



Shrimathi Devkunvar Nanalal Bhatt Vaishnav College For Women (Autonomous)

Owned and Managed by Cork Industries Charities Trust
Affiliated to University of Madras - Re-Accredited with 'A+' Grade by NAAC - 4th Cycle

COURSE DATA SHEET

SEMESTER	1	BATCH	2026
COURSENAME	EXPLAINABLE ARTIFICIAL INTELLIGENCE	COURSE CODE	26UDSGE1001
COURSE UNITS	5	COURSE TYPE	Theory
CONTACT HOURS (L-T-P)		CREDITS	4
OFFERED BY	B.SC CS WITH DS	SHIFT(I/II) Shift I- 8.15 am – 12.50 pm Shift II – 1.00 pm to 5.30 pm	II

COURSE OBJECTIVES	
1	To introduce the fundamental concepts, applications, and societal impact of Artificial Intelligence.
2	To develop an understanding of how AI systems make decisions and the need for transparency and explainability in AI.
3	To familiarize learners with ethical, fair, and responsible AI practices, including privacy and data protection.
4	To explore the role of Explainable AI in real-world applications such as healthcare, education, banking, and social media.
5	To provide awareness of Generative AI technologies, their capabilities, limitations, and responsible use.

COURSE OUTCOMES: On completion of the course the students will be able to...		
	CO Statement	Cognitive Level
CO1	To Explain the basic concepts, applications, and challenges of Artificial Intelligence.	K1,K2
CO2	To Describe AI decision-making and the importance of Explainable AI.	K2



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CO3	To Apply ethical, fairness, and responsible AI principles to real-world situations.	K2,K3
CO4	To Analyze the use of Explainable AI in various application domains.	K3,K4
CO5	To Evaluate the opportunities and limitations of Generative AI technologies.	K2,K3,K4

SYLLABUS

UNIT	TOPICS	HOURS
1	Overview Artificial Intelligence- AI in Daily Life - Applications of AI in Education, Healthcare, Banking, and Business - Machine Learning Basics - Benefits and Challenges of AI	12 Hours
2	AI Makes Decisions - Human Decision-Making vs AI Decision-Making - Explainable AI (XAI) - Importance of Transparency and Trust - Real-Life Examples of AI Decisions	10 Hours
3	Bias in AI - Fairness and Responsible AI - Ethical Use of AI - Privacy and Data Protection - AI Regulations and Guidelines	13 Hours
4	Explainable AI in Healthcare - Explainable AI in Banking and Finance - Explainable AI in Education - Explainable AI in Social Media- Trustworthy AI Systems	<u>15 Hours</u>
5	Introduction to Generative AI - Chatbots and Virtual Assistants - Large Language Models (LLMs) - AI Hallucinations and Limitations - Responsible Use of Generative AI	<u>10 Hours</u>
Note (if any)		60 Hrs

TEXT/REFERENCE BOOKS/E - RESOURCES:



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Text Books	1. Melanie Mitchell, <i>Artificial Intelligence: A Guide for Thinking Humans</i>, 1st Edition, Farrar, Straus and Giroux, 2019. 2. Stuart Russell, Peter Norvig, <i>Artificial Intelligence: A Modern Approach</i>, 4th Edition, Pearson Education, 2021.
Books For Reference	1. Christoph Molnar, <i>Interpretable Machine Learning: A Guide for Making Black Box Models Explainable</i>, 2nd Edition, Leanpub, 2022. 2. Michael Kearns, Aaron Roth, <i>The Ethical Algorithm: The Science of Socially Aware Algorithm Design</i>, 1st Edition, Oxford University Press, 2019. 3. Kate Crawford, <i>Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence</i>, 1st Edition, Yale University Press, 2021. 4. Stuart Russell, <i>Human Compatible: Artificial Intelligence and the Problem of Control</i>, 1st Edition, Viking (Penguin Random House), 2019. 5. Pam Baker, <i>Generative AI For Dummies</i>, 1st Edition, Wiley, 2024.
E-Learning Resources	1. Coursera – AI, Ethics, and Generative AI courses. 2. edX – AI fundamentals and responsible AI courses. 3. NPTEL – AI and emerging technology courses for Indian universities. 4. SWAYAM – Government of India online learning platform with AI-related courses. 5. Responsible AI Resources, Microsoft Responsible AI 6. Elements of AI, University of Helsinki and MinnaLearn, Available at: Elements of AI

PEDAGOGY (TEACHING METHODOLOGY):

- Lecture-Based Learning
- Collaborative Learning
- Blended Learning

CO-PO AND CO-PSO MAPPING:										
	PO1	PO2	PO3	PO4	PO5	PO6		PSO1	PSO2	PSO3
CO1	3	2	1	2	1	1		3	2	2
CO2	3	2	1	2	1	2		3	2	2
CO3	2	3	2	1	2	3		3	2	2
CO4	2	3	3	2	2	1		3	2	2
CO5	2	3	2	2	3	2		3	2	2



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Average (Use only filled in cells for calculation)	2.4	2.6	1.8	1.8	1.8	1.8	3	2	2
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Correlation Level: 1-Low 2-Moderate 3-Strong

JUSTIFICATION OF CO-PO/PSO MAPPING			
CO	PO/PSO	Level of correlation	Justification
CO1	PO1	3	Understands fundamental concepts of AI and Machine Learning.
	PO2	2	Analyzes AI applications in different domains.
	PO3	2	Identifies suitable AI-based solutions for real-world problems
	PO4	1	Examines AI technologies through basic investigation and learning.
	PO5	3	Demonstrates awareness of modern AI tools and technologies.
	PO6	2	Recognizes the societal impact of AI applications.
	PSO1	3	Builds foundational knowledge of AI concepts relevant to the discipline.
	PSO2	2	Applies AI fundamentals in domain-specific applications.
	PSO3	2	Enhances awareness of emerging AI technologies.
CO2	PO1	3	Explains AI decision-making concepts and explainability.
	PO2	3	Compares human and AI decision-making approaches
	PO3	2	Selects appropriate explainable AI techniques for practical scenarios
	PO4	2	Evaluates AI decisions using transparency principles.
	PO5	2	Uses AI tools to understand decision-making processes.
	PO6	3	Promotes trust and accountability in AI systems.
	PSO1	3	Develops knowledge of explainable AI concepts.
	PSO2	2	Applies AI decision analysis in real-life applications.
	PSO3	2	Strengthens understanding of trustworthy AI systems.
CO3	PO1	3	Understands ethical, fair, and responsible AI principles.
	PO2	3	Identifies bias and fairness issues in AI systems.



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	PO3	2	Suggests ethical approaches to AI implementation.
	PO4	2	Evaluates AI systems for fairness and privacy concerns.
	PO5	2	Demonstrates awareness of AI regulations and ethical guidelines.
	PO6	3	Promotes responsible and ethical use of AI in society.
	PSO1	3	Applies ethical AI concepts in professional practice.
	PSO2	2	Addresses fairness and privacy issues in AI solutions.
	PSO3	2	Supports responsible development and deployment of AI systems
CO4	PO1	3	Explains explainable AI applications across various domains.
	PO2	3	Analyzes AI applications in healthcare, banking, education, and social media.
	PO3	2	Recommends explainable AI solutions for domain-specific problems.
	PO4	2	Evaluates trustworthy AI systems using practical examples.
	PO5	3	Uses AI technologies to understand real-world applications.
	PO6	3	Recognizes the importance of trust in AI-driven services.
	PSO1	3	Applies explainable AI concepts in domain applications.
	PSO2	2	Integrates AI solutions in professional environments.
	PSO3	2	Enhances competency in trustworthy AI practices.
CO5	PO1	3	Understands Generative AI and Large Language Models.
	PO2	2	Analyzes the capabilities and limitations of Generative AI.
	PO3	3	Applies Generative AI tools responsibly in practical tasks.
	PO4	2	Evaluates AI-generated outputs and identifies hallucinations.
	PO5	3	Demonstrates effective use of Generative AI technologies.
	PO6	3	Promotes ethical and responsible use of Generative AI.
	PSO1	3	Develops knowledge of modern Generative AI techniques.
	PSO2	3	Applies Generative AI in domain-specific applications.
	PSO3	2	Enhances skills in responsible and explainable AI usage.