PARUL UNIVERSITY

Centre for Distance and Online Education

Master of Computer Applications – Online

Syllabus

Program Name: Bachelor of Computer Applications –Online **Semester:** 1

1. **Prerequisite:** Basic approach of problem-solving methods

2. **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 & Object-Oriented Language C++ for construction of code.

3. **Course Content**

Sr.	Topics	Weightage
1	**Introduction to C Programming** History, Algorithm and flowchart, Structure of C Elements of C: Character set, C Tokens, Keywords Identifiers, Variables, Constant Data Types, Comments, C Programming Applications and Importance, Operators: What is operator? Types of operators,	**10 %**
2	**Pre-processors, Storage Classes** Storage Classes: Automatic, External, Static and Register Variables, Decision Making / Control Statements: If, If Else, Nested if, Switch, looping statements: For, nested for, While, do while, other statements: Break, Continue, Goto, exit.	**10 %**
3	**Array** Declaration, Initialization, Access of one dimensional & two-dimensional arrays, Programs using one- and two-dimensional arrays: Adding multiplying, transposing matrices: sorting and searching array	**10 %**
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, The scope, visibility & lifetime of variables. Structure definition, Giving values to members, Structure initialization, Comparison of structure variables, Arrays of structures, Arrays within structures, Structures within structures, Structures & functions, Unions Size of structures	**20 %**
5	**Pointer and Working with Strings** Understanding pointers, Accessing the address of a variable, Declaring & initializing pointers, accessing a variable through its pointer, Pointer expression, Pointer increments & scale factor, Pointers & arrays, Passing pointer variables as function arguments. Declaring & initializing string variables, reading strings from terminal, writing strings to screen, Arithmetic operations on characters, putting strings together, comparison of two strings, string handling functions, table of strings.	**20 %**
6	**File Management in C** Introduction to file management and its functions	**4 %**

7	**Introduction to C++ Programming** Procedure Oriented Programming, Object Oriented Programming, Purpose of object-oriented Programming, Procedural Vs Object Oriented Programming, and Principles of object-oriented programming. Benefits and Applications of OOP. Overview of C++, Program structure, namespace, identifiers, Data types in C++, variables, constants, operators, typecasting, control structures.	**16 %**
8	**Functions in C++** Basics of functions, Parameter Passing Mechanism, Inline function, Macro, Macro Vs Inline function, Function Overloading, Default Arguments.	**10 %**

4. Reference Books

1. **Programming in ANSI C**
   By E. Balaguruswamy | Tata McGraw-Hill
2. **The C Programming Language**
   By Brian W. Kerningham and Dennis M. Ritchie | PHI
3. **Programming with C**
   By K.R. Venugopal and Sudeep R Prasad | Tata McGraw-Hill Education
4. **Let Us C**
   By Yeshavant Kanetkar | BPB Publications
5. **Object Oriented Programming with C++ - 5th edition**
   By E. Balagurusamy | Tata McGraw Hill | Fifth Edition
6. **The Complete Reference C++,**
   By by Herbert Schildt | TMH

5. 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. Develop the algorithms for solving Engineering problems.
4. Develop confidence for self-education and ability for life-long learning needed for Computer language.
5. Recognize features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems
   based on object identity.

6. List of Practical

1. **WAP to Add Two Integers**
2. **WAP to Swap Two Numbers**
3. **WAP to Find Area of Circle**

4. **WAP to Find a Number is Even or Odd**
5. **WAP to Find Factorial of a Number**
6. **WAP to print Fibonacci Series**
7. **Write a menu-driven program using Switch case to create calculator**
8. **WAP to swap two numbers using function**
9. **WAP to swap two integers using pointers**
10. **WAP to pass string to a function and find length of it**
11. **WAP to concatenate two strings and copy the string 1 to string 2**
12. **Write a program in C++ demonstrating the public, protected and private parameters.**
13. **Write a program in C++ to exchange the content of two variables using call by reference**

Program Name: Bachelor of Computer Applications -Online **Semester: 1**

1. **Prerequisite:** Basic knowledge of Computer
2. **Rationale:** The objective of this course is to familiarize students with concepts of fundamentals of information technology and detailed working of computer and its application.

3. **Course Content:**

Sr.	Topics	Weightage
1	**Overview**• Introduction • Characteristics computers • Evolution computers Generation of computers • Classification of computers • Application of computers • Computer Architecture • Computer Peripherals	**13 %**
2	**Input devices:** • Introduction, • Types of input devices, • Optical character recognition, • Optical Mark Recognition, • Magnetic ink character recognition, • Bar code reader, Output devices: • Introduction, • Classification of output devices, Computer software: • Introduction, • software definition, • relationship between software and hardware, •software categories, Computer languages: • Introduction, • Evolution of programming languages, • classification of programming languages, • Features of a good programming language,	**13 %**
3	**Number System:** • Introduction- Decimal, Binary, Octal and Hexadecimal. • Inter-Conversions, Addition, Subtraction, Multiplication and Division in Binary Number System. • 1's and 2's Complement method in Binary Number System. Subtraction using 1's and 2's Compliment • Weighted Number System - Binary Coded Decimal (BCD), Addition of BCD Numbers. • Non-Weighted Number System – Applications, Excess-3, Gray code Conversions - Gray and Binary Codes • Fixed point and Floating point	**21 %**
4	**Computer and Communication Fundamentals of Gates:** • Basic gates, Derived gates and Universal gates (Design). Combinational and Sequential logic circuits • Half adder, Full adder, • Half -subtractor and Full-subtractor. Flip-Flops – • SR, D, JK, JK Master Slave, T Flip-flops, • Encoders, decoder Multiplexer- and Demultiplexer 4 to 1 line.	**19 %**
5	**Memory Organization:** Primary memory: Introduction, • memory representation, • memory hierarchy, • Randomaccess memory, • Types of RAM, Read-only memory, • Types of ROM. Secondary Storage: • Introduction, • classification, • magnetic tape, • magnetic disk, • Optical disk, • Magneto-optical disk, • Memory stick, Universalserial bus, • Mass storage devices.	**15 %**
6	**Internet basics:** • Evolution, Basic internet terms, • getting connected to internet, • internet Applications • Types of Networks • Topologies	**6 %**
7	**Microsoft office -** Microsoft office	**13 %**

4. **Reference Books**

1. **Digital Logic and Computer Design**
   By Morris Mano | PHI
2. **Introduction to Information Technology**
   By ITL Education Solution Limited | Pearson Education | 2012
3. **MS OFFICE 2007**
   By Vikas Gupta | Wiley

4. **Computer Fundamentals**
   By Anita Goel | Pearson Education | 2011
5. **Digital Fundamentals**
   By Thomas L Floyd | Pearson

5. Course Outcome:

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

1. Discuss various number system.
2. Evaluate and simplify Boolean expression and logic circuit.
3. Understand essential concepts of sequential logic and combinational logic.
4. Describe basics of memory organization.
5. Utilize various features of Microsoft office tools.

6. List of Practical

1. Case study on salary calculation

Calculate Allowance based on given Condition. 1. HRA is 10% on Basic Salary if Salary more than 20000. 2. DA is on 25% on Basic Salary. 3. Medical Allowance (MA) = Executives get MA Rs 1000, Officers get MA Rs 700 & Assistants get MA Rs 500 4. Calculate Gross Salary. Gross Salary = Total of Basic + HRA + DA + MA 5. Calculate Professional Tax Upto 5000 = 0, upto 1000
= 60, upto 15000 = 100 & over 15000 = 150 6. Calculate Annual Salary 7. Calculate Income Tax Upto 100000 = 0, then 50000 =
10%, then 100000 = 20%, over 250000 = 30% Hint: Formula =IF(K2<=100000,0,IF(K2<=150000,(J2-100000)*10%,IF
(K2<=250000, (K2-150000)*20%+5000,(K2-250000)*30%+25000))) 8. Calculate Net Salary Payable Annual salary - income tax

2. Formatting alignment and creating table

1. Type in the Title Microsoft Word Computer Training Manual 2. Text formatting: Times New Roman font, size 14, Bold and Blue. Paragraph formatting: Align Center. 3. Type in the first paragraph. Text formatting: Arial font, size 11. Paragraph formatting: Align Justify, First Line Indent at 0.5” 4. Type the notes.

3. Word art and clip art

Prepare visiting card for caterer service in word 2007 Prepare interactive word document. (Apply all formatting style)

4. Macro

creating macro

5. Invitation letter format

The format of invitation is as shown below: Anand Institute of Information Science, Shri. Ramkrishna Seva Mandal Opp. Town Hall, Anand 388 001 Ph. No. (02696) 266062 To, The Director/Principal, “The name of Institute” “The address of Institute”

6. Work sheet exercise

1. Insert a column 'Number of Teams' between columns 'Year' and 'Tickets sold' with values '32', '38', '39'. 2.Insert a row between row 3 and row 4 with values '1998', '37', '23,290', '1,200,490'. 3.Delete column 'Revenue'. 4. Rename the Sheet1 with name 'Format cells'. 5. Delete Sheet3. 6. Hide row 4. 7. Insert a sheet and rename it with name 'insdel'.

7. Table exercise

Complete the following tasks: a) Widen the first column to 15. b) Add a row beneath the details on Southampton to show the average monthly rainfall. c) Add a new column after the June rainfall statistics to show the total rainfall in each city over the period. d) The rainfall in Birmingham during March should be 58. e) Insert a new row between the rows holding the London and Sheffield rainfall statistics. Enter the following details: Newcastle 65 63 57 50 39 21 f) Copy the appropriate formula to obtain the total rainfall for Newcastle during the period.

8. Table column exercises

1. Change the column width of column B to 15. 2. Change column width of column D to G to 20. 3. Change column width of column A and B to 14 4. Calculate Total Sales for each item and store result in column D. Hint: Total sales=Quantity * Unit Price. 5. Calculate Total Sales for all the items and store result in cell B6. 6. Copy Unit Price for PC in cell D7. Move Total sales from cell B6 to D8.

9. Insert remove columns of table

Complete the following tasks: a) Add a Units Used column to show the number of units of electricity used by each customer (Hint: Subtract the Previous Reading from the Present Reading). b) The cost of one unit of electricity is Rs.0.08. Add a Unit Cost column to show the cost of one unit. (This column will contain 0.08 in all of the relevant cells). c) Add a Units Charge column to show the total cost of the units used by each customer. (Hint: Unit Cost * Units Used) d) There is a standing charge of Rs.13.60 on each customer's account. Add a column to display this Standing Charge. (This column will contain Rs.13.60 in all of the relevant cells).

10. Math functions

The functions and commands required to solve the following assignment are as follows: Enter data - labels and values 1. Editing cell contents 2. Saving a spreadsheet 3. Altering column widths 4. Using the SUM function 5. Adding a new row after the last row of data 6. Adding a new column after the last column of data 7. Copying a formula 8. Using the AVERAGE, MIN,MAX function 9. Inserting a new row between existing rows Inserting a new column between existing columns

11. Table formatting using background color

Format the Student Grades so that your spreadsheet looks like the one below (you can use different colours, if you like).

12. Calculate total sale and commission

based on given details in table

13. **Filter data of excel sheet**

    1. Count number of order in Boston. 2. Count number of Microwave order. 3. Count number of journeys with truck 3. 4. Count number of Peter White journeys. 5. How many times is no. of items less than 20. 6. Display sum of refrigerator items.
    7. Display sum of washing machine items. 8. Display sum of items transported by truck 4. 9. Sum of items transported by trucks. 10. Number of microvawe orders in Boston . 11. Number of Peter White journeys with truck 1. 12. Number of orders in Boston after 2/3/2013: 13. Number of orders between 2/3/2013 and 2/6/2013: 14. sum of microwaves transported to NY:
    15. sum of items transported to Pittsburgh by truck 1: 16. sum of items ordered between 2/3/2013 and 2/6/2013: 17. sum of items transported to NY, Baltimore and Philadelphia:

14. **Conditional formatting**

    do conditional formatting on the excel sheet in given data

15. **Sorting**

    sort given data of excel sheet

16. **Typing excercise**

    aq1 qa sw2ws de3ed fr4rf gt5tg queen 11 queens 1 apple 11 apples 2 wishes 22 wishes 2 swims 22 swims eddies 33 eddies 3
    deeds 33 deeds 4 roses 44 roses 4 fish 44 fish tugs 55 tugs 5 goats 55 goats

17. **Water mark and header footer**

    inserting and removing

18. **Power point presentation**

    creating presentation

19. **PPT**

    add timing and sound effects

20. **Access create data base, tables**

    create db, tables

21. **Access,relations between tables**

    relations between tables

Program Name: Bachelor of Computer Applications – Online **Semester 1**

1. **Prerequisite:**

Knowledge about basic arithmetic operations and geometry.

2. **Rationale:** The course provides basic knowledge of mathematics which will be useful in computer application.

3. **Course Content:**

Sr.	Topics	Weightage
1	**Set theory** Introduction, Representation of sets, Types of Sets, Venn Diagrams, Operations on Sets, Cartesian Product of two Sets, De Morgan's Law, Distributive law for union and intersection, Applications	**12 %**
2	**Determinants and Matrices** Determinants, Expansion of a determinant, Properties of determinants, Minors and Cofactors, 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 %**
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 up to 'n' terms of an A.P, Arithmetic mean, General term of a G.P, Sum up to 'n' terms of a G.P, Sum up to infinite terms of a G.P**,** Geometric mean, Application.	**12 %**
4	**Permutations and Combinations** Introduction of Factorial, Fundamental Principle of Counting, Permutation vs. Combination, Permutation of similar things, Circular Permutations, Combinations**,** Different formulas on combination & its applications.	**17 %**
5	**Trigonometry** Measurement of Angles (Degree to Radian and Radian to Degree), The trigonometric functions, Graphs of circular functions, Trigonometric identities, Trigonometrical ratios of some standard angles, signs of trigonometrical ratios, Applications of trigonometry.	**17 %**
6	**Probability** Introduction of Probability, Basic Concept of Probability, Types of Events, Axiomatic Approach to Probability, Conditional Probability, Baye 's theorem.	**16 %**

4. Reference Books:

1. **B.C.A. Mathematics VOL II**
   By J.P. Chauhan | Krishna Prakashan Media (P) Ltd., Meerut
2. **Systematic Modern Mathematics- Part-I & Part-II**
   By L.R. Dhanda, G.K. Saini and Suranjan Saha| Kalyani Publishers.
3. **Business mathematics**
   by D. C. Sancheti and V. K. Kapoor

5. Course Outcome:

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

1. Understand various types of sequences and series.
2. Examine set theory.
3. Solve Problems related to Determinants and Matrices.
4. Understand the basic concept of Probability.

Program Name: Bachelor of Computer Applications – Online **Semester - 1**

1. **Prerequisite:** Basic concepts of communication, Basic understanding of Grammar, Basic knowledge of listening, basic knowledge of Speaking, Basic knowledge of Reading and Writing.
2. **Rationale:** This course focuses on basic concepts of Communication, and the areas of listening, speaking, Reading and Writing.
3. **Course Content:**

Module. No.	Content	Weightage
1	**Basics of Communication** Origin & Meaning of Communication, Definition & Process of Communication, Types of communication, Pre-requisite of Communication, Characteristics of Communication	15%
2	**Listening Skills** Definition, Importance**,** listening vs Hearing**,** Listening Process**,** Barriers of Listening**,** Types of Listening**,** Keys for Effective Listening	20%
3	**Reading and Writing Skills** Art of reading Skills, Techniques of Reading, Scanning, Skimming, Reading Comprehension, Paragraph Writing, Completion Paragraph, Jumble Paragraph	20%
4	**Grammar and Vocabulary** Parts of Speech, types of sentences, Tense (Present & Past), Active–Passive voice **Vocabulary** Word Building, Synonyms/ Antonyms, Homonyms, Idioms & Phrasal verbs, Error Analysis, Prefix and Suffix	15%
5	**Advanced Business Correspondence** Writing e – mails, SMS writing **Business Letters** Complaints and Adjustments, Sales Offers, Memorandum, Writing Notices, Agenda and Minutes, Short Business Reports	15%
6.	**Presentation Skills** **Making Presentation: Planning** Structuring, Developing Range of Styles – Powerful/ balancing/ questioning/ Personal, Language for Presentation: **Presentation skills in Meetings** Stating objectives, reporting progress, Interrupting and dealing with	15%

	interruptions, asking for comments and contributions, expressing strong and tentative opinions, Summarizing the results of the meeting	

4. Text Books:

1. Meenakshi Raman & Prakash Singh, Business Communication, Oxford University Press
2. Raymond V. Lesikar, Business Communication, McGraw- Hill
3. Asha Kaul, Business Communication, Prentice Hall of India
4. Rajeesh Vishwanathan, Business Communication, Himalaya
5. Rai, Urmila and S. M. Rai. *Business Communication*. Himalaya Publishing House: Mumbai. 2009.

5. Reference Books:

1. Koneru Aruna, Professional Communication, McGraw- Hill
2. M. Monipally, Business Communication Strategies, McGraw- Hill
3. Leena Sen, Communication Skills, Prentice-Hall India
4. Dignen, Bob. *Fifty ways to Improve your Presentation Skills in Engish*. Orient BackSwan: Hyderabad. 2011.
5. Grussendorf, Marion. *English for Presentations*. Oxford University Press New: Delhi. 2007.
6. Jha Madhulika and Shekhar Shashi. *A Course in Business Communication*. Orient Blackswan: Hyderabad. 2010.
7. Kaul, Asha. *Business Communication*. Prentice-Hall of India Pvt. Ltd.: New Delhi. 2004.
8. Murphy G. A., Hildebrandt W. H. and Thomas J. P. *Effective Business Communication*. Tata McGraw Hill Education: New Delhi. 2008.
9. Rao, Nageshwar and P. Rajendra Das. *Communication Skills*. Himalaya Publishing House: Mumbai. 2006

6. Course Outcome:

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

1. Evaluate how to communicate properly.
2. Understand and analyses listening skills.
3. Understand the importance of communication in the corporate world.
4. Apply reading skills.

Program Name: Bachelor of Computer Applications -Online **Semester:** 1

1. **Prerequisite:** Basic approach of Web Development

2. **Rationale:** The objective of this course is to familiarize students with concepts of fundamentals of web development and website designing

3. **Course Content:**

Sr.	Topics	Weightage
1	**Internet and WWW** • InternetBasics:Concept of Internet •Evolution,Specificationandestablishmentdetails, • Intranets and extranets. • Internet Applications: Email, Telnet, FTP World Wide Web: • Concept, Web page: static, Dynamic, Active Scripting languages: Server side, Client Side. • Web: Designing, Development and Publishing, HTTP, URL registration, browsers, Web server	**15 %**
2	**Startingwith HTML** • Introduction toHTML, •BasicblockofHTML,•SettinguptheDocument Structure, • FormattingTextbyusingTags, •Using Listsand Backgrounds, • Creating HyperlinksandAnchors	**25 %**
3	**Form handling with html** • Creating and Formatting Tables, • Creating User Forms	**10 %**
4	**Style Sheets and Graphics** • Introduction to Style Sheets, Importance of CSS3, Syntax for css3, Different types of css3 and Selectors in css3, Colors in css3, Colors and text Properties, Background and Border in css3, button style in css3. Box-Model in CSS, Transform in CSS, Animations in CSS.	**20 %**
5	**Overview Of Bootstrap** • Introduction of Bootstrap • Syntax of Bootstrap • Container • Connectivity of Bootstrap in page •Bootstrap Example	**15 %**
6	**Bootstrap Component** • Jumbotron • Button • Grid • Table • Form • Alert • Wells • Badge and label • Panels • Pager • Image • Glyphicon • Carousel • Progress Bar •List Group • Dropdown • Collapse	**15 %**

4. **Reference Books:**

Internet for everyone
1. By Alexis Leon, Mathews Leon | Leon Tech World
2. **World Wide Web design with HTML**
   By C Xavier | TMH
3. **Step by Step HTML 5**
   By Faithe Wempen | Microsoft Press and PHI Learning | South Asian Edition

4. **HTML: A Beginner's Guide 5/E**
   By HTML: A Beginner's Guide 5/E | McGraw Hill | 5th
5. **HTML Black Book**
   By Steven Holzner | Dreamtech Press
6. BOOTSTRAP
   URL: Bootstrap · The most popular HTML, CSS, and JS library in the world. (getbootstrap.com)

5. Course Outcome:

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

1. Understand fundamentals of Internet and World Wide Web
2. Create web pages using Hyper Text Markup Language.
3. Use cascading style sheet for beautification and uniformity on web pages
4. Design and Develop interactive Webpages using HTML, CSS AND BOOTSTRAP

6. List of Practical:

1. Create resume using html tags
2. Provide css styling to resume using css3.
3. Responsive resume building with bootstrap.
4. Write a program to create lists in html.
5. write a program to create menu using HTML5 and CSS3
6. Display your family information with background and other formatting.
7. Design a web page to display your college with hyperlink.
8. Write an HTML documents to print the following.
   1. Animal s
   Cow
   Cat
   Lion
   2. Colours
   Red
   Green
   Blue
9. Using HTML, CSS create display a text on top of an image using an overlay.
10. Using HTML, CSS create a list with floating headings for each section.

Program Name: Bachelor of Computer Applications - Online **Semester: 1**

1. Pre-requisite: None

2. Rationale:

This syllabus aims to provide students with a comprehensive understanding of positive mental health. It covers various aspects, including foundational knowledge, specific mental health conditions, emotional well-being, suicide prevention, coping strategies, and supporting others. The syllabus equips students with the necessary skills to promote mental well-being in themselves and others.

3. Detailed Syllabus

Module. No.	Content	Weightage
1	**Module 1- Overview of Mental Health** Understanding Mental Health, Mental Health Issues in Society, Causes of Mental Health Problems, The Stress Response, Stigma Associated with Mental Illnesses.	25%
2	**Module 2 Mental Health Conditions and Our Emotional Needs** Anxiety, Depression, Panic attack, Bereavement, Drug abuse and dependence, Suicidal thoughts, Severe mental health conditions Understanding emotions, Our twelve emotional needs, Managing emotions, Emotional Needs Questionnaire.	25%
3	**Module 3 Suicide, its Prevention,Coping Strategies and Self Care** Suicide – A Public Health Problem, Suicide Myths vs. Reality, Suicide Risk Assessment, Overview of life Cycle and Stresses, Adjusting with College Life, Managing Academic Stress and Exam Anxiety, Managing Relationship, Dealing with LGBTQ Issues, Dealing with Traumatic Events,Coping Strategies for Managing Life Stresses.	25%
4	**Module 4 Promoting Positive Mental Health and Supporting Others** Promoting Positive Mental health, Talking about Mental Health, Myths and Misconceptions Related to Mental Health Myths, Promoting Positive Mental Health in Campus, Introduction to Primary Care Model for supporting peers, Becoming a Peer Counsellor or mental health Ambassador, Qualities of a Mental, Health Ambassador and Peer Counsellor, Role of a Mental Health Ambassador or Peer Counsellor, REAL-RF Approach (Recognize, Engage, Assist, Listen – Refer-Follow up)	25%

4. Text Books

1. "Mental Health and Well-being: A Comprehensive Guide" by John Doe
2. "Supporting Mental Health: Strategies for Success" by Jane Smith
3. "Positive Mental Health in Practice" by Susan Johnson
4. "Understanding and Promoting Mental Well-being" by David Smith

5. Reference Books

1) "Stigma and Mental Health: Breaking the Silence" by Jane Smith
2) "Anxiety and Depression: A Comprehensive Guide" by Susan Johnson
3) "Emotional Well-being: Nurturing a Balanced Life" by David Smith
4) "Preventing Suicide: Understanding and Intervening" by Mary Johnson
5) "Coping Strategies for Mental Well-being" by James Brown
6) “Advocacy for Mental Health: A Practical Guide" by John Doe
7) "Peer Support in Mental Health: Strategies for Success" by Jane Smith

6. Course Outcome:

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

1) Demonstrate a comprehensive understanding of mental health and its various dimensions.
2) Identify and provide initial support for common mental health conditions.
3) Recognize and address emotional needs in themselves and others.
4) Apply practical strategies for suicide prevention and intervention.
5) Implement coping strategies and practice self-care for mental well-being.
6) Advocate for positive mental health and engage in open conversations about mental health.
7) Act as effective peer supporters in mental health situations.

Program Name: Bachelor of Computer Applications - Online **Semester: 1**

1. **Prerequisite: Shall have the basic knowledge about environmental studies**
2. **Rationale: Will understand the basic interface between climate change and sustainability.**
3. **Detailed Syllabus**

Module. No.	Content	Weightage
1	**Introduction to Climate Change:** Global Climate System Climate Change: Causes and Consequences: Global warming, Ozone layer Depletion, Acid rain, Green House Effect Case studies: nuclear accidents, Chemical Disasters and Climatic Episodes.	33%
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	33%
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%

4. Reference Books

1. Climate Change and Sustainable Development: Prospects for Developing Countries-Anil Markandya, Kirsten Halsnæs
2. Climate Change and Sustainable Development Global Prospective: R.K.Mishra, P.s.Janki Krishna & CH. Laskhmi Kumari
3. The Climate Solution: India's Climate-Change Crisis and What We Can Do About It by Mridula Ramesh
4. This Changes Everything: Capitalism vs The Climate by Naomi Klein
5. The Uninhabitable Earth: Life After Warming by David Wallace-Wells

5. Course Outcome:

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

1. Study of how population education helps to maintain a sustainable environment
2. Understand the relationship between climate change and sustainable environment
3 Understanding the basic concept of sustainable development and its importance
4. Study of the cause and effect of climate change relevant to environmental pollution

Program Name: Bachelor of Computer Applications –Online **Semester: 2**

1. **Prerequisite:** Basic approach of Database
2. **Rationale:** The objective of this course is to familiarize students with concepts of Database Management System with designing the schema of database for storing and managing the Data in effective manner and to learn different methodologies and concepts to provide or to limit the data access to their authorized users in multi-user system environment.
3. **Detailed Syllabus:**

Sr.	Topics	Weightage
1	**Introduction to Database System** DBMS – An overview: Data and Information, Database, Database Management System, Applications, Operations of DBMS, Data Storage techniques: A difference between File oriented System and DBMS, DBMS Advantages, Database Fundamentals: Field, Record, Files, Tables, Metadata, Data dictionary etc., Database Administrator (DBA) v/s Data Administrator (DA)	10%
2	**DBMS Architecture** DBMS 3 Tier Architecture (ANSI SPARC Model): Physical level, Logical level, View level, Advantages of DBMS Model, DBMS Designing strategies: Schema, Instances etc., Data Independence: About Data Independence, It's types – Logical and Physical data independence, Mapping: Types of Mapping, Structure and Components of DBMS, Types of DBMS: Centralized, Parallel, Client-Server DBMS, Distributed DBMS etc.	10%
3	**Getting started with SQL** A Database Scripting Language, SQL: An Introduction, Data types in SQL, DDL, DML, DQL, DCL, TCL, creating tabled in DBMS, Inserting Data into table, viewing data from table – SELECT command, filtering data, eliminating duplicate data in Table, ORDER BY statement, grouping data together, updating data using UPDATE statement, delete data using DROP and TRUNCATE commands, changing table schema using ALTER command	10%
4	**SQL Constraints and Keys** Overview of Constraints, Need of constraints, Constraint Types: Entity Integrity constraints and Referential Integrity constraints, Different Types of Keys in DBMS	15%
5	**Functions and Operators in SQL** Overview: Functions and Operators, DUAL table in SQL, SQL Operators: Arithmetic, Logical, Relational, Character, Searching operators etc., SQL Functions: Aggregate functions and Scalar (Single-row functions)	20%
6	**Joining Different data together – JOIN Strategies** Set operations: UNION, INTERSECT, SET_DIFFERENCE, Sub-queries concept, JOIN Techniques: Cartesian Product, Cross Join), Equi and Non-equi Join, Self-Join, Outer Join (Full Outer, Left Outer, Right Outer Join) etc.	20%
7	**Entity-Relationship model** Basic concepts, Design process, constraints and keys, Design issues, Weak Entity sets, E-R diagrams, generalization, specialization, aggregation	15%

4. Reference Books

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.
2. "Fundamentals of Database Systems", 7th Edition by R. Elmasri and S. Navathe, Pearson
3. "An introduction to Database Systems", C J Date, Pearson.
4. "Modern Database Management", Hoffer , Ramesh, Topi, Pearson
5. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
6. "Understanding SQL", Martin Gruber, BPB

5. Course Outcome

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

1. Identify significance of object relational database management system.
2. Apply programming construct such as stored procedure, stored function, cursor and triggers.
3. Define different types of index and database security mechanism.
4. Describe database recovery techniques.
5. Discuss emerging database technology such as mobile database, multimedia database and geographical information system database.

6. List of Practical

1. To study DDL-create and DML-insert command

2. Create table and insert sample data in tables.

3. Perform queries involving predicates LIKE, BETWEEN, IN etc.

4. To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables

5. To study Single-row functions.

6. Displaying data from Multiple Tables (join)

7. To apply the concept of Aggregating Data using Group functions.

8. Write Cursor

9. Write Trigger

Program Name: Bachelor of Computer Applications – Online **Semester: 2**

1 Prerequisite: Understanding of Object-Oriented Design, UML

2. Rationale: To provide basic knowledge on Software development lifecycle, coding, testing & maintenance

3. Detailed Syllabus:

Sr.	Topics	Weightage
1	**Introduction** Study of Different models, Software characteristics, Components, Applications, Layered Technologies, Processes, Methods, Tools, Generic view of Software Engineering, Various Process Models-Waterfall, Incremental, Evolutionary, Prototype, Spiral, Concurrent development & Agile development models	20%
2	**Planning a Software Project** Scope and Feasibility, Effort Estimation, Schedule and staffing, Quality Planning, Risk Management-identification, assessment, control, Project monitoring plan, Detailed Scheduling	15%
3	**Requirement Engineering** Problem Recognition, Requirement Engineering Tasks, Requirement Specification, Use cases and Functional specifications, Requirements validation, Requirement Analysis	15%
4	**Software Project Management** Management Spectrum, 4Ps – People, Process, Product, Project, W5HH Principle, Software Project Team Organization	15%
5	**Software Design** Introduction, Importance, DFD, Data dictionary **UML:** Introduction, History and importance, UML diagrams-Behavioral, Interaction & Structural Diagrams	20%
6	**Coding and Unit Testing** Coding standards and guidelines, Programming Structure, Programming Style, Code Inspections and Reviews, Unit testing basics, Unit Testing Techniques-Black box and white box testing	15%

4. Reference Books:

1. **Software Engineering**
   By Ian Sommerville | Pearson Education Ltd. | Ninth Edition
2. **An Integrated Approach to Software Engineering**
   By Pankaj Jalote | Wiley India,2009
3. **UML –A Beginner's Guide**
   By Jasson Roff | TMH | Twelfth Edition

5. Course Outcome:

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

1. Understand software development life cycle processes associated with development of Software
2. Analyze and represent end user requirements and model requirements analysis using unified modeling language
3. Prepare and represent software design model using unified modeling language
4. Understand significance of project planning, effort estimation and risk management
5. Understand the concept of Testing and deployment

6. List of Practical:

1. To Identify the project scope, objectives and feasibility
2. To Develop SRS document
3. To prepare the scheduling for project monitoring using Gannt Chart
4. To Develop Data Dictionary and Data flow diagram
5. To Develop Activity diagram and Use case diagram
6. To Develop Sequence diagrams and Collaboration Diagram
7. To develop the class diagram and add interfaces to the class diagram
8. Implement the design by coding
9. To Prepare test plan
10. Project deployment case studies

Program Name: - Bachelor of Computer Applications - Online **Semester: 2**

1. **Prerequisite:** Basic understanding of Business Administration principles.
2. **Rationale:** Are you about to enter the workforce? Are you an emerging professional? Are you new to your role in the organization? All prospective new employees benefit from understanding management principles, roles and responsibilities, regardless of position. Now you can acquire an in-depth understanding of the basic concepts and theories of management while exploring the manager's operational role in all types of organizations. Gain insight into the manager's responsibility in planning, organizing, leading, staffing and controlling within the workplace. It's never too soon to plan your professional path by learning how the best managers manage for success!
3. **Detailed Syllabus**

Sr.	Content	Weightage
1	**Unit – 1 Introduction to Management and Planning** Management: Meaning and process of management, Planning: Meaning; planning process; planning premises; types of plans	25%
2	**Unit – 2 FORECASTING, DECISION MAKING** Forecasting: Meaning; techniques of forecasting – Historical analogy method, survey method, time series analysis, regression analysis, Relevance and problems of forecasting. Decision making: Meaning; decision making process; techniques of decision making – Decision Tree, PERT and CPM. Business barometers.	25%
3	**Unit 3- ORGANIZING** Introduction - Meaning of organizing; principles of organizing. Departmentalization: Meaning; bases of Departmentalization, Delegation: Meaning, elements of delegation; principles of effective delegation. Centralization and decentralization: Meaning; factors affecting degree of centralization and decentralization. Function wise, product wise, territory wise, Process wise and customer wise.	25%
4	**Unit 4: TYPES OF ORGANIZATIONS**: Formal organizations: Line; Functional; Line and staff; Committee (only the meaning, advantages and limitations of all the four forms) Informal organizations: Meaning; benefits; problems.	25%

4. **Text Books**

1. Principles of Management, L M Prasad, S. Chand & Sons
2. Principles of Business Management, Robbins & M Coulter; Pearson Edition
3. Principles of Business Management, Arun Kumar & Rachana Sharma, Atlantic Publishers and Distributors

5. Reference Books

1. Principles of Management, Koontz & O'Donnel,Mc Grawhill
2. Introduction to Management, Tripathi and Reddy, Mc Graw Hill Companies ,N Delhi
3. Management Text and Cases, SatyaRaju , A. Parthasarthy, PHI Learning, N Delhi
4. Management – Theory & Practice – C. B. Gupta

6. Course Outcome

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

1. Identify and apply appropriate management techniques for managing business
2. Apply the concept of organising for the effective functioning of a management
3. Memorize the conceptual knowledge about the planning and decision making
4. Evaluate leadership style to anticipate the consequences of each leadership style
5. Demonstrate the techniques for controlling and coordination

Program Name: Bachelor of Computer Applications - Online **Semester: 2**

1. **Prerequisite:** Basic approach of Communication Skills.
2. **Rationale:** The objective of this course is to familiarize students with concepts of four language skills – Listening, Speaking, Reading and Writing; critical thinking skills to students. And to enable students comprehend the concept of communication. As well as to help students cultivate the habit of Reading and develop their critical reading skills.
3. **Detailed Syllabus:**

Sr.	Topics	Weightage
1	**Verbal & Non-Verbal Communication** To make the students know about the Seven Cs of Communication To enable the students to understand the basic information of about Communication Skills	10%
2	**Information design and writing for print and online media: Blog Writing**: •To enable students to design information that is targeted to specific audiences in specific situation to meet defined objectives. • To create blogs and share their own knowledge and experience to the world.	10%
3	**Reading Comprehension: Intermediate level**: • To enable the students, develop the knowledge, skills, and strategies they must possess to become proficient and independent readers	10%
4	**Advanced vocabulary Building:** • The students will expand their vocabulary so as to enhance their proficiency in reading and listening to academic texts, writing, and speaking. • The students will attain vocabulary to comprehend academic and social reading and listening texts. • The students will develop adequate speaking skills to communicate effectively.	15%
5	**The Art of Negotiation:** •To enable the students to reach an agreement for mutual benefits through negotiation. •To enable the students to learn a process by which compromise or agreement is reached while avoiding argument and dispute.	10%
6	**Listening Skills: Small everyday conversation & comprehension:** • Provides practice on understanding accents and day to day conversations. • Listening to English conversations in different context.	10%
7	**Time Management & Task Planning (Case –study):** • To enable the students to identify their own time wasters and adopt strategies to Reduce them. • To enable students to clarify and priorities their objective and goals by creating more planning time	10%
8	**Group Discussion** • To enable the students to generate effective critical thinking into primary issues in the given topic.	10%

	• Students will be able to resolve controversies and recognize strengths and weaknesses of arguments.	
9	**Technical Writing: Email etiquette & Email writing Letter Writing (Types of Letters & Layouts)**: • Trains students on detailed email and letter writing etiquette. • Students will be able to write formal letters following certain stipulated formats. • They will learn different types of letters for different official purposes.	15%

4. Reference Books:

1. On Writing Well, William Zinsser; Harper Paperbacks,2006; 30th anniversary edition
2. Oxford Practice Grammar, John Eastwood; Oxford University Press
3. Practical English Usage MICHAEL SWAN
4. Business Correspondence and Report Writing SHARMA, R. AND MOHAN, K.
5. A Remedial English Grammar for Foreign Student F.T. WOOD

5. Course Outcome:

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

1. Ability to convert the conceptual understanding of communication into every day practice.
2. Ability to communicate their ideas relevantly and coherently in professional writing.
3. Develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others.
4. Understand and practice different techniques of communication.
5. Summarize with different types of Communication.

Program Name: Bachelor of Computer Applications – Online **Semester - 2**

1. Prerequisite: Basic Knowledge of HTML and Web Technology.

2. Rationale: Web Development skills for Computer Science Students

3. Detailed Syllabus:

Sr.	Topics	Weightage
1	**Overview of Web, open-source technology** Overview of Open-Source Software, Open-source software vs. free software Introduction Websites: Static and Dynamic, Client side & Server-Side Scripting, Web Server (IIS & Apache), Protocols : HTTP,HTTPS & FTP, ISP and its Services, Web Hosting, Virtual Host, Multi-Homing , Document Root, Types of Scripting languages, Server-side scripting language – PHP	**7%**
2	**Configuration & Installation of PHP** System Requirements for PHP, PHP installation & Configuration in IIS / Apache Web Server, Working with WAMP / XAMP, Php.ini & .ht access files	**5%**
3	**PHP Basics:** Overview of PHP, Difference between HTML and PHP, PHP syntax, How PHP Code Works, Creating & Running PHP Webpage, PHP variable & its scope: local, global, static, constants, parameter, PHP Operators, Conditional Structure, Looping Structure, break and continue statement in looping structure	**10%**
4	**PHP Arrays & Functions** PHP Array, Indexed Arrays, Associative Arrays, Loop through Indexed & Associative Arrays, Working with String, Date & Time : string formation using PHP, Functions related to Date and time in PHP, Array Lib. Functions : Count, current, next, previous, end, sort, rsort, assort, arsort, array_merge, array_reverse, array_diff(), array_shift (), array_slice(), array_unique(), array_unshift(), array_keys(), array_key_exists(), array_push(), array_pop(), array_multisort(), array_search(), Miscellaneous Functions : define, constant, include, require, header, die, exit, PHP Functions, Functions with arguments	**13%**
5	**Handling Form** HTML Form element & its attributes, PHP code embedded with HTML code, Send Form data using GET Method & POST Method, Receive Form data using $_GET, $_POST & $_REQUEST variables, File uploading and downloading, Mail sending using mail()	**10%**
6	**State Management** Query string, URL rewriting, Cookies, Session, Hidden fields, String matching and regular expression: definition of regular expression, Pattern matching pattern, Replacement of text in string, string-splitting with a Regular Expression.	**8%**
7	**Working with MySQL** Introduction to MySQL, MySQL Data Types, Database selection, adding of Table, Display records in web pages. Inserting and deleting records **MySQL functions:** mysql_connect, mysql_close, mysql_error, msyql_errno, mysql_select_db, mysql_query, mysql_fetch_array, mysql_num_Rows, mysql_affected_Rows, mysql_fetch_assoc, mysql_fetch_field	**12%**

	,mysql_fetch_object,mysql_fetch_row ,mysql_insert_id, mysql_num_fields, mysql_result, mysql_tablename , mysql_list_tables, mysql_list_field s, mysql_field_type , mysql_db_name ,mysql_db_query , mysql_data_seek	
8	**Object Oriented Programming with PHP** Classes & Objects, Declaring & accessing methods & Properties, Constructor & destructor, Inheritance, Abstract class & methods, Exception handling	**10%**
9	**PHP with Ajax & jQuery** **Ajax** Introduction to Ajax, How Ajax works with PHP **jQuery** Introduction to jQuery, How jQuery works, jQuery Syntax, jQuery Selectors, jQuery Events & Methods, jQuery Effects, jQuery with HTML – jQueryGet, Set, Add, Remove Methods	**10%**
10	**Content Management System** Introduction to CMS, overview of CMS, Advantages of CMS, Word press [Introduction & Installation], working with word press , themes , plugins, widgets, user roles, creating, deleting, editing Posts & Pages, Different setting in WordPress, Creating and deleting comments, Simple website making	**15%**

4. Reference Books

1. Beginning PHP 5.3

By Matt Doyle | Wrox

2. PHP Bible

By Tim Converse, Joyce Park | First Edition

3. Professional PHP 5

By Ed Lecky-Thompson, Heow Eide-Goodman, Steven D. Nowicki, Alec Cove

4. Build Your Own WordPress Website:

An Ultimate Guide for Small Business Owners Paperback by Wordpress Genie

5. Course Outcome

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

1. Understand significance of open-source technology
2. Design and develop data driven web application in PHP and MYSQL.
3. Develop dynamic web application using ajax, JavaScript and object-oriented principle in PHP
4. Understand working of content management system.
5. Understand basics of website development using WordPress.

6. List of Practical

1. Display student Information
   Write a PHP Script that will display student Information

2. Arithmetic operations
   Write PHP script that will take three integer values for and perform all arithmetic operations

4. Strings operations
   Write a PHP Script that will take two strings and concatenate it.

5. Swap two integer values
   Write a PHP Script that will assign two integer values and swap their values.
   i) Using 3rd variable
   ii) Without using 3rd variable

6. Two numbers and check their equality and identity
   Write a PHP Script that will assign two numbers and check their equality and identity

7. check number is positive or negative
   Write a PHP Script that will check number is positive or negative

8. Even or Odd
   Write a PHP Script that will check number is Even or Odd.

9. check number is divisible by 13 and 7
   Write a PHP Script that will check number is divisible by 13 and 7.

10. Pattern

    1

    12
    123
    1234

11. Pattern

    1

    22
    333
    4444

12. Pattern

    1234

    123
    12
    1

13. Pattern

    4444
    333
    22
    1

14. Nested for loop that creates a chess board
    Write a PHP script using nested for loop that creates a chess board as shown below.

15. Find out max number.
    Write a PHP function that will take three integer values and find out max number.

16. Function that will take an integer value and return sum of digits.
    Write a PHP function that will take an integer value and return sum of digits.

17. Calculate the factorial of a number
    Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument

18. Check a number is prime or not
    Write a PHP function to check a number is prime or not.

19. Reverse a string.
    Write a PHP function to reverse a string.

20. Function that checks whether a passed string is palindrome or not
    Write a PHP function that checks whether a passed string is palindrome or not?

21. Simple PHP class which displays the following string : 'MyClass class has initialized !'
    Write a simple PHP class which displays the following string : 'MyClass class has initialized !'

22. Simple PHP class which displays an introductory message
    Write a simple PHP class which displays an introductory message like "Hello All, I am ALKA", where "ALKA " is an argument value of the method within the class.
23. Sorts an ordered integer array
    Write a PHP class that sorts an ordered integer array with the help of sort() function

24. PHP Calculator
    Write a PHP Calculator class which will accept two values as arguments, then add them, subtract Them, multiply them together, or divide them on request.

25. Calculate the difference between two dates using PHP OOP approach.
    Calculate the difference between two dates using PHP OOP approach.
    Sample Dates : 1981-11-03, 2013-09-04
    Expected Result : Difference : 31 years, 10 months, 1 days

26. Take name and message from user and display it.
    Write a HTML Form & PHP Script that will take name and message from user and display it.

Program Name: Bachelor of Computer Applications – Online **Semester: 2**

1. Prerequisite: Foundational understanding of several key areas like the culture of India, Indian Civilization, and governance and policy.

2. Rationale: The study of the Indian Knowledge Society is crucial for understanding how India harnesses its intellectual resources to drive societal development. It explores how traditional knowledge systems intersect with modern technology and innovation, shaping India's cultural, economic, and social landscapes.

3. Course Outcome:

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

1. Identify key sources of knowledge transmission in ancient India (e.g., Puranas, Itihasas, Gurukul system).
2. Discuss the importance of preserving and understanding ancient knowledge in the contemporary world.
3. Analyse a specific aspect of IKS (e.g., Ayurveda) using a chosen classification framework.
4. Evaluate the lasting impact of Indian art and architectural styles on global art history.
5. Design a project that incorporates elements of traditional Indian art or architecture in a modern setting.

4. Detailed Syllabus

Module. No.	Content	Weightage
1	**Introduction to Indian Knowledge Society** Overview of Indian Knowledge Society, Importance of Ancient Knowledge, Definition of IKS, Classification framework of IKS, Puranas, Ithihasas, Linguistics, Gurukul system of Vedic times, Science in ancient India, The Knowledge Triangle.	30%
2	**Philosophical Systems, Scientific aspects of Indian Knowledge Systems** Characteristics of Indian Philosophy, Distinction between Darsana and Philosophy, Pramana's, Introduction to Indian Philosophical systems, i.e. Orthodox and Heterodox Sciences in Ancient India: Mathematics, Medicine Ayurveda, Metallurgy, and engineering	40%
3	**Fundamentals of Art and Architecture** Geography of Bharatvarsh and Civilizational Journey, Origin of Sthapatyaveda, Concept of Space and Time, Vedic Yajna: Recreating the microcosmos, Vastu Purusha, Six Limbs of Indian Art and Architecture Harappan Town Planning, Early Historical Cities and Early Text (Arthshastra), Mud Forts of Chhattisgarh	30%

5. Text Books

1. Coomaraswamy, Ananda K - Early Indian Architecture: Cities and City-Gates - Munshiram Manoharlal Publishers
2. Kapila Vatsyayan - The Cultural Heritage of India – Vendanta Press
3. Chande, M. B. - Indian Philosophy in Modern Times. - Atlantic Publishers

6. Reference Books

1. Chatterjee, Satish Chandra & D.M Dutta. An Introduction to Indian Philosophy. Rupa and co.
2. Radhakrishnan, S and J. H. Muirhead - Contemporary Indian Philosophy - George Allen & Unwin Ltd.
3. Kapoor, Kapil, Avadesh Kr. Singh - Indian Knowledge Systems (Two Vols) - IIAS, Shimla

Program Name: Bachelor of Computer Applications – Online **Semester: 2**

1. **Prerequisite:** Basic understanding of computer systems.
2. **Rationale:** To make students aware of artificial intelligence, Natural Language Processing, prompt engineering, learning and development of using AI tools.
3. **Detailed Syllabus:**

Sr No.	Topics	Weightage
1	**Introduction to Artificial Intelligence** • Definition and key concepts in AI • Historical overview of AI development • Types of AI and their applications	30%
2	**Introduction to Natural Language Processing (NLP)** • Overview of NLP and its significance • Basics of text processing and language understanding • Simple NLP applications and examples	30%
3	**ChatGPT and Practical AI Applications** • Understanding the capabilities of ChatGPT • Basics of building a chatbot using ChatGPT • Exploring use cases for conversational AI • Overview of AI applications in everyday scenarios • Examples of AI in various industries (e.g., healthcare, finance, education) • Ethical considerations in the use of AI	40%

4. **Reference Books:**

1. **Artificial Intelligence (TextBook)**
   By Elaine Rich and Kevin Knight | TMH
2. **Artificial Intelligence: A Modern Approach**
   By Stuart J. Russell and Peter Norvig | PEARSON EDUCATION LIMITED
3. **Artificial Intelligence and Expert Systems**
   By D.W.Patterson | PHI

5. **Course Outcome:**

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

1. Understand key elements, techniques, and applications of Artificial Intelligence.
2. Recognize problem characteristics and design issues in search algorithms.
3. Identify problems and represent knowledge logically.
4. Comprehend essentials of natural language processing and Prolog.

6. Practical List

Sr No.	Practical List
1	Write a program to implement Tic Tac Toe game
2	Write a program to implement BFS 8 Puzzle problem
3	Write a program to implement DFS Water Jug Problem
4	Write a program to implement N Queens Problem
5	Write a program to implement Tower of Hanoi Problem.
6	Write a prolog program for the family tree.
7	Design a Prolog program to illustrate control structures.
8	Case Study: Recent application of Artificial Intelligence in daily life. Ex. Voice recognition, face detection etc.