISP.	16	10
2	**Introduction To Basic Cyber Security Fundamentals**The Chapter Will Cover What Is Cyber Security, Advantages Of Cyber Security, How To Make A Career In Cyber Security, Different Cyber Terms Like Hacking, Penetration Testing, Forensics, Cyber Security Analyst, Cloning, Etc.	16	10
3	**Cyber Crimes (i)**This Chapter Will Introduce To Different Types Of Cyber Crimes Around The World, And How To Be Safe In That.	20	11
4	**OSINT Basics**This Chapter Will Show Students The Basic Of OSINT Along Side With The Real Time Use Of It. Also Will Lead To Forensics Investigation Knowledge For The Learners.	25	15
5	**Cyber Security :- The Future**This Will Explain Students Why Cyber Security Is Going To Be A Revolutionary Field In The Future, Along Side How To Make A Proper Career In Cyber Security With Field Guidance.	23	14
	Total	100	60

Reference Books

1.	**Computer Networks (TextBook)** By Andrew Tanenbaum | Pearson Education | 5th Edition
2.	**Introduction to Cyber Security: Guide to the world Cyber Security (TextBook)** By Anand Shinde | Notion Press | 1st, Pub. Year 2021
3.	**The Hacker Playbook 2: Practical Guide to Penetration Testing** By Peter Kim | Createspace Independent Pub | 1st, Pub. Year 2015
4.	**THE ART OF INVISIBILITY** By Kevin Mitnick | Back Bay Books | 2, Pub. Year 2019
5.	**The Basics of Hacking and Penetration Testing** By Patrick Engebretson | Syngress | 2, Pub. Year 2013

Course Outcome

After Learning the Course the students shall be able to:
After Learning the Course the students shall be able to: 1. To Develop the Basic Knowledge Of Computer Networks. 2. Develop The Knowledge Of Cyber Security And Get To Know About Its Future. 3. To develop the knowledge on Cyber Crimes and securing ideas. 4. To improve the capability on cyber forensic investigation. 5. To enhance the cybersecurity career and hands on application.

Course: BBA **Semester:** 1

Prerequisite: A basic approach to problem-solving methods

Rationale : Marketing studies gives a unique competitive advantage: You can learn how to promote yourself and your work. After all, marketing studies helps you understand the true meaning of value: The value of the product and the value of the person or brand that delivers said product.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to MarketingMarketing Management:** Introduction, Objectives, Scope, and Importance. Types of Market, Core Concepts of Marketing, Functions of Marketing, Marketing Orientations **Marketing Environment:** Introduction, Environmental Scanning, Techniques of Environment Scanning, Analyzing the Organization's Microenvironment, Company's Macro Environment, Differences between Micro and Macro Environment, Marketing Planning, and Implementation	**20**	**12**
2	**Segmentation, Targeting, and Positioning:** Introduction, Concept of Market Segmentation, Benefits of Market Segmentation, Requisites of Effective Market Segmentation, The Process of Market Segmentation, Bases for Segmenting Consumer Markets, Targeting- Meaning, Target market strategies, Market Positioning- Meaning, Positioning Strategies, Value Proposition, Differentiation Meaning, Strategies	**20**	**12**
3	**Channel & Promotion Decision:Channel Decision:** Channel Decision, Nature of Marketing Channels, Types of Channel flows, Channel functions, Functions of Distribution channels, Structure and Design of Marketing Channels, Channel co-operation, conflict and competition, Retailers, and wholesalers. **Promotion Decision:** Promotion mix, Advertising Decision, Advertising objectives, Advertising and Sales Promotion, Developing Advertising Program, Role of Media in Advertising, Advertisement effectiveness Salesforce Decision	**20**	**12**
4	**Buying Behaviors:Consumer buying behavior:** Introduction, Characteristics, Factors affecting Consumer behavior, Types of Buying Decision behavior, Consumer Buying Decision Process, Buying Motives, Buyer Behavior Models. **Business Buyer behavior:** Introduction, Characteristics of Business Markets, Differences between Consumer and Business Buyer Behavior, Buying Situations in Industrial/Business Market, Buying Roles in Industrial Marketing, Factors that Influence Business Buyer, Steps in Business Buying Process	**20**	**12**
5	**Understanding the Marketing-Information Systems (MKIS)**Introduction, Characteristics of MKIS, Benefits, Types, Components, Marketing Research	**20**	**12**
	Total	**100**	**60**

Reference Books	
1.	**Arun Kumar and N Menakshi: Marketing Management, Vikas Publishing, India (TextBook)**
2.	**Marketing Management** By Philip Kotler | Current
3.	**Marketing management** By Tapan panda | Excel Books
4.	**Marketing Management – A South Asian Perspective** By Kotler. Keller, Koshy and Jha | Pearson Education
5.	**Rajan Saxena: Marketing Management; Tata MC Graw-Hill (India Edition)**

Course Outcome

After Learning the Course the students shall be able to:
After Learning the Course, the students shall be able to: 1. List key elements of a marketing plan. 2. Explain the relationship between marketing and overall business strategy. 3. Develop a pricing strategy for a new product based on market research. 4. Evaluate market segmentation strategies for a diverse target market. 5. Assess the impact of a marketing campaign on brand equity and customer loyalty. 6. Design a comprehensive marketing plan for a company entering a new international market.

Course: B.Sc. Design **Semester:** 1

Prerequisite: 1) Understanding of Basic Computer Skills 2) Media Literacy 3) Creative Vision 4) Passion to learn

Rationale : Taking a basic photography course can be incredibly helpful for anyone looking to improve their photography skills. Not only will you learn about the technical aspects of photography, but you'll also gain a greater appreciation for the art form and discover your own unique style.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	4	-	4	20	20	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit 1 Human visual system** 1) Luminions 2) Chrominions Digital camera mechanism are build based on the human visual science. to understand human visual systemone should know How Rods & Cons behave How we see colours when we need to open or close entrance pupil like camera aperture.	**33**	**30**
2	**Unit 2 Light** Image processing signal path Image Acquisition Image Enhancement. Image Restoration. Color Image Processing Morphological Processing	**33**	**30**
3	**Unit 3Linear encoding & Log Encoding** Linear encoding to know the process to explore image is based on linear encoding grey scale gamma rays **Log Encoding** how to manipulate the light source by using log encoding. how we can shoot greater dynamic range how to get better result in post production.	**34**	**30**
	Total	**100**	**90**

Reference Books

1.	**Basic Photography (TextBook)** By Michael Langford | Focal Press
2.	**Handbook of Photography (TextBook)** By James A. Folts & Ronaldo P. Lovell
3.	**Mastering the Basics of Photography (TextBook)** By McCartney, Susan | Allworth Press, Pub. Year 2001
4.	**Photography (TextBook)** By Lee Frost | Hodder Headline

Course Outcome

After Learning the Course the students shall be able to:

1. Improved technical skills: Basic photography classes will teach you the fundamentals of camera operation, exposure, and lighting. This will help you understand how to use your camera to its full potential and create images that are properly exposed and well-lit.
2. Greater artistic expression: Basic photography classes will also help you develop your creative vision and explore different styles of photography. By learning about composition, color, and perspective, you'll be able to create images that are not only technically proficient but also visually compelling.

Course: B.Sc. Design **Semester:** 1

Prerequisite: 1) Understanding of Basic Computer Skills 2) Media Literacy 3) Creative Vision 4) Passion to learn

Rationale : The course introduce students to the key creative and conceptual principles for working with video and moving images. With introductions to digital video cameras, sound recording, and editing software, the course enables you to develop shooting and editing techniques relevant media arts contexts.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
2	-	4	-	4	20	20	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit 1**1) Exposure what we need to explore in a image through digital camera sensor 2) Aperture - how it corresponds with the amount of light 3) Shutter Speed how shutter speed and time exposure works. 4) ISO it determines with the sensitivity of sensor.	55	50
2	**Unit 2Sensor** types of sensor how it works importance of sensors CCD - charge couple device Cmos sensor Various sensor size	45	40
	Total	100	90

Reference Books

1.	**The Painted Face: India's Popular Cinema** By Chindananda Dasgupta | Roli Books
2.	**Digital Video Processing (TextBook)** By A. Murat Tekalp | Pearson | 2nd, Pub. Year 2015

Course Outcome

After Learning the Course the students shall be able to:

After the introducing this course, students will have a generic overview and would able to understand :- Technologies of working digitized Moving image, sound & editing setup
To disseminate important stories and provoke feelings & critical thinking .

Course: B.Sc. Design **Semester:** 1

Prerequisite: 1) Understanding of Basic drawing Skills 2) design interpretation 3) Creative Vision 4) Passion to learn

Rationale : They can understand & apply the basics of Characters designing. Importance of Characters designing in a visual form in Story-telling. They create the usage and importance of Characters.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
2	-	4	-	4	20	20	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit 1** Characters: Types & Patterns What is a story? What are the characters written Sketching Characters, different styles and anatomy Clarity of Story through Characters.	**40**	**36**
2	**Unit 2** Storyboarding - Introduction, Point of view Character Costume based on geographical location, Character Development & Design Difference between Cartoon & Caricature	**60**	**54**
	Total	**100**	**90**

Reference Books

1.	**Design Drawing (TextBook)** By Francis D. K. Ching | Wiley India Pvt. Ltd.
2.	**Drawing & Painting (TextBook)** By A.H. Hashmi | Pustak Mahal Delhi
3.	**The Art of Drawing (TextBook)** By Pogany, Willy | Madison Books, 1996

Course Outcome

After Learning the Course the students shall be able to:
Understand the art of Character Design. Understand the purpose of Character designing based on the story & setting Understand, learn, and apply techniques and software skills in character design.

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Subject Syllabus

00019101SE01 - Mathematical Aptitude

Course: BTech **Semester:** 1

Prerequisite: Basic numeracy skill

Rationale : Mathematical aptitude refers to the ability to reason, think critically, and apply mathematical principles to solve problems and make sense of the world around us.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
2	-	-	0	2	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit-1**Numbers, HCF & LCM, Square Root & Cube Root, Ratio & Proportion, Permutations & Combinations, Percentage, Average-Shortcut averages, Partnership, Time -work & distance, Boats & streams, Mixtures, Logarithms	40	12
2	**Unit-2**Progression (AM, GM, HM), Series, Interest (S.I. & C.I.) and depreciation rate, Profit-Loss & Discount, Equations (Linear & Quadratic), Probability.	40	12
3	**Unit-3**Mensuration I (Area & Perimeter), Mensuration II(Volume & Surface area), Grouped Data, Ungrouped Data (Mean and Standard Deviation) Data interpretation: (Tabulation, Bar Graph, Pie Chart, Line Chart).	20	6
	Total	100	30

Reference Books

1.	**Quantitative Aptitude for Competitive Examinations (TextBook)** By D. Khattar | Person Indian Education Service
2.	**Verbal Reasoning and Non - Verbal Reasoning (TextBook)** By B. S. Sijwali and Indu Sijwali | New Delhi: Arihant
3.	**Quantitative Aptitude for Competitive Examinations** By R. S. Aggarwal | S. Chand Publishing,

Course Outcome

After Learning the Course the students shall be able to:

After completion of the course, Students will be able to,
1. Analyse and interpret mathematical problems, devise appropriate strategies, and apply relevant mathematical concepts and techniques to find solutions.
2. Comprehend and manipulate numerical information effectively, make accurate calculations, and interpret numerical data in various contexts.
3. Think critically and logically, recognize patterns and relationships, and construct logical arguments using mathematical principles.
4. Apply these concepts and techniques to solve real-world situations.

Parul® University

Subject Syllabus

06010101UE04 - Internet of Behaviour

Course: BBA **Semester:** 1

Prerequisite: Basic Computer knowledge and Internet Surfing

Rationale : Establishes foundational understanding: Provides students with a clear definition and historical context of IoB, laying the groundwork for further exploration. Identifies key technologies: Introduces students to the essential technologies and methodologies used in IoB, enabling them to grasp the technical aspects of the field. Highlights potential applications: Illustrates the potential of IoB across various domains, motivating students to delve deeper into specific areas of interest.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Internet of Behavior**Introduction to Internet of Behavior (IoB) Understanding the concept of IoB Historical context and evolution Key technologies and methodologies	20	12
2	**Data Collection**Behavioral Data Collection and Analysis Techniques for collecting behavioral data Data privacy and ethical considerations Tools and methods for analyzing behavioral data	20	12
3	**Applications of IoB in Various Industries**Healthcare: IoB in patient monitoring and personalized medicine Retail: Customer behavior analysis and personalized marketing Transportation: IoB applications in smart cities and traffic management	20	12
4	**Ethical and Legal Implications of IoB**Privacy concerns and data protection regulations Ethical considerations in behavior tracking and analysis Case studies and real-world examples	20	12
5	**Practical**Practical Applications and Project Development Hands-on projects using IoB technologies Developing IoB applications Integration with existing systems and platforms	20	12
	Total	100	60

Reference Books

1.	**“Internet of Things (A Hands-on-Approach)”,** By Vijay Madisetti and Arshdeep Bahga, | VPT
2.	**Big data analytics with R and Hadoop** By VigneshPrajapati | SPD, Pub. Year 2013
3.	**Getting Started with the Internet of Things** By Cuno Pfister

Course Outcome

After Learning the Course the students shall be able to:

1. Formulate strategies for addressing ethical and legal challenges in IoB
2. Critique ethical considerations in behavior tracking and analysis.
3. Apply tools and methods for analyzing behavioral data in various scenarios.
4. Compare different techniques for behavioral data collection.
5. Explain the fundamental principles of IoB

Course: B.Sc.Nursing **Year:** 1

Prerequisite: Shall have the basic knowledge about anatomy and physiology of human body.

Rationale : Will gain the basic knowledge about first Aid and life sciences.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to first aid**Aims of first aid The first aider First aid and the law Indian good Samaritan protection guidelines Duty of giving care Consent of the person in need Privacy Negligence Dealing with an emergency Top-to-toe assessment Hygiene and hand washing First aid overview flow char	7	4
2	**Assessment of patients with fractures, wounds, and bleeding**Brief Anatomy of the skeletal system Fractures (injuries to bones) Injuries and fractures to the head,neck and spine Injuries and fractures to the cheekbone, nose and lower jaw Fracture of the cheekbone or nose Fractures of the lower jaw Injuries to the shoulder, ribs or breastbone Injuries or fractures of the shoulder Injuries and fractures of the collarbone Rib injuries and fractures Fractures of the breastbone Injuries to the arm, elbow, wrist, hand or Injuries and fractures of the arm(upper arm, forearm, wrist) Injuries and fractures of hand or fingers Injuries to the pelvis, lower limbs, knee, ankle or feet Injuries and fractures of the pelvis Injuries and fractures of the leg (thigh or lower leg) or ankle Fracture of the knee cap (patella) Injuries and fractures of foot or toes Dislocations (injuries to joints) Strains and sprains (injuries to ligaments, muscles and tendons)	10	6
3	**Respiratory emergencies**Respiration The respiratory system No breathing or difficult breathing When to refer the casualty to a healthcare facility Drowning Remove the victim out of the water Strangulation and hanging Choking Swelling within the throat Suffocation by smoke or gases Asthm	10	6
4	**Care of burns**The skin Burn wounds First, second and third degree burns Type of burns by origin Danger of burn Dry burns and scalds (burns from flames, hot surfaces, steam, Care of minor burns (small first and second degree burns) Specific burn locations Electrical burns and electrocution by electricity or lightning Chemical burns Sunburns, snow/welders eyes, heat exhaustion and heat stroke Heat exhaustion Heatstroke Frostbites Prevention of burns Fever Hypothermia	8	5
5	**Lifesaving procedures in emergency & shock**The heart and the blood circulation, Heart and blood circulation,	8	5

	Blood pressure, Pulse, The blood, Chest discomfort, Bleeding, First aid for bleeding (in general), Resuscitation (basic CPR), Resuscitation of a person who is not breathing or not breathing normally, Resuscitation of baby/child (less than one year old)		
6	**Head trauma & stroke**The nervous system, The central nervous system, The peripheral nervous system (PNS), Unconsciousness, Head injuries, Concussion, Cerebral compression, Skull fractures, Stroke, Fits – convulsions - seizures	**10**	**6**
7	**Gastrointestinal tract, diarrhea, food poisoning and diabetes**Review of anatomy and physiology of gastrointestinal tract, Diarrhoea, Prevent dehydration, Food poisoning, Diabetes, Type 1 diabetes, Type 2 diabetes, Gestational diabetes (diabetes during pregnancy), Diagnosis, Hyperglycaemia, Symptoms of hyperglycaemic coma or diabetic coma, Hypoglycaemia	**10**	**6**
8	**Senses, foreign bodies in eye, ear, nose or skin and swallowed foreign Objects**Review of anatomy and physiology of the special senses, Foreign body in the eye, Foreign body in the ear, Foreign body in the nose, Foreign body in the skin, Swallowed foreign objects	**10**	**6**
9	**Urinary system, reproductive system and emergency childbirth**Review of anatomy and physiology of Urinary & Reproductive system, Male reproductive system, Female reproductive system, Pregnancy, Stages of labour and giving birth, Aftercare of the mother, Medical conditions and pregnancy, Diabetes, High blood pressure, Infections, Prevention of sexually transmitte diseases (STD), Sexually transmitted infections, Reducing the risk of STDS/STIS, Emergency childbirth	**10**	**6**
10	**Psychological first aid**Definition of psychological first aid, Traumatic crisis, (psychological) shock phase, Reaction phase, Processing phase, Reorientation phase, Behave calmly, Listening to the affected person, Physical contact, Providing psychological first aid to all	**7**	**4**
11	**Specific emergency situations and disaster management**Emergencies at school, Emergencies at work, Road and traffic accidents, Emergencies in rural area, Disasters and multiple casualty accidents Emergency triage	**10**	**6**
	Total	**100**	**60**

Reference Books

1.	**First aid handbook: Fast and effective emergency care (TextBook)** By Dr. Pipa Keech | 3rd
2.	**Until Medical Help Arrives: First aid Book (TextBook)** By Dr. H. V. Sardesai | 1 st Edition, Pub. Year 2022
3.	**First aid manual, (TextBook)** By UK's Leading First aid providers | 11th edition:, Pub. Year 2021

Course Outcome

After Learning the Course the students shall be able to:

After completion of course students shall be able to,
• Understand the importance of first aid in emergency situations.
• Demonstrate the ability to assess the scene of an emergency.
• Identify and prioritize different types of injuries and illnesses.
• Learn and practice CPR techniques for adults, children, and infants and use of automated external defibrillators (AEDs) and how to use them.
• Understand the importance of infection control in wound care.
• Identify signs and symptoms of shock and how to provide first aid for different types of burns and how to assess and provide first

Course: B.Sc. (Hons) **Semester:** 1

Prerequisite: Shall have understanding of environmental science, ecology, and Natural Resource.

Rationale : To develop the knowledge among students about ecosystems and natural resources and their importance for sustaining the balance between environmental health and human development.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit 1: Introduction to Ecosystems** Basic Concepts of Ecology: Definition and scope of ecology; Ecosystem components: biotic and abiotic factors; Levels of ecological organization: population, community, ecosystem, biome, and biosphere. Energy Flow: food chains and food webs; trophic levels and energy pyramids; nutrient cycling in ecosystems.	25	15
2	**Unit 2: Types of Ecosystems** Structure and function of an ecosystem. Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). Biodiversity and Conservation.	25	15
3	**Unit 3: : Introduction to Natural Resource** Concept of resource, classification of natural resources: Renewable and non-renewable resources. Factors influencing resource availability, distribution and uses. Natural resources associated problems.	25	15
4	**Unit 4: Types of Natural Resource and management** Forest resources, Land resources, Water resources, Energy resources, Food resources, marine resources, Mineral resources, Integrated resource management and Case Studies.	25	15
	Total	100	60

Reference Books

1.	**Concepts of Ecology** By Kormondy, E. J. | Prentice Hall of India, Pub. Year 1996
2.	**Aquatic Ecosystem: Biodiversity, Ecology and Conservation** By Mamta Rawat, Sumit Dookia and Chandrakasan Sivaperuman | Springer publication, Pub. Year 2015
3.	**Ecology** By Subrahmanyam, N. S. and Sambamurty, A. V. S. S. | Narosa Publishing House., Pub. Year 2000
4.	**Natural Resources Conservation & Management** By Singh, K. K. | M D Publications Pvt. Ltd, Pub. Year 2008
5.	**Ecology, Environmental Science and Conservation** By Singh, J.S., Singh, S.P. and Gupta, S.R. | S. Chand Publishing, New Delhi, Pub. Year 2014

Course Outcome

After Learning the Course the students shall be able to:
1. Grasp ecosystem structures and functions to predict and understand ecological interactions and outcomes. 2. Develop expertise in biodiversity conservation techniques and understand their applications in maintaining ecosystem health. 3. Acquire skills in sustainable resource management for responsible use and conservation of soil, water, and forests. 4. Learn to assess environmental impacts from human activities and implement strategies to mitigate negative effects. 5. Understand environmental policies and ethical considerations that govern natural resource use and protection.

Course: B.Com(Hons)(4 years) **Semester:** 1

Prerequisite: Foundational understanding of financial services, banking operations, and basic knowledge of insurance principles

Rationale : The course aims to provide a comprehensive understanding of digital banking, including its importance, various channels, products, and associated risks. It also covers topics related to cards, ATMs, payment systems, innovation in insurance, digital insurance management, governance, regulatory frameworks, and global perspectives on digital insurance.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Digital BankingDigital Banking:** Introduction to Digital Banking- need and importance of Digital Banking- Channels of Digital Banking- Digital Banking Products: Introduction and need for Digital Banking Products **Mobile Banking:** Overview and brief history of Mobile Banking- Product features & diversity of Mobile Banking- Immediate Payment Service (IMPS)- Risk Management & Frauds related to Mobile Banking- Benefits of providing Mobile Banking Services. **Internet Banking:** Overview and brief history of Internet Banking- its Products and their features- Corporate and Individual Internet Banking integration with e-Commerce Merchants- etc.- Types of Risks associated with Internet Banking- Technology and Security Standards for Internet Banking- Legal issues involved in Internet Banking	**25**	**15**
2	**CardsCards:** Overview of Cards and brief history of Cards- various types of Cards a bank provides to its customers EMV Technology: New Technologies such as Tap and Go- NFC etc.- Approval Processes for the issue of Cards- Benefits of Cards- and Recovery & Follow-Ups for Cards. **ATMs:** Overview and brief history of Automated Teller Machines (ATM)- Product features- Instant Money Transfer Systems- Proprietary- Brown Label- and White Label ATMs- various Value-Added Services (e.g.- bill payments- donations- etc.)- ATM Network Planning such as Onsite & Offsite- Security & Surveillance of ATM sites- Benefits of installing ATMs- Risk Management and Frauds related to ATMs. **Payment Systems:** Overview of Global Payment Systems- Overview of Domestic Payment Systems- RuPay & RuPay Secure- Immediate Payment Service – IMPS- National Unified USSD Platform i.e NUUP- RTGS- NEFT- National Automated Clearing House (NACH)- Aadhaar Enabled Payment System (AEPS) e-KYC- Cheque Truncation System or CTS- National Financial Switch (NFS).	**25**	**15**
3	**Innovation in InsuranceInnovation in Insurance**: Innovation and financial services- Levels of innovation – Digital insurance: Status of insurance companies - Strategic choices for insurance companies in the digital age – Challenges - Digital insurance as a new model for financial institutions - Protecting customers with better security - Effective and compliant insurance companies – 4 P's of digital insurance. **The Management of Digital Insurance:** A digital insurance model – customer perspective - Corporate digital insurance – drivers - Online-only insurance companies - The value of digital insurance - Critical success factors – Different models - Multigenerational view - Marketing digital insurance - Marketing mix – economics of digital insurance – SWOT – Fraud in digital insurance	**25**	**15**
4	**Governance and Regulatory FrameworkGovernance and Regulatory Framework**: Lean and Digitize project management – Data management – Security - Regulations for insurance organizations – IRDAI norms – Protection of policyholders - Support to compliance. **Digital Insurance Throughout the World:** Digital insurance across the world – Future of digital insurance: Application innovations (Artificial intelligence, Robotics process automation, Anticipatory computing, Social networks) - Technological innovation (Internet of things, Wearable technology) - Network innovations (5G networks, Web 2.0, Web 3.0)	**25**	**15**
	Total	**100**	**60**

Reference Books	
1.	**Digital Banking and Cyber Security** By Lohana Sarika R. | New Century Publications
2.	**Digital Payments in India: Background, Trends and Opportunities** By Singh Jaspal | New Century Publications
3.	**Digital Banking** By Indian Institute of Banking and Finance | Taxmann

Course Outcome

After Learning the Course the students shall be able to:

Course Learning Outcomes:
CLO 1 Demonstrate knowledge of various digital banking products and their features.
CLO 2 Assess the risks associated with mobile and internet banking and suggest risk management strategies.

CLO 3 Analyze the different types of cards, ATMs, and payment systems offered by financial institutions.

CLO 4 Evaluate the impact of digital innovations on the insurance sector and compliance with regulatory frameworks.

Course: BHMCT Hotel Mgmt **Semester:** 1

Prerequisite: The students should have the basic knowledge about the events management.

Rationale : The course provides theoretical knowledge about the concept of management in event sector.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**NATURE & FUNCTIONS OF MANAGEMENT IN EVENTS**Importance, Definition, Functions in Events,Role of an Event Manager, Management Skills for event management.	10	6
2	**DEVELOPMENT OF MANAGEMENT THOUGHT**Early Classical Approaches, Neo Classical Approaches, Modern Approaches	8	4
3	**INTRODUCTION TO PLANNING & DECISION MAKING IN EVENTS**Nature & Importance of Planning,Types of Plans, Meaning of Decision,Types of Decisions, Steps in Rational Decision making	15	10
4	**CONCEPT OF ORGANISING IN EVENT**Concept, nature, significance of organizing, Formal and informal organization, Organization chart of event company, Types of organization, functional , Line and staff relationship, Delegation and Authority, Centralization and Decentralizatio, Recruitment – internal and external sources, Steps in the process of selection, recruitment Vs selection.	20	12
5	**DIRECTING & LEADING IN EVENTS**Meaning, nature, significance, characteristics of directing, chain of command, authority – responsibility-accountability relationship, Elements of Direction – supervision, communication, training and development, leadership, motivation, Leadership – meaning, importance, theories and styles, Communication – meaning, significance, types, process and barriers to communication, Supervision – Meaning, nature and significance of supervision.	15	10
6	**MANAGERIAL CONTROL IN EVENTS**Meaning of Managerial Control, Steps in Control Process, Need for Control System, Benefits of Control, Control Techniques.	18	10
7	**MOTIVATION**Meaning, nature and importance of motivation, morale incentives, Motivation and productivity relationship, Types of motivation, theories of motivation – Herzberg's hygiene-motivation (two factor) theory, Maslow's theory of need hierarchy, Mc Gregory's theory 'X' and theory 'Y'.	14	8
	Total	100	60

Reference Books

1.	**Principles of Management** By Tripathy PC and Reddy PN | Tata McGraw-Hill
2.	**Principles of Management** By BS Moshal
3.	**Special Events** By Joe Goldblatt
4.	**The Event Manager's Bible - The Complete Guide to Planning and Organising a Voluntary or Public Event** By D G Conway
5.	**Secrets to Successful Events** By Lynn Fuhler

Course Outcome

After Learning the Course the students shall be able to:
1. Understand & describe the functions of event management 2. Describe the managerial functions in events 3. Elaborate the importance of motivation & incentivization.

Course: B.Sc. **Semester:** 1

Prerequisite: Shall have the basic knowledge about environmental studies

Rationale : Will understand the basic interface between climate change and sustainability.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
2	-	-	-	2	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit 1 : Introduction to Climate Change**Global Climate System Climate Change: Causes and Consequences: Global warming, ozone layer depletion, acid rain, and greenhouse effect case studies: nuclear accidents, chemical disasters, and climatic episodes	33	10
2	**Unit 2: Sustainable Development:**Sustainable Development Goals: An overview Climate Change and Sustainable Development: National and State Policies Achieving Sustainable Development Goals: Role of Various Stakeholders Building Partnership for Climate Change and Sustainable Development	34	10
3	**Unit 3 : Sustainable Approach to Climate Change:**Energy Conservation: Use of Renewable energies: Water, Solar, Wind, Tidal, Geothermal Water conservation techniques: Rain Water Harvesting. Environmental Ethics & Public Awareness: Role of various religions and cultural practices in environmental conservation Sustainable Human Development.	33	10
	Total	100	30

Reference Books

1.	**Climate Change and Sustainable Development: Prospects for Developing Countries** By Anil Markandya, Kirsten Halsnæs
2.	**Climate Change and Sustainable Development Global Prospective** By R.K.Mishra, P.s.Janki Krishna & CH. Laskhmi Kumar
3.	**This Changes Everything: Capitalism vs The Climate** By Naomi Klein
4.	**The Uninhabitable Earth: Life After Warming (TextBook)** By David Wallace-Wells

Course Outcome

After Learning the Course the students shall be able to:

1. Identify the complexity and operations of governance systems and processes on international, national, and local levels.
2. Explain the differences between government and governance and the various ideas and meanings attached to the goal of sustainable development.
3. Critically analyze policy-making processes in regard to sustainability issues.
4. Apply high-quality written and verbal communication skills
5. Work effectively in a team and in tutorial or workshop situations

Course: B.Sc.IT **Semester:** 1

Prerequisite: Basic understanding of AI/ML concepts and familiarity with cloud computing platforms.

Rationale : To provide students with foundational knowledge of core data concepts, including the differences between structured and unstructured data, and to demonstrate how Microsoft Azure services are used to store, process, manage, and analyze relational and non-relational data. The course prepares learners for industry-standard practices and entry-level data roles such as Data Analyst, Data Engineer, or Database Administrator. It aligns with the Microsoft DP-900: Azure Data Fundamentals certification

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
3	-	0	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Data and Storage Fundamentals** Explore core data concepts including structured, semi-structured, and unstructured data types. Understand the roles of data professionals (engineers, scientists, analysts), and differentiate between OLTP and OLAP workloads. Identify data formats such as CSV, JSON, and Parquet, and recognize their use cases in Azure services. Learn about storage options and formats used in data systems.	20	10
2	**Relational Data Storage and Processing in Azure** Understand transactional data and database systems, focusing on Azure SQL Database, SQL Server on Azure VM, and Azure SQL Managed Instance. Deep dive into data consistency models like ACID and BASE. Explore relational database design using normalization concepts, keys, indexes, and views. Understand core SQL operations (SELECT, INSERT, UPDATE, DELETE) and how Azure supports these through platform-as-a-service (PaaS) and infrastructure-as-a-service (IaaS).	20	10
3	**Non-Relational Data and Storage Solutions** Explore non-relational data systems in Azure including Azure Cosmos DB, Azure Table Storage, and Blob Storage. Learn about their structure, access APIs (Core, MongoDB, Cassandra, Gremlin), and consistency models. Examine how metadata works in blobs and how these services are integrated within modern applications. Study storage tiers, hierarchical namespaces, and access methods within Azure Data Lake Gen2 and Microsoft OneLake.	20	10
4	**Analytical Data Processing in Azure** Understand batch and real-time analytics, and the appropriate use cases for both. Explore analytical storage solutions like Azure Synapse Analytics and Microsoft Fabric. Learn about the architecture of data analytics pipelines, data ingestion layers, and how different services interact in an analytical workflow. Study how Azure supports end-to-end analytics using distributed data storage and compute.	20	10
5	**Applied Data Analytics and Cost Considerations** Hands-on exercise with Microsoft Fabric's Dataflows, including real-time dashboards and visualization tools. Understand pricing models for Azure Data Services, including cost estimation, billing structures, and optimization. Learn how to use the Azure Pricing Calculator and Total Cost of Ownership (TCO) calculator for project planning. Wrap up with an overview of Cosmos DB capabilities in analytics and operational processing scenarios.	20	8
	Total	100	48

Course Outcome

After Learning the Course the students shall be able to:
1. Define core data concepts and explain various data types, formats, and processing models. Identify and utilize Azure storage services such as Blob Storage, Data Lake Gen2, and Azure Files. 2. Explain data normalization and use of database objects in relational models. 3. Compare and contrast relational and non-relational storage models in Azure. 4. Describe data analytics architecture in Azure, including Azure Synapse and Microsoft Fabric

Course: B.Sc.IT **Semester:** 1

Prerequisite: Basic understanding of AI/ML concepts and familiarity with cloud computing platforms.

Rationale : To provide students with foundational knowledge of core data concepts, including the differences between structured and unstructured data, and to demonstrate how Microsoft Azure services are used to store, process, manage, and analyze relational and non-relational data. The course prepares learners for industry-standard practices and entry-level data roles such as Data Analyst, Data Engineer, or Database Administrator. It aligns with the Microsoft DP-900: Azure Data Fundamentals certification

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	20	-	30	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Outcome

After Learning the Course the students shall be able to:
1. Define core data concepts and explain various data types, formats, and processing models. Identify and utilize Azure storage services such as Blob Storage, Data Lake Gen2, and Azure Files. 2. Explain data normalization and use of database objects in relational models. 3. Compare and contrast relational and non-relational storage models in Azure. 4. Describe data analytics architecture in Azure, including Azure Synapse and Microsoft Fabric

List of Practical

1.	**Identify structured, semi-structured, and unstructured data and upload them to Azure Blob Storage.**
2.	**Compare OLTP and OLAP systems using sample scenarios in Azure services.**
3.	**Create and normalize a sample relational database using Azure SQL Database.**
4.	**Perform CRUD operations using SQL commands in Azure SQL Managed Instance.**
5.	**Set up a non-relational database using Azure Cosmos DB with MongoDB API.**
6.	**Store and retrieve blob data with metadata using Azure Blob Storage.**
7.	**Build a batch data pipeline using Azure Synapse Analytics workspace.**
8.	**Implement real-time data stream ingestion using Microsoft Fabric Eventstream.**
9.	**Create a real-time dashboard using Microsoft Fabric Dataflow and Power BI integration.**
10.	**Estimate the cost of a data solution using Azure Pricing Calculator and TCO tool.**

Course: BCA **Semester:** 2

Prerequisite:

Course Objective: IPDC aims to prepare students for the modern challenges they face in their daily lives. Promoting fortitude in the face of failures, Unity amongst family discord, Self-discipline amidst Distractions... and many more priceless lessons. The course focuses on morality and character development at the core of student growth, to enable students to become self-aware, sincere, and successful in their many roles - as an ambitious student, reliable employee, caring family member, and considerate citizen.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction and Remaking Yourself**Restructuring Yourself: Students learn how self-improvement enables them to secure a bright future for themselves. They will learn 6 powerful thought-processes that can develop their intellectual, physical, emotional, and spiritual quotients	7	2
2	**Remaking Yourself**Power of Habit: Students will undergo a study of how habits work, the habits of successful professionals, and the practical techniques that can be used to develop good habits in their life.	7	2
3	**Learning from Legends**Tendulkar & Tata: Students will learn from the inspirational lives of India's two legends, Sachin Tendulkar and Ratan Tata. They will implement these lessons through relatable case studies.	7	2
4	**From House to Home** Listening & Understanding: Active listening is an essential part of academic progress and communications. Students will learn to listen with their eyes, ears, mind, and heart.	7	2
5	**Facing Failures**Welcoming Challenges: This lecture enables students to revisit the way in which they approach challenges. Through the study of successful figures such as Disney, Lincoln and Bachchan, students will learn to face difficulties through a positive perspective.	7	2
6	**Facing Failures**Significance of Failures: Failure is a student's daily source of fear, negativity, and depression. Students will be given the constructive skills to understand failure as formative learning experiences.	7	2
7	**My India My Pride**Glorious Past - Part 1: India's ancient Rishis, scholars, and intellectuals have made tremendous contributions to the world, they developed an advanced, sophisticated culture and civilization which began thousands of years ago. Students will learn the importance of studying India's glorious past so that they could develop a strong passion and pride for our nation.	7	2
8	**My India My Pride**Glorious Past - Part 2: Our ancient concepts can be used to seek revolutionary ideas and to generate inspiration. Students will develop a deeper interest in India's Glorious Past – by appreciating the need to read about it, research it, write about it, and share it.	7	2
9	**Learning from Legends**A.P.J. Abdul Kalam: Dr Kalam's inspirational life displayed legendary qualities which apply to students (1) Dare to Dream (2) Work Hard (3) Get Good Guidance (4) Humility (5) Use Your Talents for the Benefit of Others	7	2
10	**Soft Skills** Networking & Leadership: Students are taught the means of building a professional network and developing a leadership attitude.	7	2

11	**Soft Skills**Project Management: Students will learn the secrets of project management through the Akshardham case study. They will then practice these skills through an activity relevant to student life.	**6**	**2**
12	**Remaking Yourself**Handling Social Media: Students will learn how social media can become addictive and they will imbibe simple methods to take back control.	**6**	**2**
13	**Facing Failures**Power of Faith: Students will learn about the power and necessity of faith in our daily lives.	**6**	**2**
14	**From House to Home**Bonding the Family: Students will understand the importance of strong family relationships. They will learn how to overcome the generation gap and connect with their family more.	**6**	**2**
15	**Selfless Service**Seva: Students will learn that performing seva is beneficial to one's health, wellbeing, and happiness. It also benefits and inspires others.	**6**	**2**

Reference Books

1.	**Integrated Personality Development Course (TextBook)** By Bochasanwasi Akshar Purushottam Swaminarayan Sanstha

Course Outcome

After Learning the Course the students shall be able to:

To provide students with a holistic value-based education that will enable them to be successful in their academic, professional, and social lives.
▪ To give the students the tools to develop effective habits, promote personal growth, and improve their well-being, stability, and productivity.
▪ To allow students to establish a stronger connection with their family through critical thinking and development of qualities such as unity, forgiveness, empathy, and effective communication.
▪ To provide students with soft skills that complement their hard skills, making them more marketable when entering the workforce.
▪ To enhance awareness of India's glory and global values, and to create considerate citizens who strive for the betterment of their family, college, workforce, and nation.
▪ To inspire students to strive for a higher sense of character by learning from role models who have lived principled, disciplined, and value-based lives.

Miscellaneous

Useful Links

https://www.youtube.com/watch?v=_C09aqOszvY

Course: B.Sc. (IT) **Semester:** 2

Prerequisite: Basic knowledge of Data and Data Processing

Course Objective: Provide Conceptual insight about how database design and implementation takes place and relational operations of database

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	-	-	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Database System** Data, Information, Data Management, File-based Data Management, Database, Database Systems, Organization of a Database, Characteristics of Data in a Database, DBMS, Benefits of DBMS , Functions ,Components of DBMS, Data dictionary, Database Users, Database Architecture, Data abstraction, ANSI/SPARC Architecture, Logical and Physical data independence, Database languages, Database Design, Database constraints	21	10
2	**Data Model and Entity Relationship Modeling** Data Model Conceptual, Physical and Logical Database Models, Database relationships, Hierarchical model, Network Model, Relational Model, E-R model Entity Relationship Modeling E-R Model, Components of an E-R Model, E-R conventions, Relationships, Composite entities, Entity list, E-R diagrams, E-R Modeling symbols, Super class, Subclass entity types, Attribute inheritance, Specialization, Generalization, Specialization/ generalization constraints, Categorization	21	10
3	**Relational Database Design and Relational Algebra and Calculus** Relational Database Design Relational Algebra operations, Aggregate functions, Update operations, Types of relational calculus, Domain Relational calculus Relational Algebra and Calculus Relational Data structure, Relational data manipulation, Integrity constraints, Pitfalls of Relational database design, Decomposition, Functional dependencies, Normalization,Keys, Relationships, First Normal Form(1NF), Second Normal form(2NF), Third normal Form (3NF), Boyce-Codd Normal Form (BCNF), Fourth Normal Form (4NF) Fifth Normal Form (5NF), Lossless join dependency, Domain-Key Normal Form (DCNF), Denormalization	21	10
4	**Object Relational and Extended Relational Database** Database design for an ORDBMS, Nested relations and collections, Storage and access methods, An overview of SQL3, Systems comparison of RDBMS, OODBMS and ORDBMS.	16	5
5	**PL/SQL, Cursor and Trigger and Stored Procedures**PL/SQL, Cursor and Trigger Basic code structure, Variables, Conditional statements, looping (loop statements, while loops, for loops, cursor FOR loops), Triggers. Stored Procedures Understanding the main features of stored procedures, stored procedure architecture, Advantages of using procedures. Stored procedures - functions, procedures and packages.	21	10

Reference Books

1.	**Database System Concepts (TextBook)** By Silberschatz, Korth, Sudarshan | McGraw Hill Publication | 4th Edition
2.	**An Introduction to Database Systems** By C. J. Date, A. Kannan, S. Swamynathan | Pearson Education | 8th Edition
3.	**Database Systems: Concepts, Design and Applications** By S. K. Singh | Pearson Education
4.	**SQL, PL/SQL – The Programming Language** By Ivan Bayross | BPB Publications
5.	**Database Management Systems** By Raghu Ramakrishnan, Johannes Gehrke | McGraw Hill Publication

Course Outcome

After Learning the Course the students shall be able to:

1.Describe the core concepts of database systems, including their architecture, components, and the importance of data management.
2.Analyze and create entity-relationship models, effectively translating real-world scenarios into structured data representations.
3.Evaluate and apply advanced database design techniques, including object-relational and extended relational database concepts, to enhance database functionality and performance.
4.Implement and demonstrate the use of PL/SQL, including cursors, triggers, and stored procedures, to automate and optimize database operations.

Course: B.Sc. (IT) **Semester:** 2

Prerequisite: Basic knowledge of Data and Data Processing

Course Objective: Provide Conceptual insight about how database design and implementation takes place and relational operations of database

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	20	-	30	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Outcome

After Learning the Course the students shall be able to:

1.Describe the core concepts of database systems, including their architecture, components, and the importance of data management.
2.Analyze and create entity-relationship models, effectively translating real-world scenarios into structured data representations.
3.Evaluate and apply advanced database design techniques, including object-relational and extended relational database concepts, to enhance database functionality and performance.
4.Implement and demonstrate the use of PL/SQL, including cursors, triggers, and stored procedures, to automate and optimize database operations.

List of Practical

1. **Create a table for Customer**

Column Name	Format
cust_id	char(5)
Lname	char(15)
Fname	char(15)
Area	char(2)
phone_no	number(8)

2. **Create a table for Movie**

Column Name	Format
mv_no	number (5)
Title	char(25)
Type	char(10)
Star	char(25)
Price	number(8,2)

3. **Create a table for invoice**

Column Name	**Format**

	inv_no char(3) mv_no number(5) cust_id char(5) issue_date date return_date date
4.	**Insert the below Record in the Customer table** Cust_id lname fname area Phone_no a01 Patel Vijay sa 381334 a02 Saitwal Vandana mu 556037 a03 Jaguste Pramada da 372631 a04 Navindgi Basu ba 666612 a05 Sreedhran Ravi va - a06 - Rukmini ga 512527
5.	**Insert the below record in the Movie table** **mv_no title type Star Price** 1 Bloody Vengeance action Jackie Chan 180.95 2 The firm thriller Tom Cruise 200.00 3 Pretty woman romantic Richarge Gere 150.00 4 Home alone comedy Macaulay Culkin 150.55 5 The fugitive thriller Harrison Ford 200.00 6 Coma suspence Michael Douglas 100.00 7 Dracula horror Gray Oldman 150.00 8 Quick change comedy Bill Murray 100.00 9 Gone with the wind drama Clarke Gable 200.00 10 Carry on doctor comedy Leslie Phillips 100.00
6.	**Insert the below record in the invoice table** **inv_no mv_no cust_id issue_date return_date** i01 4 a01 13-jan-96 25-jan-96 i02 3 a02 12-feb-96 15-feb-96 i03 1 a02 15-feb-96 18-feb-96 i04 6 a03 10-mar-96 13- mar -96 i05 7 a04 05-feb-96 08-feb-96

	i06	2	a06	18-mar-96	21-mar-96
	i07	9	a05	07-jan-96	10-jan-96
	i08	9	a01	11-feb-96	14-feb-96
	i09	1	a05	15-feb-96	28-feb-96

7. **Do the Following**

Create the table Client_Master

Column Name	Data Type	Size
CLIENTNO	Varchar2	6
NAME	Varchar2	20
ADDRESS	Varchar2	50
CITY	Varchar2	20
PINCODE	Int	8
STATE	Varchar2	20
BAL_DUE	Decimal	10,2

Insert the following data into table

CLIENTNO	NAME	ADDRESS	CITY	PINCODE	STATE	BAL_DUE
C0001	Rohan Joshi	Khapaitya Chakla	Surat	395003	Gujarat	15000
C0002	Mamta Mazumdar	Salt Lake	Kolkata	460012	West Bengal	5000
C0003	Chhaya Bankar	Worli	Mumbai	400054	Maharashtra	2000
C0004	Ashwini Rathod	Ghangaur Ghat	Udaipur	780011	Rajasthan	7000
C0005	Ivan Bayross	Indiranagar	Bangalore	560050	Karnataka	1500
C0006	Deepak Sharma	Bandra	Mumbai	400002	Maharashtra	4300
C0007	Shymali Bhide	Juhu	Mumbai	470912	Maharashtra	2100

Queries:

1. List the details of the client according to the bal_due
2. List all clients who are located in Mumbai
3. Show different types of state in “Client_Master” table by eliminating the repeated states.
4. Change the city of client no “C0005” to Mangalore.
5. Change the bal_due of client no “C0001” to Rs. 1000
6. Delete from Client_master where the state holds the value ”Rajasthan”
7. Add a column name “Mobile” of data type “Number” & size=”10”.
8. Create a table “Balance_Details” having three 3 fields (ClientNo, Name, Bal_Due) from the source table name “Client_master” and rename the field Bal_Due to Balance.
9. Change the name of “Client_Master” table to “Customer”

8. **Do the Following**

Table Name : Employee

Employee_no	First_name	Last_name	Salary	Joining date	Department
1	John	Abraham	100000	01-JAN-13	Banking
2	Michael	Clarke	80000	01-APR-13	Insurance
3	Roy	Thomas	70000	21-May-13	Banking
4	Tom	Jose	60000	08-Dec-13	Insurance
5	Jerry	Pinto	65000	11-Feb-14	Marketing
6	Philip	Mathew	45000	01-Jul-14	Services
7	John	Henry	55000	01-Jan-15	Technical
8	Ivan	Bayross	60000	01-Aug-15	Sales

Table Name : Incentives

Employee_Ref_Id	Incentive_date	Incentive_amount
1	01-Feb-13	5000
2	01-Dec-13	3000
3	01-Mar-13	4000
4	21-Mar-15	4500
5	01-Sep-15	3500

Queries:

1. Create primary key Employee_id in Employee Table
2. Create EMPLOYEE_REF_ID in INCENTIVES table as foreign key with respect to EMPLOYEE_ID in employee table
3. Get all employee details from the employee table
4. Get First_Name,Last_Name from employee table.
5. Get First_Name from employee table using alias name “Employee Name”
6. Get First_Name from employee table in upper case
7. Get First_Name from employee table in lower case.
8. Get unique DEPARTMENT from employee table

9. **Queries of Employee table**

1. Get all employee details from the employee table order by First_Name Ascending
2. Get all employee details from the employee table order by First_Name descending
3. Get all employee details from the employee table order by First_Name Ascending and Salary descending
4. Get employee details from employee table whose employee name is “John” (like)
5. Select * from EMPLOYEE where FIRST_NAME='John'

	6. Get employee details from employee table whose employee name are “John” and “Roy” 7. Get employee details from employee table whose first name starts with 'J' 8. Get employee details from employee table whose first name contains 'o' 9. Get employee details from employee table whose first name ends with 'n' 10. Get employee details from employee table whose first name ends with 'n' and name contains 4 letters 11. Get employee details from employee table whose first name starts with 'J' and name contains 4 letters 12. Get employee details from employee table whose Salary greater than 60000 13. Get employee details from employee table whose Salary less than 80000 14. Get employee details from employee table whose Salary between 50000 and 80000 15. Get employee details from employee table whose name is 'John' and 'Michael'. 16. Get position of 'o' in name 'John' from employee table (skip) 17. Get employee details from employee table whose salary is minimum 18. Get employee details from employee table whose salary is maximum 19. Count the total number of department from employee table 20. Calculate the average salary of employee from employee
10.	**Queries** 1. Get First_Name from employee table in upper case 2. Get First_Name from employee table in lower case. 3. Get position of 'o' in name 'John' from employee table 4. Select first 3 characters of FIRST_NAME from EMPLOYEE 5. Get FIRST_NAME from employee table after removing white spaces from right side 6. Get FIRST_NAME from employee table after removing white spaces from left side. 7. Get length of FIRST_NAME of all employees from employee table 8. Get First_Name from employee table after replacing 'o' with '$' 9. Get First_Name and Last_Name as single column from employee table separated by a '_' 10. Get FIRST_NAME ,Joining year, Joining Month and Joining Date from employee table separated by '_' 11. Get employee details from employee table whose joining year is “2013”. 12. Get employee details from employee table whose joining month is “January” 13. Get employee details from employee table who joined before January 1st 2013 14. Get employee details from employee table who joined after January 31st 15. Get Joining Date and Time from employee table 16. Get difference between JOINING_DATE and INCENTIVE_DATE from employee and incentives table.

11. **Queries**

1. Find out how many employees are there in each department

2. Find out total salary per department.

3. Find out the average salary per department.

4. Show list of departments who has more than 1 employee

5. Show list of department whose total salary is greater than 50000

6. Show list of department whose average salary is less than 50000

7. Show list of department whose average salary is between 50000 and 80000

8. Show the total no of employees whose joining month is same.

9. Show the total no of employees whose joining year is same.

10. Find total salary who have joined in same month

11. Find total salary who have joined in same month and total salary is greater than 50000

12. Select employee details from employee table if data exists in incentive table

13. Display the employee name of all those who received their intencives

14. Find out the employees who have their incentives less than 5000

15. Update incentive table where employee name is 'John'

16. Select first_name, incentive amount from employee and incentives table for those employees who have incentives

17. Select first_name, incentive amount from employee and incentives table for those employees who have incentives and incentive amount greater than 3000

18. Select first_name, incentive amount from employee and incentives table for those employees who have incentives and incentive amount less than 3000

19. Select first_name, incentive amount from employee and incentives table for all employes even if they didn't get incentives

12. **Do the Following**

Create a table as following:

Dept deptno	**Dname**	**Loc**
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Emp_no	**Ename**	**Job**	**Mgr**	**hiredate**	**Sal**	**Comm**	**Deptno**

7839	King	President	-	17-11-1981	5000		10
7698	Blake	Manager	7839	01-05-1981	2850		30
7782	Clerk	Manager	7839	09-06-1981	2450		10
7566	Jones	Manager	7839	02-04-1981	2975		20
7788	Scott	Analyst	7566	13-07-1987	3000		20
7902	Ford	Analyst	7566	03-12-1981	3000		20
7369	Smith	Clerk	7902	17-12-1980	800		20
7499	Allen	Salesman	7698	20-02-1981	1600	300	30
7521	Ward	Salesman	7698	22-02-1981	1250	500	30
7654	Martin	Salesman	7698	28-09-1981	1250	1400	30
7844	Turnor	Salesman	7698	08-09-1981	1500		30
7876	Adams	Clerk	7788	13-07-1987	1100		20
7900	James	Clerk	7698	03-12-1981	950		30
7934	Miller	Clerk	7782	23-01-1982	1300		10

Queries:

1. Select all record from emp table where deptno =10 or 40.
2. Select all record from emp table where deptno=30 and sal>1500.
3. Select all record from emp where job not in SALESMAN or CLERK.
4. Select all record from emp where ename in 'BLAKE','SCOTT','KING'and'FORD'
5. Select all records where ename starts with ‘S’ and its lenth is 6 char.
6. Select all records where ename may be any no of character but it should end with ‘R’.
7. List the emps who are joined in the year 1981
8. List the emps who are joined in the month of Aug 1980
9. Display the avg salaries of all CLERKS
10. List all the emps except ‘president’ & ‘Manager’ in asc order of salaries
11. Count MGR and their salary in emp table.
12. In emp table add comm+sal as total sal.
13. Select any salary <3000 from emp table.
14. Select all salary <3000 from emp table.
15. Select all the employee group by deptno and sal in descending order.
16. List the emps who are working under Manager
17. List all the clerks of deptno 20

	18. Find the 3rd MAX salary in the emp table. 19. Find the 3rd MIN salary in the emp table.
13.	**PL/SQL Programs** 1. Hello World Program in PL/SQL. 2. PL/SQL Program To add Two Numbers. 3. PL/SQL Program For Prime Number. 4. PL/SQL Program To Find Factorial of a Number. 5. PL/SQL Program to Print Table of a Number. 6. PL/SQL Program for Reverse of a Number 7. PL/SQL Program for Fibonacci Series 8. PL/SQL Program to Check Number is Odd or Even 9. PL/SQL Program to Reverse a String 10. Pl/SQL Program for Palindrome Number 11. PL/SQL Program to Swap two Numbers 12. PL/SQL Program for Armstrong Number 13. PL/SQL Program to Find Greatest of Three Numbers 14. PL/SQL Program to Print Patterns
14.	**PL/SQL Cursor Programs** 1.Write a Program for Implicit Cursor 2. Write a Program For Explicit Cursor
15.	**Trigger Programs** Create three tables **Student (Roll_no, Name, Contact, Marks)** **Student_copy (Roll_no, Contact)** **Student_update_copy (Roll_no, New_Contact, Old_contact)** A. Create a trigger to insert Roll no and Contact number of student on insertion of any record in Table Student. B. Create a trigger to insert Roll no New Contact number and old Contact number of student on updation of contact number in Table Student.
16.	**Procedure Programs** 1. Write a procedure to insert data in employee table. 2. Write a procedure to update contact number of employee in employee table. 3. Write a procedure to find name of manager for given employee id. 4. Write a procedure to get all the details (emp_id, name, city of residence, 5. company name, city of work, manager name, salary) of given employee id.

Course: B.Sc. (IT) **Semester:** 2

Prerequisite:

Course Objective: The objective of this course is to familiarize students with various concepts of System development like planning, analysis, design, deployment and maintenance.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	-	-	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to System Analysis and Design** Definition of System. Importance of System analysis and design, role of system analyst. **SDLC:** Overview of System Development Life Cycle (SDLC), stages of systems analysis: Problem identification, Feasibility study and cost benefit analysis, System requirement analysis Stages of systems design: System design specification and programming, System implementation, follow up, maintenance, Evaluation of a system. **SDLC Models:** Waterfall Model, V-process model, spiral model, Agile model.	25	11
2	**System Requirement Analysis and Information system Building Blocks** Requirement Analysis: Function requirements and non- Function requirements. Requirement Identification: Interview, Surveys, Prototyping, Use case Modeling **Information system Building Blocks:** Introduction to Information system, A framework for system development architecture,Knowledge Building Blocks, Process Building Blocks, Communication Building Blocks.Network technology and Information Building Blocks.	25	11
3	**Data Modelling, Process Modelling and Object Modeling**Introduction to Data Modeling, Entity-Relationship Diagram. Data Dictionary. Introduction to Process Modeling, Data Flow Diagram. Object Modeling: Structured Chart, HIPO chart.	25	11
4	**Project Management** Introduction to Project Management, the Causes of Failed Projects, Project Manager Competencies, Business Achievement Competencies, Problem Solving Competencies, Influence Competencies, People Management Competencies, Self- Management Competencies, Project Management Functions Project Management Tools and Techniques: Project Evaluation and Review Technique (PERT chart), Gantt chart, The Project Management Life Cycle.	25	12

Reference Books

1.	**System Analysis and Design (TextBook)** By S. Parthasarthy & B. W. Khalkar | 1st Edition
2.	**Analysis & Design of Information System** By James A. Senn | Second Edition

Course Outcome

After Learning the Course the students shall be able to:

1.Identify and recall key concepts and terminology related to system analysis and design, such as the System Development Life Cycle (SDLC), requirements gathering, and modeling techniques.
2. Describe basic terminology and concepts related to system requirements, such as stakeholder needs, functional and non-functional requirements, and use cases.
3. Apply data modeling, process modeling, and object modeling techniques to develop comprehensive system designs that accurately represent both data flow and system functionality.
4. Apply project management principles and methodologies to plan, execute, and monitor projects, ensuring they are completed on time and within scope and budget.

Course: B.Sc. (IT) **Semester:** 2

Prerequisite:

Course Objective: The objective of this course is to familiarize students with various concepts of System development like planning, analysis, design, deployment and maintenance.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	20	-	30	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Outcome

After Learning the Course the students shall be able to:
1.Identify and recall key concepts and terminology related to system analysis and design, such as the System Development Life Cycle (SDLC), requirements gathering, and modeling techniques. 2. Describe basic terminology and concepts related to system requirements, such as stakeholder needs, functional and non-functional requirements, and use cases. 3. Apply data modeling, process modeling, and object modeling techniques to develop comprehensive system designs that accurately represent both data flow and system functionality. 4. Apply project management principles and methodologies to plan, execute, and monitor projects, ensuring they are completed on time and within scope and budget.

List of Practical

1.	**Design an Information System on any Business requirement. Do the Requirement Analysis, identify the modules and users of the system**
2.	**Develop SRS as per IEEE standard**
3.	**For the same system, do the feasibility study and check for the various feasibility aspects**
4.	**Design the E-R diagram for the system**
5.	**Design the Data Flow diagram and Data Dictionary for the system**
6.	**Create Decision table and decision tree for Bill preparation or account creation**
7.	**Design Use case, Sequence Diagram and Activity Diagram for Payroll Management System**
8.	**Design Use case, Sequence Diagram and Activity Diagram for Payroll Management System**

Course: BCA **Semester:** 2

Prerequisite: Basic knowledge of AI & ML

Course Objective: Provide you with the knowledge and expertise to become a proficient data scientist. Demonstrate an understanding of statistics and machine learning concepts that are vital for data science. Produce Python code to statistically analyze a dataset and critically evaluate data visualizations based on their design and use for communicating stories from data.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	-	-	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Artificial Intelligence** What is an AI Technique? The AI Problems and applications, Major areas of Artificial Intelligence	10	5
2	**Introduction to Search Algorithm** Basic Problem Solving Methods and State Space Search Defining the Problems as a State Space Search, Exhaustive search -BFS, DFS, Bidirectional Search, Heuristic search - Hill Climbing, Best First Search, A* search algorithm	20	9
3	**Knowledge Representation** Knowledge representation as propositional logic, predicate logic, Semantic Network, Frame based knowledge	20	9
4	**Introduction to NLP (Natural Language Processing)** What is NLP? History of NLP, Advantages of NLP, Disadvantages of NLP, Components of NLP Applications of NLP, how to build an NLP pipeline? Phases of NLP, Why NLP is Difficult? NLP APIs, NLP Libraries, Difference between Natural language, and Computer language	10	5
5	**Unsupervised learning Algorithm**Unsupervised learning, Applications, challenges, K-Nearest Neighbor Learning Locally Weighted 05 15 71 Regression, SVM, Priority Algorithm, EM Algorithm.	30	12
6	**Artificial Neural networks and Deep learning** Introduction to Artificial Neural networks and Deep learning and genetic algorithms Neural Network Representation, Appropriate problems for Neural Network Learning, Perceptron, Multilayer Networks and Back Propagation Algorithms, Remarks on Back Propagation Algorithms. Case Study: Face Recognition	10	5

Course Outcome

After Learning the Course the students shall be able to:

1.Apply foundational concepts of artificial intelligence and machine learning, demonstrating knowledge of their significance, methodologies, and real-world applications.
2.Analyze and evaluate various search algorithms, choosing and implementing the most appropriate techniques to solve complex AI problems.
3.Evaluate and synthesize AI techniques for knowledge representation and apply Bayesian learning methods to make informed predictions based on uncertain data.
4.Create and implement clustering algorithms and convolutional neural networks, applying theoretical concepts to real-world scenarios in deep learning.

Course: BCA **Semester:** 2

Prerequisite: Basic knowledge of AI & ML

Course Objective: Provide you with the knowledge and expertise to become a proficient data scientist. Demonstrate an understanding of statistics and machine learning concepts that are vital for data science. Produce Python code to statistically analyze a dataset and critically evaluate data visualizations based on their design and use for communicating stories from data.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	20	-	30	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Outcome

After Learning the Course the students shall be able to:
1.Apply foundational concepts of artificial intelligence and machine learning, demonstrating knowledge of their significance, methodologies, and real-world applications. 2.Analyze and evaluate various search algorithms, choosing and implementing the most appropriate techniques to solve complex AI problems. 3.Evaluate and synthesize AI techniques for knowledge representation and apply Bayesian learning methods to make informed predictions based on uncertain data. 4.Create and implement clustering algorithms and convolutional neural networks, applying theoretical concepts to real-world scenarios in deep learning .

List of Practical

1.	**Implementation of CSV operation using Pandas library.**
2.	**Implementation CSV Read / Write Operation using Pandas library.**
3.	**Write a program(s) to implement BFS and/or DFS algorithms.**
4.	**Write a program to Implement A* Algorithm**
5.	**Implementation To add the missing value in any data set Using Pandas Library**
6.	**Implementation Classification with k-Nearest Neighbor**
7.	**Introduction about NLTK (Natural Language Toolkit) to implement classification, stemming, tagging, parsing, semantic reasoning, and tokenization in Python**
8.	**Write a program(s) to implement Support vector machines**
9.	**Write a program(s) to implement EM algorithm**
10.	**Write a program(s) to implement 8 puzzle problem or Water Jug problem or Tic-tac-toe game or any AI search problem.**
11.	**Implementation of Neural network-based application.**

Course: BCA **Semester:** 2

Prerequisite: Basic Cyber Security And Forensics - 2

Course Objective: The objective of this course is to familiarize students with concepts of Advance Cyber Security And Ethcial Hacking And To Keep Them Aware About Cyber Crime So That They Can Keep Themselves Safe On The Digital Platform.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	-	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction To Ethical Hacking**Student Will Learn New Terms Like Hacking, Types Of Hackers, What Is Ethical Hacking. Why Do We Need Ethical Hackers And Some Terms In This Field.	20	12
2	**Command Line Hacking**Will Teach Students About The Use Of Command Prompt In Ethical Hacking Along Side With Practical. It Will Have Various Commands That Will Help Gaining Knowledge For Ethical Hacking.	20	12
3	**Introduction To Malwares**Students Will Know About Various Types Of Virus, Also They Will See A Live Demo For The Malwares. Also They Will Get Aware Regarding Malwares, Rensomwares To Keep Themselves Safe Digitally.	20	12
4	**Basic Introduction To Kali Linux.**This Chapter Will Show The Importance Of Kali Linux In Ethical Hacking And How To Operate It. How To Operate.	20	12
5	**Cyber Crimes – II**This Will Explain Students About The Basics Of Deep Web, What Is Phishing, Email Spamming, And Various New Terms For Cyber Crimes. Also Will Learn How To Prevent Them.	20	12

Reference Books

1.	**Hacking The Art Of Exploitation (TextBook)** By By Jon Erikson
2.	**Computer Hacking Beginner Guide** By By Alan T Norman
3.	**The Hacker Playbook 2.0** By Peter Kim
4.	**Techchip Material** By Online Material Followed By Google And Youtube Platform

Course Outcome

After Learning the Course the students shall be able to:

1.Understand and explain the fundamental concepts of ethical hacking, including its significance, methodologies, and legal implications.
2.Analyze various types of malware, understanding their functionalities and impacts on systems and networks.
3.Apply basic skills in Kali Linux to perform security testing and penetration testing, leveraging the tools and features of the operating system.
4.Evaluate and discuss contemporary cyber crime trends, assessing their implications for individuals and organizations.

Course: BBA **Semester:** 2

Prerequisite: Curiosity and willingness to learn about new technologies and digital trends is important in the field of digital marketing

Course Objective: • Understand the fundamental concepts and components of digital marketing, including the role of internet users and the digital advertising market in India. • Develop skills required in digital marketing, such as social media marketing, Facebook marketing, mobile marketing, Twitter marketing, Instagram and Snapchat marketing, display advertising, LinkedIn marketing, search engine advertising, search engine optimization, and web analytics. • Create and implement effective digital marketing strategies for various platforms, including Facebook, Twitter, Instagram, Snapchat, and LinkedIn. • Analyze and utilize different marketing tools and features specific to each platform to optimize campaign performance and achieve marketing goals.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to digital marketing :**digital marketing, internet users, digital marketing strategy, digital advertising market in India, skills required in digital marketing, digital marketing plan	15	10
2	**Social MediaSocial media marketing :** listen, goal setting, strategy, implementation, measure, improve **Facebook marketing :** Facebook for business, anatomy of an ad campaign, digital marketing strategy roadmap, adverts, Facebook insights, other marketing tools **Mobile marketing :** mobile usage, mobile advertising, mobile marketing toolkit, mobile marketing features, campaign development process, mobile analytics **Twitter marketing :** getting started with Twitter, building a content strategy, Twitter usage, Twitter ads, Twitter analytics, Twitter for marketers **Instagram and Snapchat :** Instagram content strategy, Instagram style guidelines, hashtags, videos, sponsored ads, apps, generate leads, what is snapchat?, how does Snapchat work?	25	10
3	**Display and Social MediaDisplay advertising :** concept of display advertising, types of display ads, buying models, targeting, making a good ad, programmatic digital advertising, analytics tools, YouTube advertising **LinkedIn marketing :** LinkedIn strategy, sales lead generation using LinkedIn, content strategy, LinkedIn analytics, targeting, and ad campaigns	20	10
4	**Search engine:Search engine advertising :** ad placement, managing consumer demand, integrated marketing communication, impact of digital channels on IMC, ad ranks, creating an ad campaign, enhance your ad campaign, performance reports **Search engine optimization :** search engine, concept of Search Engine Optimization (SEO), SEO phases, on page optimization, off page optimization, social media reach, maintenance	20	10
5	**Web analytics**Data collection, key metrics, making web analytics actionable, multi-channel attribution, types of tracking codes, mobile analytics, competitive intelligence.	20	5

Reference Books

1.	**Fundamentals of Digital Marketing, (TextBook)** By Puneet Singh Bhatia, | Palgrave Macmillan
2.	**Digital Marketing,** By Seema Gupta, | Prentice Hall
3.	**Marketing Management** By Philip Kotler | Current

Course Outcome

After Learning the Course the students shall be able to:
1. List common digital marketing channels and platforms. 2. Explain the customer journey in the digital marketing context. 3. Create a social media content calendar for a specific target audience. 4. Analyze website traffic data to identify patterns and trends. 5. Assess the ROI of a digital advertising campaign using key performance indicators (KPIs). 6. Develop a comprehensive digital marketing plan for a new product launch, including budget allocation and channel selection

Course: B.Sc. Design **Semester:** 2

Prerequisite: An understanding of Basic Camera Mechanism can be helpful. | 18010201PP01 - Digital Camera Mechanism

Course Objective: Taking a basic photography course can be incredibly helpful for anyone looking to improve their photography skills. Not only will you learn about the technical aspects of photography, but you'll also gain a greater appreciation for the art form and discover your own unique style.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Semester	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	1	6	-	4	-	20	20	-	60	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit - I** **Introduction to Concave Lenses:** - Definition and basic properties. - Comparison with convex lenses. **Concave Lens Structures:** - Explanation of the curved surfaces and thickness of concave lenses. - Variations in concave lens shapes. **Ray Diagrams for Concave Lenses:** - Construction and interpretation of ray diagrams for concave lenses. - Understanding the behavior of light rays passing through concave lenses. **Applications of Concave Lenses:** - Real-world applications in various optical devices. - Significance in corrective lenses.	50	45
2	**Unit - II** **Image Formation:** Understanding how images are formed by lenses. Differentiating between real and virtual images. **Image Size:** Explanation of image size in relation to object size and lens properties. Mathematical expressions for calculating image size. **Magnification:** Definition and formula for magnification. Significance of magnification in optical systems. **Factors Affecting Magnification:** Exploring how changes in object distance, image distance, and focal length impact magnification. Real-world examples illustrating magnification variations. **Applications of Magnification:** Practical applications in microscopy, telescopes, and other optical devices. Importance of magnification in scientific and industrial fields.	50	45

Reference Books

1.	**The Digital Photography Book: The Step-By-Step Secrets For How To Make Your Photos Look Like The Pros** By Scott Kelby | Rocky Nook
2.	**Understanding Exposure** By Peterson, B. | Amphoto Books, New Delhi India | 4 th Edition,, Pub. Year 2016

Course Outcome

After Learning the Course the students shall be able to:

1. Improved technical skills: Basic photography classes will teach you the fundamentals of camera operation, exposure, and lighting. This will help you understand how to use your camera to its full potential and create images that are properly exposed and well-lit.
2. Greater artistic expression: Basic photography classes will also help you develop your creative vision and explore different styles of photography. By learning about composition, color, and perspective, you'll be able to create images that are not only technically proficient but also visually compelling.

Course: B.Sc. Design **Semester:** 2

Prerequisite: An understanding of Basics of Camera can be helpful. | 18010201VV01 - Fundamentals of Digital Videography

Course Objective: The course introduce students to the key creative and conceptual principles for working with video and moving images. With introductions to digital video cameras, sound recording, and editing software, the course enables you to develop shooting and editing techniques relevant media arts contexts.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Semester	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	1	6	-	4	-	20	20	-	60	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit - I** **Introduction to Contrast:** - Definition and importance in imaging. - Role in distinguishing details in an image. **Types of Contrast:** - Spatial contrast vs. tonal contrast. - Contrast in different lighting conditions. **Factors Influencing Contrast:** - Lens characteristics affecting contrast. - Impact of subject matter and scene on contrast. **Contrast Enhancement Techniques:** - Use of filters and post-processing to enhance contrast. - Practical applications in photography and imaging.	55	60
2	**Unit - II** **A) Key Lighting** **Introduction to Key Lighting:** - Definition and fundamental role in the 3-point lighting system. - Significance in creating the primary illumination on the subject. **Placement and Direction:** - Understanding optimal positions and angles for key lights. - Techniques for controlling shadows and highlights using key lights. **Modifiers and Tools:** - Exploring various modifiers (softboxes, barn doors, etc.) to shape key light. - Importance of key light intensity and color temperature. **Creative Applications:** - Case studies illustrating creative uses of key lighting in different genres. - Adapting key lighting for diverse cinematic styles. **B) Fill Lighting** **Introduction to Fill Lighting:** - Definition and its role in balancing shadows created by the key light. - Achieving a natural and aesthetically pleasing look with fill light. **Placement and Intensity:** - Optimal positioning of fill lights to complement the key light. - Balancing fill light intensity to control contrast. **Modifiers and Techniques:** - Exploring tools and techniques to soften or shape fill light. - Creative use of fill light for specific moods and tones.	45	40

	Practical Considerations: - Addressing challenges in fill lighting, such as avoiding overfill and flat lighting. - Adapting fill lighting setups to different shooting environments. **C) Back Lighting** **Introduction to Back Lighting:** - Definition and role in separating the subject from the background. - Creating depth and dimensionality with back lighting. **Placement and Angles:** - Strategic placement of back lights to achieve desired effects. - Experimenting with various angles for backlighting. **Rim Lighting and Halos:** - Understanding rim lighting as a subset of back lighting. - Creating halos and highlights to enhance the subject's outline. **Enhancing Visual Interest:** - Practical tips for maximizing the impact of back lighting in storytelling. - Case studies showcasing creative uses of back lighting in cinematography.		

Reference Books

1.	**Cinematography: Theory and Practice: Image Making for Cinematographers and Directors** By Blain Brown | Routledge
2.	**Understanding Exposure** By Peterson, B. | Amphoto Books, New Delhi India | 4 th Edition,, Pub. Year 2016

Course Outcome

After Learning the Course the students shall be able to:
After the introducing this course, students will have a generic overview and would able to understand :- Technologies of working digitized Moving image, sound & editing setup To disseminate important stories and provoke feelings & critical thinking .

Course: B.Sc. Design **Semester:** 2

Prerequisite: NIL

Course Objective: • They can understand & apply the basics of story-telling in their area of expertise. • Importance of Story-telling in a Visual form. • They can explain the usage and importance of Characters.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Semester	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	1	6	-	4	-	20	20	-	60	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Unit - I** **Storytelling:** Definition and Significance: Introduction to the art of storytelling in visual mediums. Evolution of Storytelling: Historical context and how storytelling has evolved in cinema and other visual media. **What is a Story?** Elements of a Story: Breakdown of key components such as plot, characters, setting, and theme. Narrative Structures: Exploring linear and non-linear storytelling approaches. **3 Act Structure: Beginning, Conflict, Resolution** Act 1 - Beginning: Introduction of characters, setting, and establishment of the story's foundation. Act 2 - Conflict: Development of challenges, rising action, and intensification of conflicts. Act 3 - Resolution: Climax, resolution of conflicts, and conclusion. **Characters** Character Development: Techniques for creating well-rounded and engaging characters. Character Arcs: Understanding the evolution and growth of characters throughout the story. **Scene Development** Importance of Scenes: Analyzing the role of individual scenes in advancing the plot. Pacing and Flow: Techniques for maintaining a dynamic and engaging pace in scene transitions. **Importance of Dialogues in Story** Function of Dialogues: Understanding how dialogues contribute to character development and plot advancement. Subtext and Nuances: Exploring the layers of meaning within dialogues and how they add depth to storytelling. **Acting, Working with Dialogue** Character Interpretation: Strategies for actors to understand and embody their roles. Dialogue Delivery: Techniques for delivering dialogues convincingly and authentically. **Clarity of Story through Characters** Character-driven Storytelling: How characters can serve as a vehicle for conveying the narrative. Visual Storytelling: Exploring how visual elements complement character actions and dialogues.	50	45
2	**Unit - II** **Storyboarding - Introduction** Definition and Purpose: Understanding the role of storyboarding as a visual planning tool in filmmaking. Historical Context: Exploring the evolution of storyboarding and its significance in pre-visualization. **Perspective** Basics of Perspective Drawing: Introduction to one-point, two-point, and three-point perspective. Creating Depth: Techniques for using perspective to add depth and dimension to storyboard frames. **Point of View** Camera Angles and Shots: Exploring different camera angles (high angle, low angle, eye level) and shot types (wide shot, close-up, etc.). Narrative Impact of Point of View: Analyzing how the choice of point of view influences storytelling. **Composition; Visual Clarity**	50	45

	Rule of Thirds: Understanding and applying the rule of thirds in composition. Visual Hierarchy: Creating clear and compelling compositions for effective visual storytelling. **Dramatic Composition** Creating Tension and Emotion: Techniques for using composition to enhance the dramatic impact of a scene. Color and Lighting in Composition: Exploring how color and lighting contribute to the overall dramatic composition. **Use of Angles** Low and High Angles: The psychological impact of shooting from low or high angles. Dutch Angles: Understanding and using dutch angles for visual storytelling purposes. **Character Performance** Expressive Poses and Gestures: Techniques for conveying character emotions and actions through poses. Storyboarding Action Sequences: Creating dynamic and visually engaging sequences to depict character performance. **Character Development & Design** Character Design Principles: Introduction to designing characters for visual storytelling. Consistency in Design: Ensuring consistency in the appearance of characters across frames.		

Reference Books

1.	**Prepare to Board! Creating Story and Characters for Animated Features and Shorts** By by Nancy Beiman | Focal Press
2.	**Dream Worlds: Production Design for Animation** By Hans Bacher | Focal Press

Course Outcome

After Learning the Course the students shall be able to:

- Understand the art of Story Telling.
- Understand the purpose of Story boarding
- Understand, learn, and apply technique in storyboarding

Course: BCA **Semester:** 2

Prerequisite: A core course on Business statistics desirable

Course Objective: Analytics and data science industry, IT services industry, Manufacturing and services operations and marketing

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
1	-	2	-	2	20	20	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Business Intelligence & Analytics** Introduction to Business Intelligence & Analytics (BIA), drivers of BIA, types of analytics: descriptive to prescriptive, vocabulary of business analytics, course plan and resources, Technical architecture of BIA, case analysis of AT&T Long distance, fundamentals of data management, OnLine Transaction Processing (OLTP), design process of databases	17	5
2	**Relational Databases to Customer Analytics** Relational databases, normalisation, SQL queries, ShopSense case of management questions, data warehousing, OnLine Analytical Processing (OLAP), data cube, Descriptive analytics, and visualization, customer analytics, survival analysis, customer lifetime value, case study	17	5
3	**Navigating the Data Mining Process and Statistical Learning** Data mining process, introduction to statistical learning, data pre-processing, data quality, overview of data mining techniques, case study using regression analysis, Introduction to classification, classification techniques, scoring models, classifier performance, ROC and PR curves	18	5
4	**Decision Trees and Cluster Analysis** Introduction to decision trees, tree induction, measures of purity, tree algorithms, pruning, ensemble methods, Tree implementation in Python: problem of targeted mailing,Cluster analysis, measures of distance, clustering algorithms, K-means and other techniques, cluster quality	18	5
5	**Insights with Clustering, Neural Networks, and Text Mining** A store segmentation case study using clustering, implementation in Python, profiling clusters, cluster interpretation and actionable insights, RFM sub- segmentation for customer loyalty, Machine learning, Artificial Neural Networks (ANN), topology and training algorithms, back propagation, financial time series modelling using ANN, implementation in Python,Text mining, process, key concepts, sentiment scoring, text mining using R-the case of a movie discussion forum	30	10

Course Outcome

After Learning the Course the students shall be able to:

This course equips students with necessary knowledge and skills on the thought process, modelling approaches and tools required to use data from the enterprise databases and other sources for business decisions. In turn, the course prepares participants for a career in data science, business analytics and market research. This course will introduce the context of data mining, and cover important modelling techniques such as regression, decision trees, clustering, ANN and text mining.

Miscellaneous

Useful Links

1. https://nptel.ac.in/courses/106106361

Course: BCA **Semester:** 2

Prerequisite: Basic knowledge of computer with popular Microsoft excel technologies

Course Objective: Data Visualization for Business Intelligence works closely with business stakeholders to identify business requirements. They collaborate with enterprise data analysts and data engineers to identify and acquire data. They also transform the data, create data models, visualize data, and share assets by using latest popular technology. Candidates for this exam should be proficient at using Power Query and writing expressions by using Data Analysis Expressions (DAX). These professionals know how to assess data quality. Plus, they understand data security, including row-level security and data sensitivity

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
1	-	2	-	2	20	20	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Get started with data analytics** In this learning path, you will learn about the life and journey of a data analyst, the skills, tasks, and processes they go through in order to tell a story with data so trusted business decisions can be made. You will learn how the suite of data analytics tools and services are used by a data analyst to tell a compelling story through reports and dashboards, and the need for true business intelligence in the.	15	4
2	**Overview of data analysis** Learn Data-driven businesses make decisions based on the story that their data tells, and in today data-driven world, data is not being used to its full potential, a challenge that most businesses face. Data analysis is, and should be, a critical aspect of all organizations to help determine the impact to their business, including evaluating customer sentiment, performing market and product research, and identifying trends or other data insights.	15	4
3	**Introduction: Started building with current available technology** Learn how Power BI services and applications work together. Explore how Power BI can make your business more efficient. Learn how to create compelling visuals and reports. Create and use analytics reports with Power BI Get started with Microsoft data analytics Get started with Power BI	15	5
4	**Tour and use the Power BI service** The common flow of work in Microsoft Power BI is to create a report in Power BI Desktop, publish it to the Power BI service, and then share it with others, so that they can view it in the service or on a mobile app	18	5
5	**Identify foundational components of Microsoft Power Platform** The common flow of work in Microsoft Power BI is to create a report in Power BI Desktop, publish it to the Power BI service, and then share it with others, so that they can view it in the service or on a mobile app.	17	5
6	**Introduction to creating measures using Data Analysis Expressions** Data Analysis Expressions (DAX) is a programming language that is used throughout Microsoft Power BI for creating calculated columns, measures, and custom tables. It is a collection of functions, operators, and constants that can be used in a formula, or expression, to calculate and return one or more values. You can use DAX to solve a number of calculations and data analysis problems, which can help you create new information from data that is already in your model.	20	7

Reference Books	
1.	**Mining of Massive Datasets** By Jure Leskovec, Anand Rajaraman, Jeffrey David Ullman
2.	**Data Analytics: Become a Master in Data Analytics** By Richard Dorsey
3.	**Data Smart: Using Data Science to Transform Information into Insight** By John W. Foreman

Course Outcome

After Learning the Course the students shall be able to:
1 - Explain the core concepts of data analytics and the foundational components of the Microsoft Power Platform. 2 -Analyze various data analysis methodologies and tools, including an overview of available technologies and their applications in real-world scenarios. 3 -Demonstrate the ability to navigate and utilize the Power BI service, effectively creating and sharing visualizations and reports. 4 -Create and implement measures using Data Analysis Expressions (DAX) to perform advanced data calculations and enhance their analytical capabilities.

List of Practical

1.	**Design Dashboard for Marketing Campaign Insights Analysis using Microsoft Excel**
2.	**Design Dashboard for Marketing Campaign Insights Analysis using Microsoft Excel**
3.	**Design Dashboard for Healthcare Sales Analysis using Microsoft Excel**
4.	**Design Dashboard for Global Health Expenditure Analysis using PowerBI**
5.	**Design Dashboard for Loan Application Analysis using PowerBI**
6.	**Design Dashboard for Movie Sales Visualization using PowerBI**
7.	**Design Dashboard for Covid-19 Insights Analysis using PowerBI**

Parul® University

Subject Syllabus

00019302AE05 - Basic Hindi-II

Course: BCA

Semester: 2

Prerequisite: Knowledge of Hindi-I

Course Objective: Basic comprehensive skills and Hindi-I

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**□□□□□ □□□□□□□□□ (Advanced vocabulary)**□□□□□ □□□□□□□□□ (Advanced vocabulary) □□□□□□□ (Numbers) (51 onwards) □□□ (Telling Time) □□□□□□□□ (Greetings)	13	4
2	**□□□□□ □□□□ (Listening skills)**□□□□□ □□□□ (Listening skills) □□□ □□□ ((Short Story) □□□□ □□□□□□□ ((Short Conversation)	20	6
3	**□□□□□ □□ □□□□□□□□ (Speaking Skills)**□□□□□ □□ □□□□□□□□ (Speaking Skills) □□□□ □□□□□ (Self Introduction) □□□ □□ □□□ □□□□□□□ (Day to day conversation) □□□□□□□□□ (Elocution)	27	8
4	**□□□□□ □□ □□□□ (Reading Skills)**□□□□□ □□ □□□□ (Reading Skills) □□□□□□ □□ □□□□□ (Reading Comprehension) □□□ □□□ (Short Story) □□□□□ □□ □□□ (Newspaper article)	20	6
5	**□□□□ □□□□ (Writing skills)**□□□□ □□□□ (Writing skills) □□□□ □□□□□ (Self Introduction) □□□ □□□□□□□ (Short message)	20	6

Reference Books

1.	**Hindi for Beginners published** By Up To School Worksheets
2.	**Hindi Abhyaas Pustika Published** By Seema Verma | Trishala Learning System pvt.
3.	**NCERT Workbook of Hindi for Grade-2**
4.	**Rachnatmak Vyakaran** By Suresh Pant and Himani Joshi | Pearson.
5.	**Matra Gyan** Wonder House Books
6.	**Amoli Hindi Vyakaran** By Dr. Nirmal Dalal

Course Outcome

After Learning the Course the students shall be able to:
After Learning the course the students shall be able to: Understand difficult words in Hindi language. Comprehend Hindi language through listening Introduce self in Hindi language. Communicate at elementary level in Hindi. Read and write Hindi language.

Course: BCA **Semester:** 2

Prerequisite: Knowledge of Gujarati-I

Course Objective: Basic comprehensive skills and Gujarati-I

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**□□□□ □□□□□ (Advanced vocabulary)**□□□□ □□□□□ (Advanced vocabulary) □□□□□□□□ (Numbers) (51 onwards) □□□ (Telling time) □□□□□□□□□□ (Greetings)	13	4
2	**□□□□□ □□□□□□ (Listening Skills)**□□□□□ □□□□□□ (Listening Skills) □□□□□ □□□□□□ (Short Story) □□□□□ □□□□□□ (Short Conversation)	20	6
3	**□□□□□□□ □□□□□□ (Speaking Skills)**□□□□□□□ □□□□□□ (Speaking Skills) □□□□□□ □□□□□ (Self Introduction) □□□□□□□ □□□□□□ (Day to day conversation) □□□□□□□□ (Elocution)	27	8
4	**□□□□□ □□□□□□ (Reading Skills)**□□□□□ □□□□□□ (Reading Skills) □□□□□ □□□ (reading comprehension) □□□□□ □□□□□□ (Short Story) □□□□□ □□ □□□ (Newspaper article)	20	6
5	**□□□□ □□□□□□ (Writing skills)**□□□□ □□□□□□ (Writing skills) □□□□□□ □□□□□ (Self Introduction) □□□□□ □□□□□ (Short message)	20	6

Reference Books

1.	**, Technical Communication : Principles And Practice** By Sangeetha Sharma, Meenakshi Raman | Oxford University Press
2.	**All in One (English-Gujarati)** Manoj Publications
3.	**Gujarati Barakhadi by Sonika Agrawal** Published by Notion Press
4.	**Varna Lekhan** By Gujarati Books
5.	**My first Gujarati alphabets** By Priyal J. | My first Picture Book Inc

Course Outcome

After Learning the Course the students shall be able to:
After Learning the course, the students shall be able to: Understand difficult words in Gujarati language. Comprehend Gujarati language through listening Introduce self in Gujarati language. Communicate at elementary level in Gujarati. Read and write Gujarati language.

Course: B.Sc. **Semester:** 2

Prerequisite: Knowledge of Communication Skills - I

Rationale : This course is designed to help learners develop effective English communication skills essential for academic success and professional proficiency.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
1	-	2	-	2	40	-	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Vocabulary Building (Synonyms, Antonyms, One Word Substitutes)** Understanding word meanings and context Synonyms and antonyms usage rule Techniques for one-word substitutions	13	2
2	**Direct Indirect Speech** Rules of direct and indirect speech Tense and pronoun changes Reporting questions, commands, and exclamations	13	2
3	**Sentence Correction** Basic grammar rules and sentence structures Common errors and correction strategies Subject–verb agreement, tense, and voice	13	2
4	**Picture Perception** Observing and interpreting visual information Identifying characters, settings, and events Recognizing emotions, actions, and contexts	13	2
5	**Extempore** Principles of impromptu speaking Structuring a one-to-two-minute speech Importance of clarity, fluency, and confidence	7	1
6	**Letter Writing (Formal & Business)** Structure and format of letters Language and tone in formal/business correspondence Common conventions and etiquette	7	1
7	**Email Writing** Formal and business email formats Subject lines, salutations, and closings Language, tone, and clarity	7	1
8	**Essay Writing** Essay structure (Introduction, Body, Conclusion) Coherence, unity, and logical flow	13	2
9	**Goal Setting and Tracking** Importance of setting SMARTER goals Techniques for tracking progress Understanding short-term vs long-term goals	7	1
10	**Reading Comprehension (Level of difficulty - Intermediate)**	7	1

	Strategies for reading comprehension Identifying main ideas and supporting details Vocabulary in context and inferencing skills		
	Total	**100**	**15**

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyze	Create
Weightage	7	13	31	30	20

Reference Books

1.	**Effective Technical Communication. McGraw Hill (India)/Tata McGraw-Hill.** By Rizvi, M. A.
2.	**English Grammar in Use** By Murphy, Raymond | Cambridge University Press, Pub. Year 2019
3.	**Norman Lewis, Word Power Made Easy, Goyal Publishers, Delhi**
4.	**Practical English Usage** By MICHAEL SWAN

Course Outcomes

At the end of this course Students Will be able to:	
1	Remember fundamental rules of phrases and clauses, types of sentences, and conditionals
2	Understand techniques for analyzing statements and assumptions, and the principles of agenda preparation and minutes of meetings
3	Analyse strategies for effective time management, SOAR analysis, and professional LinkedIn profile creation
4	Apply logical reasoning, articulation, and professional communication skills in group discussions and personal interviews
5	Create engaging blog content with organized structure, coherence, and clarity.

List of Practical

1.	**Vocabulary Building** • Vocabulary Building (Synonyms, Antonyms, One Word Substitutes) • Vocabulary quizzes and matching exercises • Context-based word usage practice • Group word games and drills
2.	**Direct Indirect Speech** • Transforming sentences from direct to indirect and vice versa • Group practice exercises • Error identification drills
3.	**Sentence Correction** • Sentence Correction • Error spotting exercises • Sentence rewriting tasks • Peer correction and discussion
4.	**Picture Perception** • Writing stories or descriptions based on pictures • Group discussion and analysis of visuals • Role-play scenarios derived from images
5.	**Extempore** • Individual JAM/extempore sessions • Peer and instructor feedback • Fluency and confidence improvement activities
6.	**Letter Writing (Formal & Business)** • Drafting letters for various situations • Peer review and correction • Comparison with model letters
7.	**Email Writing** • Drafting formal and business emails • Reviewing and correcting sample emails • Peer evaluation exercises
8.	**Essay Writing** • Writing essays on given prompts • Peer review for coherence and clarity • Editing exercises to improve structure and grammar
9.	**Goal Setting and Tracking** • Creating individual goal plans • Tracking exercises and self-reflection • Group discussion on goal achievement strategies
10.	**ReadingComprehension(LevelofDifficulty – Intermediate)** • Comprehension exercises from passages • Skimming and Scanning activities • Answering inference and vocabulary-based questions

Course: BCA **Semester:** 2

Prerequisite: Knowledge about basic arithmetic operations and geometry

Course Objective: The course provides basic knowledge of mathematics which will be useful in computer application.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Counting**	8	5
2	**Set theory**	8	5
3	**Logic**	8	5
4	**Relations**	8	5
5	**Functions**	8	5
6	**Mathematical Induction and Pigeon hole Principle**	8	5
7	**Graph Theory - 01**	9	5
8	**Graph Theory - 02**	9	5
9	**Graph Theory - 03 and Generating Functions**	9	5
10	**Principle of Inclusion-Exclusion**	8	5
11	**Recurrence relations**	8	5
12	**Advanced Topics**	9	5

Reference Books

1.	**Discrete Mathematical & it's Applications with Combinatorics and Graph Theory** By Kenneth H Rosen | Tata McGraw-Hill
2.	**Graph Theory with Applications to Engineering and Computer Science** By Narsingh Deo | PHI
3.	**Discrete Mathematics with Graph Theory and Combinatorics** By T. Veerarajan | The McGraw Hill Company
4.	**Discrete Mathematics** By Swapan Kumar and BikashSarkar | Oxford University Press

Course Outcome

After Learning the Course the students shall be able to:

1. Ability to know and to understand various types of sequences and series.
2. Study about set theory.
3. Solve Problems related to Determinant and Matrices.
4. Understand concept of geometry.

Course: BCA **Semester:** 2

Prerequisite: Knowledge about basic arithmetic operations and geometry

Course Objective: The course provides basic knowledge of mathematics which will be useful in computer application.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Set theory** Introduction, Representation of sets, Types of Sets, Venn Diagrams, Operations on Sets, Cartesian Product of two Sets	12	7
2	**Determinants and Matrices** Determinants, Expansion of a determinant, Properties of determinants, Minors and Cofactors, Cramer's Rule Matrices, Types of matrices, Arithmetic operations on Matrices , Cramer's rule , Determinants of a Square Matrix, Adjoint of Matrix, Inverse of matrix (up to 3x3 matrix using adjoint matrix)	26	15
3	**Arithmetic and Geometric Progression** Concept of a sequence , Concept of Series, The sum of an arithmetic series, General term of an A.P, Sum upto 'n' terms of an A.P, General term of a G.P, Sum upto 'n' terms of a G.P, Sum upto infinite terms of a G.P.	12	7
4	**Permutations and Combinations**Introduction of Factorial, Fundamental Principle of Counting, Permutation vs. Combination, Types of Permutations, Circular Permutations, Combinations, Different formulas on combination & It's Applications.	18	11
5	**Trigonometry**Measurement of Angles (Degree to Radian and Radian to Degree), The trigonometric functions, Graphs of circular functions, Trigonometric identities, Applications of trigonometry.	16	10
6	**Co–ordinate Geometry**Point : Distance formula, Mid-point formula, Section formula. Line : Forms of equation of straight line, slope point form, Two point form, Parallel and perpendicular lines.	16	10

Reference Books

1.	**B.C.A. Mathematics VOL II** By J.P. Chauhan | Krishna Prakashan Media (P) Ltd.,Meerut
2.	**SystematicModern Mathematics- Part-I & Part-II** By L.R. Dhanda, G.K. Saini and Suranjan Saha | Kalyani Publishers.
3.	**The Elements of Coordinate Geometry, Part-1 Cartesian Coordinates & Plane Trigonometry Part-1** By Loney, Arihant
4.	**Schaum's Outline of Combinatorics** By V. K. Balakrishnan, Mc GrawHill

Course Outcome

After Learning the Course the students shall be able to:
1. Ability to know and to understand various types of sequences and series. 2. Study about set theory. 3. Solve Problems related to Determinant and Matrices. 4. Solve problems of combination and Permutation. 5. Understand concept of geometry. 6. Understand concept of Trigonometry.

Course: BCA **Semester:** 2

Prerequisite: basic awareness of personal values, social behavior, and Indian culture is desirable.

Rationale : IPDC aims to prepare students for the modern challenges they face in their daily lives. Promoting fortitude in the face of failures, Unity amongst family discord, Self-discipline amidst Distractions... and many more priceless lessons. The course focuses on morality and character development at the core of student growth, to enable students to become self-aware, sincere, and successful in their many roles - as an ambitious student, reliable employee, caring family member, and considerate citizen.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction and Remaking Yourself**Restructuring Yourself: Students learn how self-improvement enables them to secure a bright future for themselves. They will learn 6 powerful thought-processes that can develop their intellectual, physical, emotional, and spiritual quotients	7	2
2	**Remaking Yourself**Power of Habit: Students will undergo a study of how habits work, the habits of successful professionals, and the practical techniques that can be used to develop good habits in their life.	7	2
3	**Learning from Legends**Tendulkar & Tata: Students will learn from the inspirational lives of India's two legends, Sachin Tendulkar and Ratan Tata. They will implement these lessons through relatable case studies.	7	2
4	**From House to Home** Listening & Understanding: Active listening is an essential part of academic progress and communications. Students will learn to listen with their eyes, ears, mind, and heart.	7	2
5	**Facing Failures**Welcoming Challenges: This lecture enables students to revisit the way in which they approach challenges. Through the study of successful figures such as Disney, Lincoln and Bachchan, students will learn to face difficulties through a positive perspective.	7	2
6	**Facing Failures**Significance of Failures: Failure is a student's daily source of fear, negativity, and depression. Students will be given the constructive skills to understand failure as formative learning experiences.	7	2
7	**My India My Pride**Glorious Past - Part 1: India's ancient Rishis, scholars, and intellectuals have made tremendous contributions to the world, they developed an advanced, sophisticated culture and civilization which began thousands of years ago. Students will learn the importance of studying India's glorious past so that they could develop a strong passion and pride for our nation.	7	2
8	**My India My Pride**Glorious Past - Part 2: Our ancient concepts can be used to seek revolutionary ideas and to generate inspiration. Students will develop a deeper interest in India's Glorious Past – by appreciating the need to read about it, research it, write about it, and share it.	7	2
9	**Learning from Legends**A.P.J. Abdul Kalam: Dr Kalam's inspirational life displayed legendary qualities which apply to students (1) Dare to Dream (2) Work Hard (3) Get Good Guidance (4) Humility (5) Use Your Talents for the Benefit of Others	7	2
10	**Soft Skills** Networking & Leadership: Students are taught the means of building a professional network and developing a leadership attitude.	7	2

11	**Soft Skills**Project Management: Students will learn the secrets of project management through the Akshardham case study. They will then practice these skills through an activity relevant to student life.	**6**	**2**
12	**Remaking Yourself**Handling Social Media: Students will learn how social media can become addictive and they will imbibe simple methods to take back control.	**6**	**2**
13	**Facing Failures**Power of Faith: Students will learn about the power and necessity of faith in our daily lives.	**6**	**2**
14	**From House to Home**Bonding the Family: Students will understand the importance of strong family relationships. They will learn how to overcome the generation gap and connect with their family more.	**6**	**2**
15	**Selfless Service**Seva: Students will learn that performing seva is beneficial to one's health, wellbeing, and happiness. It also benefits and inspires others.	**6**	**2**
	Total	**100**	**30**

Reference Books

1.	**Integrated Personality Development Course (TextBook)** By Bochasanwasi Akshar Purushottam Swaminarayan Sanstha

Course Outcome

After Learning the Course the students shall be able to:

1. Develop self-awareness, positive habits, and ethical values for personal and academic growth.
2. Apply soft skills such as communication, leadership, and teamwork in academic and social settings.
3. Demonstrate resilience by adopting positive approaches to challenges, failures, and life situations.
4. Appreciate India's cultural heritage and apply its values to become responsible and considerate citizens.

Miscellaneous

Useful Links

https://www.youtube.com/watch?v=_C09aqOszvY

Course: BCA **Semester:** 2

Prerequisite: Knowledge of Basic Programming concepts.

Rationale: This subject will help the students to learn various aspects of Python programming.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/	Credit	T	CE	P	T	P	
1	0	2	-	2	20	20	20	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Sr.	Topics	W	T
1	**Introduction to Python:** Overview of Python and its applications, Setting up the Python environment, Variables, data types, and basic operations,	15	4
2	**Control and conditional Structure** Control structures: if-else statements and loops	20	3
3	**Function and Module** Functions and Modules and Data Structures in Python, Function definition and call, default parameter values, keyword arguments, assert statement	25	3
4	**String and list, tuple and dictionary** Strings-slicing, membership, and built-in, functions on strings, Lists, tuples, sets, and dictionaries operation	20	3
5	**File Handling:** Reading and writing files in Python, Working with CSV and JSON data formats	20	2
		100	15

Reference Books	
1.	Fluent Python, 2nd Edition by Luciano Ramalho (TextBook)
2.	Learn Python3 the Hard Way By Zed Shaw
3.	Beginning Python: Using Python 2.6 and Python 3.1 By James Payne | Wrox Publication
4.	Introducing Python by Lubanovic Bill, O' ReILLY

Course Outcome

After Learning the Course, the students shall be able to:

1. Understand the fundamentals of Python programming including environment setup, variables, data types, and basic operations.
2. Apply control structures such as conditional statements and loops to develop logical and decision-making programs.
3. Implement functions, modules, and various data structures (lists, tuples, sets, dictionaries) to solve computational problems effectively.
4. Analyze and manipulate data using strings, collections, and file handling techniques including working with CSV and JSON formats.

	List of Practical
1.	Write a function that takes the lengths of three sides: side1, side2 and side3 of the triangle as the input from the user using input function and return the area and perimeter of the triangle as a tuple. Also, assert that sum of the length of any two sides is greater than the third side.
2.	Write a Python function to find the nth term of Fibonacci sequence and its factorial. Return the result as a list.
3.	Write a function that takes a number (>=10) as an input and return the digits of the number as a set.
4.	Write a function that finds the sum of the n terms of the following series. Import the factorial function created in question 4. 1 – x 2 /2! + x4 /4! – x 6 /6! + … xn /n!
5.	Write a menu driven program to perform the following on strings: ***a)*** Find the length of string. ***b)*** Return maximum of three strings. ***c)*** Accept a string and replace all vowels with "#" ***d)*** Find number of words in the given string. ***e)*** Check whether the string is a palindrome or not.
6.	Use dictionary to store marks of the students in 4 subjects. Write a function to find the name of the student securing highest percentage. (Hint: Names of students are unique).
7.	Write a function that takes a sentence as input from the user and calculates the frequency of each letter. Use a variable of dictionary type to maintain the count.
8.	Write a function that reads a file file1 and copies only alternative lines to another file
9.	Write a program that makes use of a function to accept a list of n integers and displays a histogram.

Course: B.Sc. IT **Semester:** 2

Prerequisite: Basic knowledge of SQL, databases, and cloud computing concepts.

Rationale : To develop skills in deploying, managing, securing, and optimizing Azure SQL databases for modern cloud and enterprise applications.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
2	-	2	-	3	-	-	-	60	30	150

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Azure SQL and Database Option**Introduction to Azure SQL and its various database options including Azure SQL Database, Azure SQL Managed Instance, and SQL Server on Azure Virtual Machines; Differences between PaaS and IaaS offerings; Evaluation of single databases vs elastic pools; DTU vs vCore purchasing models; Overview of service tiers such as General Purpose, Business Critical, and Hyperscale.	20	10
2	**Deploying and Configuring Azure SQL Resources**Deployment and configuration of Azure SQL resources using Azure Portal, PowerShell, CLI, and ARM templates; Configuring firewall rules, collation, and connectivity options; Enabling geo-replication and elastic pools; Integration with VNet service endpoints and private endpoints; Managing databases using tools such as SSMS, Azure Data Studio, and SQLCMD.	20	10
3	**Monitoring and Performance Tuning**Monitoring database performance using Query Performance Insight, Intelligent Insights, and built-in metrics; Query tuning using execution plans and indexes; Using Dynamic Management Views (DMVs) for diagnostics; Resource usage optimization strategies; Identifying and resolving common performance bottlenecks.	20	5
4	**Security and Compliance Features**Understanding Azure SQL's built-in security features including firewalls, authentication methods, and threat detection; Implementing role-based access control (RBAC) and encryption (TDE, Always Encrypted); Ensuring data compliance through auditing and vulnerability assessments; Securing sensitive data using advanced features and best practices	20	10
5	**Backup, Restore & High Availability**Backup and restore strategies including automated backups, long-term retention, and point-in-time recovery; Configuring high availability using active geo-replication and auto-failover groups; Automating tasks using elastic jobs and runbooks; Managing maintenance with scheduled updates; Migration options using Data Migration Assistant and Azure Database Migration Service; Hybrid cloud database architecture.	20	10
	Total	100	45

Course Outcome

After Learning the Course the students shall be able to:

1. Explain Azure SQL services, database options, and cloud deployment models.
2. Deploy and configure Azure SQL resources using Azure tools and connectivity options.
3. Monitor, tune, and optimize database performance using built-in Azure features.
4. Implement security, backup, recovery, and high-availability solutions for Azure SQL databases.

List of Practical	
1.	Provision an Azure SQL Database using the Azure Portal.
2.	Configure firewall rules and connect using SSMS and Azure Data Studio.
3.	Implement performance tuning with Query Performance Insight.
4.	Set up and verify Transparent Data Encryption (TDE).
5.	Enable and test auditing and advanced threat protection
6.	Perform a point-in-time restore of a sample database
7.	Automate a backup task using Azure Automation
8.	Monitor query performance using Extended Events
9.	Migrate an on-premises SQL Server DB to Azure SQL using DMA
10.	Configure Geo-Replication and test failover scenarios.