**BACHELOR OF SCIENCE( ARTIFICIAL INTELLIGENCES AND DATA SCIENCE)**

**SEMESTER – I**

**CORE –I-Data Structures-(23UADCC01)**

**COURSE OUTCOMES (COs):**

On completion of this course, students will

**CO1:** Learn about the Computer fundamentals and the Problem solving and understand the basic concepts of C and C++ programming.

**CO2 :**Demonstrate the various basic programming constructs like decision making statements. Looping statements and functions.

**CO3 :**Analyze the object oriented concepts like overloading, inheritance ,polymorphism, Virtual functions ,constructors and destructors.

**CO4 :**Comparethevariousfilestreamclasses;filetypes,usageoftemplatesand exception Handling mechanisms, pros and cons of procedure oriented language with the concepts of programming language.

**CO5:** Study about Numeric data and character-based data. Analyze about Arrays.

**CO6:** Develop programs in corporation the programming constructs of object oriented Programming concepts.

**Elective Course -EC1 - Introduction to Linear Algebra (23UMAEGS05 )**

**COURSE OUTCOMES (COs):**

On successful completion of the course, the students will be able to

 **CO 1:** Define partial Fraction and Binomial series and example

 **CO 2:** Define Exponential series and logarithms series and example

**CO 3:** Define matrix and simple problem.

 **CO 4:** Define rank of matrix and problems

 **CO5:** Describe cayley Hamiltan Theorem.

**SEC-I- PHP Programming(23UADSE04)**

**COURSE OUTCOMES (COs):**

On completion of this course, students will

**CO1** :Write PHP scripts to handle HTML forms .

**CO2:**Write regular expressions including modifiers, operators, and meta characters.

 **CO3:** Create PHP Program using the concept of array.

**CO4:** Create PHP programs that use various PHP library functions

**CO5:**Manipulate files and directories.

 **SEMESTER – II**

**CORE –II Introduction to Python Programming (21UADCC02)**

**COURSE OUTCOMES (COs):**

Develop algorithmic solutions to simple computational problems

**CO1:** Read, write, execute by hand simple Python programs. Structure simple Python programs for solving problems.

**CO2:** Decompose a Python program into functions .

 **CO3:** Describe the hash function and concepts of collision and its resolution methods .

 **CO4:** Represent compound data using Python lists, tuples, dictionaries. Read and write data from to files in Python Programs.

 **CO5:** Judge the pros and cons of Python.

**Elective Course - EC2 –NUMERICAL METHODS-I(23UMAEGS07)**

**COURSE OUTCOMES (COs):**

On successful completion of the course, the students will be able to

**CO1:** Define Algebraic methods and problems .

**CO2 :**Define Newton’s methods and Root squaring methods and problems .

**CO3 :**Define finite differences and problems

**CO4:** Define Interpolation methods and problems

**CO5 :**Define divided differences and inverse interpolation and problems

**SKILL ENHANCEMENT COURSE –SEC3- INTRODUCTION TO HTML (23UADSE02)**

**COURSE OUTCOMES (COs):**

On completion of this course, students will

**CO1:** Knows the basic concept in HTML .Concept of resources in HTML

**CO2:** Knows Design concept. Concept of Meta Data Understand the concept of save the files.

**CO3:** Understand the page formatting. Concept of list

**CO4:** Creating Links. Know the concept of creating link to email address

**CO5:** Concept of adding images .Understand the table creation.

**SKILL ENHANCEMENT COURSE- SEC2-** gad;Kiwj; jkpo;

,g;glj;ij fw;gjhy; gpd;tUk; gad;fis khzth; milth;

**CO1 :** ,f;fhy jkpopd; ,ay;Gfis mwpth;

**CO2** : epWj;jw;Fwpfs; gad;ghL nrhw;fisr; Nrh;j;Jk; gphpj;Jk; vOJk; Kiwfs; gw;wp mwpe;jpUg;gh;

**CO3** : eilKiw rhh; nkhopj;jpwd;fs;(vOj;Jj; jpwd;fs;) nra;jpf; fbjk; Mtzk; vOJk; Kiwfisg; gw;wp czh;e;jpUg;gh;

**CO4** : jpwd;fis tsh;f;Fk; newpfisg; gw;wp mwpe;jpUg;gh;

**CO5** : fl;Liu vOJk; mbf;Fwpg;Gj; jUjy; jahhpj;jy; Kiwapid mwpe;jpUg;gh;

**SEMESTER – III**

**CORE-III-Foundation of Artificial Intelligence(23UADCC03)**

**COURSE OUTCOMES (COs):**

**CO1:** Understand autonomous agents that make effective decisions in fully informed, partially observable and adversarial settings

**CO2:** Choose appropriate algorithms for solving given AI problems

**CO3:** Design and implement logical reasoning agents.

**CO4:** Demonstrate agents that can reason under uncertainty

**CO5:** Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.

**Elective Course EC3- STATISTICAL METHODS AND ITS APPLICATIONS-I(23USTAT04)**

**COURSE OUTCOMES (COs):**

Students will be able to

**CO1:** Understand the statistical methods measures of location

**CO2:** Understand the statistical methods measures of dispersion

**CO3:** Apply the statistical methods of dispersion and location

**CO4:** Understand the relationship between variables and forecasting the future values.

**CO5:** Understand the concept of sampling, sampling errors and types of sampling

**SEC4- PHP PROGRAMMING (23UADSE04 )**

**COURSE OUTCOMES (COs):**

Students will be able to

**CO1:** Write PHP scripts to handle HTML forms

**CO2:** Write regular expressions including modifiers, operators, and metacharacters.

**CO3:** Create PHP Program using the concept of array.

**CO4:** Create PHP programs that use various PHP library functions.

**CO5:** Manipulate files and directories.

**SEC5- ADVANCED EXCEL ( 23UADSE10)**

**COURSE OUTCOMES (COs):**

Students will be able to

**CO1:** Work with big data tools and its analysis techniques.

**CO2:** Analyze data by utilizing clustering and classification algorithms.

**CO3:** Learn and apply different mining algorithms and recommendation systems for large volumes of data.

**CO4:** Perform analytics on data streams.

**CO5:** Learn No-SQL databases and management.

**SEMESTER – IV**

**CORE- VI- FUNDAMENTALS OF DATA SCIENCE(23UADCC04)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Apply the skills of data inspecting and cleansing.

**CO2:** Determine the relationship between data dependencies using statistics

**CO3:** Understand the can handle data using primary tools used for data science

**CO4:** Represent the useful information using mathematical skills.

**CO5:** Apply the knowledge for data describing and visualization using tools .

**Elective Course EC4-STATISTICAL METHODS AND ITS APPLICATIONS – II(23USTAT05)**

**COURSE OUTCOMES (COs):**

Students will be able to

**CO1:** Understand the concept of random variables and expected average

**CO2:** Compute Bernoulli trials and understand the rare case population.

**CO3:** Learn the usage of normal curve and curve fitting by using the method of least squares

**CO4:** Learn about the large samples

**CO5:** Learn the basic concepts of theory of attributes.

**SKILL ENHANCEMENT COURSE – SEC6 UNDERSTANDING INTERNET(23UADSE06)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to.

**CO1 :** Knows the basic concept in internet Concept of mass medium and world wide web .

**CO2 :** Knows the concept of internet as a technology .

**CO3 :** Understand the concept of infotainment and classification based on content and style.

**CO4 :** Can be able to know about Demographic and psychographic description of internet .

**CO5 :** Understand the concept of cyber crime and future possibilities.

**SKILL ENHANCEMENT COURSE – SEC6 WEB DESIGNING (23UADSE03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to.

**CO1 :** Develop working knowledge of HTML

**CO2 :** Ability to Develop and publish Web pages using Hypertext Markup Language (HTML).

**CO3 :** Ability to optimize page styles and layout with Cascading Style Sheets (CSS).

**CO4 :** Ability to develop a java script

**CO5 :** An ability to develop web application using Ajax.

**SEMESTER – V**

**CORE V- ETHICS OF ARTIFICIAL INTELLIGENCE (23UADCC05)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Understand the ethical issues in the development of AI agents

**CO2 :** Learn the ethical considerations of AI with perspectives on ethical values

**CO3** : Apply the ethical policies in AI based applications and Robot development

**CO4 :** To implement the AI concepts to societal problems by adapting the legal concepts by securing fundamental rights

**CO5 :** Overcome the evil genesis in the concepts of AI

**CORE VI- DATABASE DESIGN AND MANAGEMENT (23UADCC06)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Understand the database development life cycle and apply conceptual modeling

**CO2 :** Apply SQL and programming in SQL to create, manipulate and query the database

**CO3 :** Apply the conceptual-to-relational mapping and normalization to design relational database(DML)

**CO4 :** Determine the serializability of any non-serial schedule using concurrency techniquesmultiple table

**CO5 :**  To learn data model and querying in object-relational and No-SQL databases.

**ELECTIVE COURSE EC5- CRYPTOGRAPHY (23UADE02)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Analyze the vulnerabilities in any computing system and hence be able to design a security solution

**CO2 :** Apply the different cryptographic operations of symmetric cryptographic algorithms

**CO3 :** Apply the different cryptographic operations of public key cryptography

**CO4 :** Apply the various Authentication schemes to simulate different applications

**CO5 :** Understand various Security practices and System security standards

**ELECTIVE COURSE EC6-BIG DATA ANALYSIS (23UADE03)**

**COURSE OUTCOMES (COs):**

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

**CO1:** Work with big data tools and its analysis techniques

**CO2 :** Analyze data by utilizing clustering and classification algorithms.

**CO3 :** Learn and apply different mining algorithms and recommendation systems for large volumes of data.

**CO4 :** Perform analytics on data streams

**CO5 :** Learn NoSQL databases and management

**SEMESTER – VI**

**CORE VII-ROBOTIC PROCESS AUTOMATION (23UADCC07)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Understandthefundamentalconceptsandtechniquesofnaturallanguageprocessing (NLP)

**CO2 :** Understanding of the models and algorithms in the field of NLP

**CO3** : Demonstrate the computational proper ties of natural languages and the commonly used algorithms for processing linguistic in formation.

**CO4 :** Understanding semantic sand pragmatics of languages for processing .

**CO5 :** To understand Robatics Process Automation .

**CORE VIII- NATURAL LANGUAGE PROCESSING (23UADCC08)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Understandthefundamentalconceptsandtechniquesofnaturallanguageprocessing (NLP)

**CO2 :** Understanding of the models and algorithm sin the field of NLP

**CO3 :** Demonstrate the computational properties of natural languages and the commonly used Algorithms for proc assign linguistic information

**CO4 :**Understanding semantic sand pragmatics of languages for processing

**CO5 :** To develop NLP Application

**ELECTIVE COURSE EC7 - IOT AND ITS APPLICATION (23UADE05)**

**COURSE OUTCOMES (COs):**

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

**CO1 :** Work with big data tools and its analysis techniques.

**CO2 :** Analyze data by utilizing clustering and classification algorithms.

**CO3:** Learn and apply different mining algorithms and recommendation systems for large volumes of data.

**CO4:** Perform analytics on data streams.

**CO5:** Learn NoSQL databases and management.

**ELECTIVE COURSE EC8 – CLOUD COMPUTING(23UADE14)**

**COURSE OUTCOMES (COs):**

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

**CO 1 :** Understand the fundamental concepts and Technologies in Cloud Computing.

**CO 2 :** Able to understand various cloud service types and their uses and pitfalls.

**CO 3 :** Able to understand Cloud Architecture and Application design.

**CO 4 :** Understand the various aspects of application design, benchmarking and security in the Cloud.

**CO 5 :** Understand various Case Studies in Cloud Computing.

**SKILL ENHANCEMENT- SOFTWARE TESTING (23UADSE05)**

**COURSE OUTCOMES (COs):**

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

**CO1** : Students learn to apply software testing knowledge and engineering methods

**CO2** : Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.

**CO3** : Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.

**CO4** : Have basic understanding and knowledge of contemporary issues in software testing, such as component-based software testing problems

**CO5** : Have an ability to use software testing methods and modern software testing tools for their testing projects