COURSE TITLE	**FUNDAMENTALS OF PROMPT ENGINEERING**
COURSE CODE	**01EE0808**
COURSE CREDITS	**2**

Objective:

1 To equip learners with the knowledge and practical skills to design, evaluate, and optimize effective prompts for diverse applications.

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

1 Explain the fundamentals of prompts, prompt types, and context design in LLMs.

2 Apply advanced prompt engineering techniques to improve clarity, accuracy, and safety of AI outputs.

3 Create effective technical and creative content using structured prompting strategies.

4 Use AI tools and platforms to develop prompt-based applications while considering limitations and ethical practices.

Pre-requisite of course:NONE

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	4	0	0	0	50	50

Contents : Unit	Topics	Contact Hours
1	**Foundation of Prompt Engineering** What is a Prompt, Types of Prompts: Zero-shot, One-shot, Few-shot, Role of Instructions and Context, Prompt patterns and templates	6
2	**Prompt Engineering Techniques** Chain-of-Thought Prompts, Role Prompting, Meta Prompting, Prompt Injection and Safety, Evaluating Prompt Effectiveness, Prompt Tuning vs Prompt Engineering, using system prompts vs user prompts, best practices for temperature, top-p, and max tokens	16
3	**Content Generation and Specialized Prompting** Generating Text with AI for Content Creation – Writing blogs, articles, and long-form content using prompt strategies; controlling tone, voice, and coherence. Creating Social Media Content – Crafting prompts for tweets, captions, LinkedIn posts, carousel scripts, and hashtag suggestions. Writing Video Scripts with AI – Structuring introductions, hooks, storyboards, and call-to-actions for educational or marketing videos.	20

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Contents : Unit	Topics	Contact Hours
4	**Applications of Prompt Engineering** Content Creation, Summarization, Translation, Coding & Debugging with LLMs, Q&A and Chatbots, Personalized Assistants, Interactive Storytelling, Search Enhancement, Data Extraction.	8
5	**Tools & Platforms** Using ChatGPT / Claude / Gemini, Introduction to LangChain, Prompt IDEs and Notebooks, Vector Databases, APIs & SDKs Deployment Tools, Limitations and Ethics of LLMs.	10
Total Hours		**60**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Experiment-1** Prompt ChatGPT to write and debug a simple Python script.	4
2	**Experiment-2** Compare zero-shot vs few-shot responses for a text summarization task.	4
3	**Experiment-3** Build a basic chatbot using ChatGPT and structured prompts.	4
4	**Experiment-4** Create a multilingual prompt for translation and compare outputs.	4
5	**Experiment-5** Analyze how the same prompt works across GPT-4, Gemini, and Claude.	4
6	**Experiment-6** Use prompt chaining to build a question-answer system.	4
7	**Experiment-7** Generate a role-playing conversation between historical figures.	4
8	**Experiment-8** Explore content moderation by testing harmful prompt detection.	4
9	**Experiment-9** Design a prompt to automate email summarization.	4
10	**Experiment-10** Create a guided creative writing assistant using ChatGPT.	8
11	**Experiment-11** Write prompts to sharpen the problem, creating literature review, analyzing data and getting conclusion for assigned topic.	16
Total Hours		**60**

Textbook :

1 Prompt Engineering for Generative AI: Future-Proof Inputs for Reliable AI Outputs, James Phoenix & Mike Taylor, O'Reilly Media, Inc., 2024

Textbook :

2 Speech and Language processing, Jurafsky, D., & Martin, J. H., Stanford University, 2023

3 Generative AI for everyone: Understanding the essentials and applications of this breakthrough technology, Altaf Rehmani, Bluerose Publishers Pvt. Ltd., 2024

References:

1 AI Engineering in Practice: Prompt Design and Retrieval-Augmented Generation, AI Engineering in Practice: Prompt Design and Retrieval-Augmented Generation, Richard Davies & Rafael Fischer, Manning Publications, 2024

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					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	0.00	30.00	30.00	20.00	20.00

Instructional Method:

1 Students will engage in hands-on experimentation by creating, testing, and refining prompts during live demonstrations and guided practice sessions.

2 Students will participate in structured lab activities where they interact directly with multiple LLMs to complete coding, summarization, translation, and chatbot-building exercises.

3 Students will conduct comparative analyses by evaluating how different AI models respond to the same prompts, and document insights through reflective notes or logs.

4 Students will collaborate with peers in group discussions, prompt-review activities, and joint debugging exercises to improve prompt quality and deepen conceptual understanding.

Supplementary Resources:

1 https://developers.google.com/machine-learning/resources/prompt-eng

2 https://cloud.google.com/discover/what-is-prompt-engineering?utm_source=chatgpt.com

3 https://docs.anthropic.com/en/docs/build-with-claude/prompt-engineering/overview

4 https://onlinecourses.nptel.ac.in/noc25_cs137/preview

5 https://onlinecourses.swayam2.ac.in/nou25_ma05/preview

6 https://cognitiveclass.ai/courses/prompt-engineering-for-everyone