

COURSE TITLE	HUMAN-AI INTERACTION
COURSE CODE	01AS0504
COURSE CREDITS	4

Objective:

- 1 To understand human-centered AI principles, design intuitive AI interfaces, apply conversational AI techniques, analyze trust and ethical issues, and develop interactive AI-based systems.

Course Outcomes: After completion of this course, student will be able to:

- 1 Explain concepts of human–AI interaction and cognitive aspects
- 2 Design user-centric AI interfaces
- 3 Apply conversational AI techniques
- 4 Analyze usability, trust, and ethical issues
- 5 Develop interactive AI applications

Pre-requisite of course:Basic understanding of AI and Programming Fundamentals

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	Introduction to HAI Human-centered AI principles, Evolution of HCI ? HAI, Cognitive psychology basics, User behaviour analysis, AI system usability, Design thinking, Case studies, AI adoption challenges	9
2	Interaction Design UX/UI principles, Designing AI interfaces, Prototyping tools (Figma, Canva), Cognitive load theory, Multimodal interaction, Accessibility in AI systems, User journey mapping, Case studies	9
3	Conversational AI Chatbot architecture, NLP fundamentals, Dialogue systems, Voice assistants, Intent recognition, Conversational design, Evaluation metrics, Case studies	8
4	Explainability & Trust Explainable AI concepts, Human trust in AI, Interpretability tools, Transparency in AI systems, Bias detection, User feedback loops, Ethical interface design, Case studies	8

Contents : Unit	Topics	Contact Hours
5	Ethics & Future Trends Responsible AI principles, Fairness & accountability, Human-AI collaboration, AI governance, Social impact of AI, Future of AI interfaces, Regulations, Research directions	8
Total Hours		42

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Practical 1 Study and analysis of human-centered AI systems	2
2	Practical 2 User persona creation and requirement analysis.	2
3	Practical 3 Designing UI wireframes using Figma/Canva.	2
4	Practical 4 Create a low-fidelity prototype of an AI-based interface	2
5	Practical 5 Perform usability testing using a predefined checklist	2
6	Practical 6 Implement a simple rule-based chatbot using decision logic	2
7	Practical 7 Perform intent recognition using a pre-built NLP library	2
8	Practical 8 Design a conversation flow using a chatbot platform (Dialogflow/demo)	2
9	Practical 9 Demonstrate voice assistant functionality using pre-configured APIs	2
10	Practical 10 Design an explainable AI interface using visual elements	2
11	Practical 11 Collect and analyze user feedback using forms/tools	2
12	Practical 12 Redesign an existing AI-based interface incorporating user feedback and usability principles	2
Total Hours		24

Textbook :

- 1 Human-Centered AI, Ben Shneiderman, Oxford University Press, 2022
- 2 Designing with the Mind in Mind, Jeff Johnson, Morgan Kaufmann, 2020

References:

- 1 The Design of Everyday Things, The Design of Everyday Things, Don Norman, Basic Books, 2013
- 2 Human-Computer Interaction, Human-Computer Interaction, Alan Dix, Pearson, 2004
- 3 Speech and Language Processing, Speech and Language Processing, Jurafsky & Martin, Pearson, 2023

Suggested Theory Distribution:

The suggested theory distribution as per Bloom’s taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
10.00	20.00	30.00	20.00	10.00	10.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- 4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory