VIDYA JYOTHI
INSTITUTE OF TECHNOLOGY
AN AUTONOMOUS INSTITUTION

Department of Artificial Intelligence and Data Science

- **Program Educational Objectives [PEOs]**

- **Program Specific Outcomes [PSOs]**

- **Program Outcomes [POs]**

- **Course Outcomes [COs] –R22**

- **CO - PO Mappings - R22**

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Department of Artificial Intelligence and Data Science

PEO's

PEO 1: Graduates will be able to solve issues creatively, communicate effectively, and work efficiently in multi-disciplinary teams with ethics & values.

PEO2: Graduates will be able to use their knowledge and abilities to grow in their careers, pursue advanced degrees and develop entrepreneur skills.

PEO3: To be engaged in life-long learning and research activities and promote societal progress.
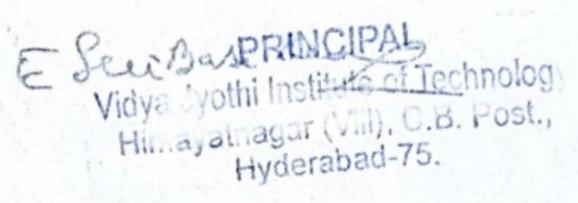
PSO's

PSO1: Acquire the practical skills in emerging technologies and in-open source platforms related to artificial intelligence and

PSO2: Apply relevant techniques and modern emerging tools in the areas of Healthcare, Education, Agriculture, Smart systems & in all multi-disciplinary problems.

PSO3: An innovative career path to entrepreneurship and life-long learning with moral and ethical values.

PO's

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of t h e information to provide valid conclusions.

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5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling to complex engineering activities, with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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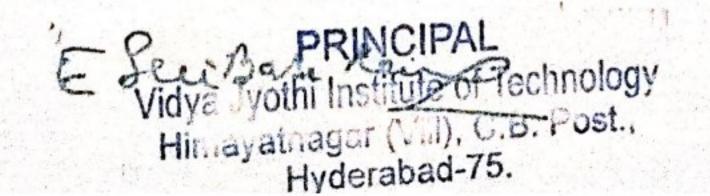
CO's & CO-PO Mapping-R22

II YEAR I SEMESTER

Course name: Probability and Statistics (A223009)

	After completing this course the student must demonstrate the knowledge and ability to
CO1	To differentiate among random variables involved in the probability models which are useful for all branches of engineering.
CO2	Derive relationship among variety of performance measures using probability distributions.
CO3	Acquire elementary knowledge of parametric and non parametric –tests and understand the use of observing state analysis for predicting future conditions.
CO4	Identify and examine situations that generate using problems and able to solve the tests of ANOVA for classified data.
CO5	Apply proper measurements, Indicators and techniques of Correlation and regression analysis.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	2	2	1	1	1	-	2	1	2	3	2	1
CO 2	3	3	2	2	1	1	1	-	2	1	2	3	2	1
CO 3	3	3	3	2	1	1	2	-	1	2	3	2	2	1
CO 4	3	3	3	2	3	1	1	-	2	3	2	2	2	1
CO 5	3	3	3	2	-	1	2	-	1	2	2	2	2	1
Avg	3	3	2.6	2	1.5	1	1.4	-	1.6	1.8	2.2	2.4	2	1

Course name: Software Engineering (A223508)

	After completing this course the student must demonstrate the knowledge and ability to
CO1	Outline the framework activities for a given project.
CO2	Examine Right process model for a given project.
CO3	Analyze various system models for a given Context.
CO4	Understand various testing techniques for a given project.
CO5	Identify various risks in project development.

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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	3	3	1	3	3	1	3	2	3	3	3	3
CO 2	3	3	3	3	1	3	3	2	3	2	3	3	3	3
CO 3	3	3	3	3	1	3	3	2	3	2	3	3	3	3
CO 4	3	3	3	3	1	3	3	2	3	2	3	3	3	3
CO 5	3	3	3	3	1	3	3	2	3	2	3	3	3	3
Avg	3	3	3	3	1	3	3	1.8	3	2	3	3	3	3

Course name: Data Structures (A223510)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of Stacks and Queues with their applications.
CO2	Analyze various operations on Binary trees.
CO3	Examine of various concepts of binary trees with real time applications.
CO4	Analyze the shortest path algorithm on graph data structures.
CO5	Outline the concepts of hashing, collision and its resolution methods using hash functions.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	3	3	2	3	2	2	3	2	3	2	3	3
CO 2	3	3	3	3	2	3	2	2	3	2	3	2	3	3
CO 3	3	3	3	3	2	3	2	2	3	2	3	2	3	3
CO 4	3	3	3	3	2	3	2	2	3	2	3	2	3	3
CO 5	3	3	3	3	2	3	2	2	3	2	3	2	3	3
Avg	3	3	3	3	2	3	2	2	3	2	3	2	3	3

Course name: Database Management Systems (A223506)

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After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of Entity-Relationship Model for enterprise level databases.
CO2	Analyze the database and provide restricted access to different users of database.
CO3	Understand various Normal forms to carry out schema refinement.
CO4	Analyze various Concurrency control protocols.
CO5	Understand working principles of Recovery algorithms

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	2	2	2	1	3	2	1	-	-	-	1	2	2	2
CO 2	2	2	3	2	3	2	1	2	-	-	2	3	2	2
CO 3	3	3	3	2	3	2	1	-	-	-	2	3	3	3
CO 4	2	2	2	1	1	-	-	-	-	-	-	2	2	2
CO 5	2	2	2	1	1	-	-	-	-	-	2	3	2	2
Avg	2.2	2.2	2.4	1.4	2.2	2	1	2	-	-	1.75	2.6	2.8	2.8

Course name: Computer System Architecture (A223505)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the various number System
CO2	Classify the basics of instruction sets
CO3	Demonstrate the design of functional units of a digital computer system.
CO4	Analyze various computer arithmetic operations.
CO5	Design a pipeline for consistent execution of instruction with minimum hazards

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2

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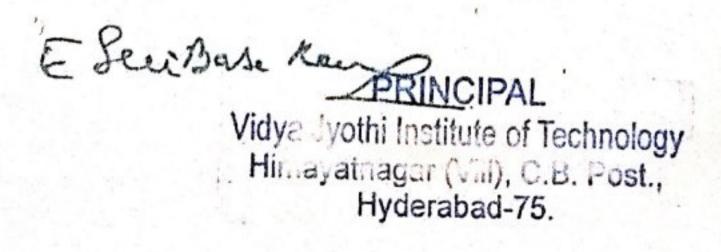|	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3	3	-	-	-	-	-	-	-	-	-	-	3	3
CO 2	-	-	-	3	3	-	-	-	-	-	-	-	3	3
CO 3	-	-	-	3	3	-	-	-	-	-	-	-	3	3
CO 4	-	-	-	3	3	-	-	-	-	-	-	-	3	3
CO 5	-	-	-	3	3	-	-	-	-	-	-	-	3	3
Avg	3	3	-	3	3	-	-	-	-	-	-	-	3	3

Course name: Data Structures Lab (A223584)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of Entity-Relationship Model for enterprise level databases.
CO2	Analyze the database and provide restricted access to different users of database.
CO3	Understand various Normal forms to carry out schema refinement.
CO4	Analyze various Concurrency control protocols.
CO5	Understand working principles of Recovery algorithms

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	3	3	3	2	1	1	2	2	3	3	3	3
CO 2	3	3	3	3	3	2	1	1	2	2	3	3	3	3
CO 3	3	3	3	3	3	2	1	1	2	2	3	3	3	3
CO 4	3	3	3	3	3	2	1	1	2	2	3	3	3	3
CO 5	3	3	3	3	3	2	1	1	2	2	3	3	3	3
CO 6	3	3	3	3	3	2	1	1	2	2	3	3	3	3
Avg	3	3	3	3	3	2	1	1	2	2	3	3	3	3

Course name: Database Management Systems Lab (A223585)

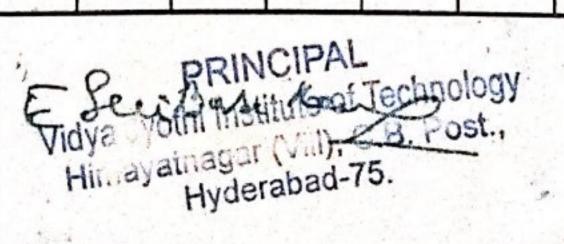| After completing this course the student must demonstrate the knowledge and ability to |
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CO1	Understand the concepts of Entity-Relationship Model for enterprise level databases.
CO2	Analyze the database and provide restricted access to different users of database.
CO3	Understand various Normal forms to carry out schema refinement.
CO4	Analyze various Concurrency control protocols.
CO5	Understand working principles of Recovery algorithms

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	2	2	1	3	2	1	-	-	-	2	2	2	2
CO 2	2	2	1	1	2	-	1	-	-	-	2	3	3	2
CO 3	3	2	2	3	2	-	-	-	-	-	3	2	2	2
CO 4	2	2	3	2	2	-	-	-	-	-	2	3	2	2
CO 5	2	2	3	2	2	2	-	-	-	-	2	3	2	3
Avg	2.4	2	2.2	1.8	2.2	2	1	-	-	-	2.2	2.6	2.8	2.8

Course name: Quantitative Methods and Logical Reasoning (A223013)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To perform well in various competitive exams and placement drives.
CO2	To solve basic and complex mathematical problems in short time.
CO3	Quantitative Aptitude and Reasoning are very important in assessing various intangible skills of the students.
CO4	They are the instrumental in developing problem solving skills and analytical abilities, which play a great role in corporate and industry set up.
CO5	Therefore, it is essential to have thorough knowledge and understanding of these areas so as to be able to perform their job roles effectively to the corporate expectations.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	-	3	-	-	2	2	2	-	-	3	-	-

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CO 2	3	3	-	2	-	-	2	2	1	-	-	3	-	-
CO 3	3	3	-	3	-	-	2	2	1	-	-	3	1	-
CO 4	3	3	-	3	-	-	2		2	-	-	3	-	2
CO 5	3	3	-	3	-	-	2	2	2	-	-	3	-	-

Course name: Skill Development Course(Data Visualization using power BI)(A223589)

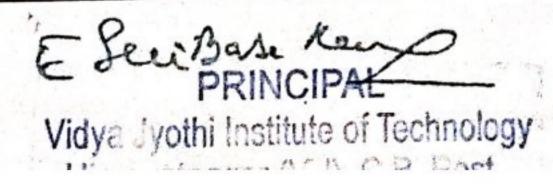| After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand How to import data into Tableau.
CO2	Understand Tableau concepts of Dimensions and Measures.
CO3	Develop Programs and understand how to map Visual Layouts and Graphical Properties.
CO4	Create a Dashboard that links multiple visualizations.
CO5	Use graphical user interfaces to create Frames for providing solutions to real world problems

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	-	3	-	-	2	2	2	-	-	3	-	-
CO 2	3	3	-	2	-	-	2	2	1	-	-	3	-	-
CO 3	3	3	-	3	-	-	2	2	1	-	-	3	1	-
CO 4	3	3	-	3	-	-	2		2	-	-	3	-	2
CO 5	3	3	-	3	-	-	2	2	2	-	-	3	-	-

II YEAR II SEMESTER

Course name: Discrete Mathematics(A224520)

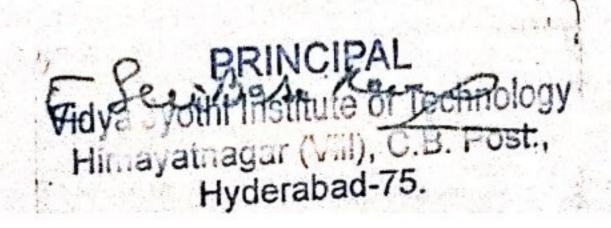| After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand and construct precise mathematical proofs
CO2	Apply logic and set theory to formulate precise statements

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CO3	Analyze and solve counting problems on finite and discrete structures
CO4	Describe and manipulate sequences
CO5	Apply graph theory in solving computing problems

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	2	3	2	1	2	2	2	3	2	3	2	3	3
CO 2	3	3	3	3	1	2	2	2	3	2	3	2	3	3
CO 3	3	2	3	2	1	2	2	2	3	2	3	2	3	3
CO 4	3	2	2	3	1	2	2	2	3	2	3	2	3	3
CO 5	3	2	3	2	1	2	2	3	3	2	3	2	3	3
Avg	3	2.2	2.8	2.4	1	2	2	2.2	3	2	3	2	3	3

Course name: Introduction to Artificial Intelligence (A224515)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understanding different AI applications in AI
CO2	Understanding Industrial AI Vs Regular AI.
CO3	Understanding Industry 4.0
CO4	Learning from AI case studies
CO5	Illustrate various types of Reinforcement learning

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	3	3	-	-	-	-	3	-	1	2	1	
CO 2	3	3	3	3	-	-	-	-	3	-	1	2	-	1

CO 3	3	3	3	3	-	-	-	-	2	-	1	2	2	
CO 4	3	3	3	3	-	-	-	-	3	-	1	2	2	1
CO 5	3	3	3	3	-	-	-	-	3	-	1	2	-	
Avg	3	3	3	3	-	-	-	-	2.8	-	1	2	1	1

Course name: Object Oriented Programming Through Java (A224513)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand OOP concepts to apply basic Java constructs.
CO2	Analyze different forms of inheritance and usage of Exception Handling
CO3	Understand the different kinds of file I/O and Multithreading in complex Java programs, and usage of Container classes
CO4	Contrast different GUI layouts and design GUI applications
CO5	Construct a full-fledged Java GUI application, and Applet with database connectivity

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	2	1	2	2	2	-	-	-	2	2	1	2	3	2
CO 2	2	1	2	2	2	-	-	-	2	2	1	2	3	2
CO 3	2	1	2	2	2	-	-	-	2	2	1	2	3	2
CO 4	2	1	2	2	2	-	-	-	2	2	1	2	3	2
CO 5	2	1	2	2	2	-	-	-	2	2	1	2	3	2
Avg	2	1	2	2	2	-	-	-	2	2	1	2	3	2

Course name: Operating systems (A224512)

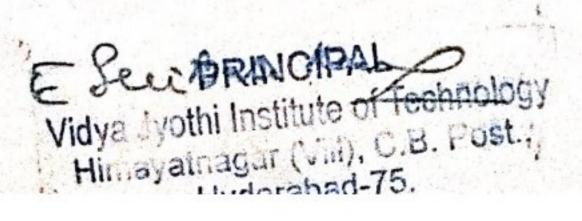| After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic functions of Operating systems and system calls.

CO2	Analyze process scheduling and synchronization.
CO3	Understand the concepts of memory management.
CO4	Examine the concepts of MASS storage structure
CO5	Compare different protection methods of OS and understand the deadlock concepts.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	2	3	2	1	2	2	2	3	2	3	2	3	3
CO 2	3	3	3	3	1	2	2	2	3	2	3	2	3	3
CO 3	3	2	3	2	1	2	2	2	3	2	3	2	3	3
CO 4	3	2	2	3	1	2	2	2	3	2	3	2	3	3
CO 5	3	2	3	2	1	2	2	3	3	2	3	2	3	3
Avg	3	2.2	2.8	2.4	1	2	2	2.2	3	2	3	2	3	3

Course name: Introduction to Data Warehousing and Data Mining (A224522)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the fundamentals of Data warehousing and OLAP technology.
CO2	Outline the Data Mining and Data pre-processing techniques.
CO3	Identify the frequent patterns using association algorithms.
CO4	Distinguish how classification algorithms are used on data sets.
CO5	Compare different clustering techniques on large data sets.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	3	2	-	1	1	1	3	2	3	3	2	3

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CO 2	3	3	3	3	-	1	1	2	3	2	3	3	2	3
CO 3	3	3	3	3	3	1	1	1	3	2	3	2	2	3
CO 4	3	3	3	3	3	2	2	2	3	2	3	2	2	3
CO 5	3	3	3	3	3	2	2	2	3	2	3	2	2	3
Avg	3	3	3	2.8	3	1.4	1.4	1.6	3	2	3	2	2	3

Course name: Artificial Intelligence Lab (A224595)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply basic principles of AI in solutions that require problem solving, knowledge representation, and learning.
CO2	Possess the skill for representing knowledge using the appropriate technique
CO3	1. Possess the ability to apply AI techniques to solve problems of Game Playing

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	2	1	2	2	2	-	-	-	2	2	1	2	3	3
CO 2	2	1	2	2	2	-	-	-	2	2	1	2	3	3
CO 3	2	1	2	2	2	-	-	-	2	2	1	2	3	3
Avg	2	1	2	2	2	-	-	-	2	2	1	2	3	3

Course name: Object Oriented Programming Through Java Lab (A224592)

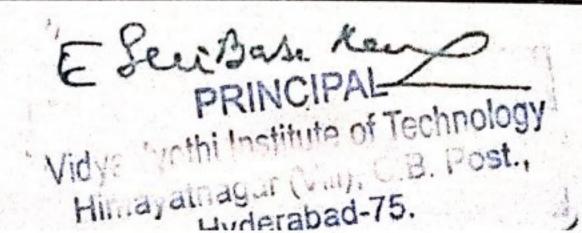| After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply basic Java constructs and OOP to solve mathematical problems.
CO2	Apply Inheritance in Java programs and Analyze Exception Handling code
CO3	Implement File input/output and multithreading concepts in advanced Java programs.
CO4	Design different GUI applications using GUI layouts.

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CO5	Apply Applet development and Database connectivity to build GUI applications

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	2	1	2	2	2	-	-	-	2	2	1	2	3	3
CO 2	2	1	2	2	2	-	-	-	2	2	1	2	3	3
CO 3	2	1	2	2	2	-	-	-	2	2	1	2	3	3
CO 4	2	1	2	2	2	-	-	-	2	2	1	2	3	3
CO 5	2	1	2	2	2	-	-	-	2	2	1	2	3	3
Avg	2	1	2	2	2	-	-	-	2	2	1	2	3	3

Course name: Real-Time Research Project(A2245P1)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand market and industries deeply
CO2	Able to solve problems with the leanest available solution
CO3	Self-learning through practical applications
CO4	Predict a time line for the project
CO5	Evaluate the requirements of the projects in terms of different sub systems

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 2	3	3	2	1	2	2	1	3	3	3	2	2	3	3

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CO 3	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 4	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 5	3	3	2	1	2	2	1	3	3	3	2	2	3	3
Avg	3	3	2	1	2	2	1	3	3	3	2	2	3	3

Course name: Professional Communication (A224014)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Acquire enhanced personality
CO2	Demonstrate appropriate professional etiquette
CO3	Practice team building with strong communication skills
CO4	Develop problem solving skills and decision-making
CO5	Exhibit effective communication on digital platforms

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 2	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 3	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 4	3	3	2	1	2	2	1	3	3	3	2	2	3	3
CO 5	3	3	2	1	2	2	1	3	3	3	2	2	3	3
Avg	3	3	2	1	2	2	1	3	3	3	2	2	3	3

Course name: Skill Development Course(Django)(A224598)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Build a blog with HTML,CSS and Bootstrap and little Java Script.
CO2	Demonstrate advanced features of Java Script and learn about JDBC.
CO3	Design a Django application for cookies and forms and admin page.

E Seebase kanp

PRINCIPAL
Vidya Jyothi Institute of Technology

VIDYA JYOTHI
INSTITUTE OF TECHNOLOGY
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Department of Artificial Intelligence and Data Science

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CO 1	2	3	2	2	1	2	-	-	2	2		3	1	1
CO 2	2	2	3	3	2	1	-	-	2	2	1	2	1	2
CO 3	3	3	3	2	3	2	-	-	1	2	2	2	2	2
Avg	2.4	2.8	2.6	2	2.2	1.8	-	-	1.8	2	1.5	2.4	1.4	1.4