



CSXX0275: Design of Conversational Experiences

L-T-P-Cr: 3-0-0-3

Pre-requisites: AI and NLP

Objectives/Overview:

- Understand the theoretical foundations of conversational interfaces and user experience (UX) principles.
- Analyze user needs and conversation design requirements for different contexts and domains.
- Design intuitive and effective conversational user interfaces (CUIs) including chatbots and voice assistants.
- Integrate natural language processing (NLP) tools for building intelligent conversational agents.
- Evaluate the usability, accessibility, and ethical considerations of conversational systems.

Course Outcomes:

At the end of the course, a student should:

Sl. No.	Outcome	Mapping to POs	Mapping to PEOs
1.	Explain the fundamentals of conversational interfaces and interaction design.	PO5,PO6, PO8,PO10 ,PO12	PEO1, PEO4
2.	Identify user needs and draft conversation flows for specific applications.	PO5,PO6, PO8,PO9, PO10,PO11,PO12	PEO1, PEO2, PEO3, PEO4
3.	Develop multimodal conversational experiences using chatbot/voice tools.	PO5,PO9, PO10,PO11,PO12	PEO1, PEO2, PEO3, PEO4
4.	Apply NLP tools and platforms (Dialogflow, Rasa, Alexa Skills) in prototypes.	PO5, PO12	PEO1, PEO4
5.	Evaluate conversation designs based on usability testing and ethical standards.	PO5,PO6, PO7,PO8, PO9,PO10 ,PO11,PO12	PEO1, PEO2, PEO3, PEO4

UNIT I: Introduction to Conversational Interfaces

Lectures: 5

History and evolution of conversational agents, Human-computer interaction principles

Chatbots vs. voice assistants vs. multimodal interfaces, Real-world applications: customer support, education, healthcare

UNIT II: Conversation Design Principles

Lectures: 6

Elements of good conversation: tone, brevity, clarity, Turn-taking, context maintenance, handling interruptions, Conversation mapping, scripts, and flows, Persona development and branding

UNIT III: Tools and Technologies

Lectures: 6

NLP basics for conversation: intents, entities, context, Platforms: Google Dialogflow, Microsoft Bot Framework, Rasa, Alexa Skills Kit, Multimodal tools: Twilio, Telegram API, WhatsApp integrations, Conversational APIs and webhook usage

UNIT IV: Prototyping and Implementation

Lectures: 5

Building simple bots using Dialog flow or Rasa, Voice interfaces with Alexa or Google Assistant, Backend integration with APIs and databases, Debugging and testing conversational flows

UNIT V: Evaluation and Ethics

Lectures: 8

Usability testing for CUIs (Heuristic evaluation, SUS, etc.), Bias in conversational AI and ethical considerations, Accessibility guidelines (WCAG, voice/screen reader design)

Case studies: success/failure in real-world

Text/Reference Books

1) *Cathy Pearl – Designing Voice User Interfaces, O'Reilly Media*

2) *Michael McTear – Conversational AI: Dialogue Systems, Conversational Agents, and Chatbots, Springer*

3) *Rashmi Gupta & Kiran Jotwani – Human-Computer Interaction, Khanna Publishing*

Raj Kamal – Internet of Things: Architecture and Design Principles, McGraw-Hill