School of Computer Science

P.G.D.C.A. (Post Graduate Diploma in Computer Applications) Programme

Subject Code & Name: PGDCA204-2- Introduction to AI and Prompt Engineering

Teaching And Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
4	-	-	4	50%	-	50%	-

Programme Name	P.G.D.C.A.
Semester	2
Course Code	PGDCA204-2
Course Title	Introduction to AI and Prompt Engineering
Course Content Type (Th. / Pr.)	Th.
Course Credit	4
Sessions + Lab Per Week	4
Total Teaching/ Lab Hours	60

Learning Objectives
Upon successful completion of this course, students will be able to: • Remember the fundamental concepts, history, evolution, types, and applications of Artificial Intelligence and Generative AI. • Understand the working principles, capabilities, and limitations of Large Language Models (LLMs) and various Generative AI tools. • Apply prompt engineering principles, prompting techniques, and AI tools to solve academic, professional, and real-world problems.

- Analyse AI-generated outputs by evaluating prompt effectiveness, identifying biases, hallucinations, and opportunities for optimization.
- Evaluate ethical, legal, privacy, security, and societal issues associated with Artificial Intelligence and responsible AI usage.
- Create effective prompts, AI-assisted workflows, and domain-specific AI solutions for content generation, research, communication, and productivity.

Learning Outcomes

After successful completion of the course, students will be able to:

- Explain the concepts, evolution, classifications, technologies, and applications of Artificial Intelligence and Generative AI.
- Demonstrate the use of Large Language Models and Generative AI tools for content creation, research, summarization, translation, and problem solving.
- Design effective prompts using standard prompt engineering techniques such as role prompting, few-shot prompting, chain-of-thought prompting, and prompt refinement.
- Analyze AI-generated responses by identifying strengths, weaknesses, hallucinations, biases, and opportunities for prompt optimization.
- Evaluate ethical, legal, security, privacy, fairness, and governance issues in the development and deployment of AI systems.
- Develop AI-assisted workflows and practical solutions using Generative AI tools for education, business, research, and professional applications.

CLO–PLO Mapping Matrix:

CLOs/PLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	2	–	–	1	2	1
CLO2	1	2	1	2	3	2
CLO3	–	2	1	2	3	2
CLO4	1	1	1	3	2	2
CLO5	–	–	–	2	2	3
CLO6	1	3	2	3	3	2

Detailed Contents

Unit	Topic/Sub Topic	Teaching Hours
I Foundations of Artificial Intelligence	**Fundamentals of Artificial Intelligence** **Introduction to Artificial Intelligence** • Definition and Evolution of AI • History and Milestones of AI • Types of AI (Narrow AI, General AI, Super AI)	15

	• AI vs Human Intelligence **AI in Everyday Life** • AI in Education • AI in Healthcare • AI in Agriculture • AI in Business and Banking • AI in Social Media and Entertainment **Benefits and Challenges of AI** • Advantages of AI • Limitations of AI • Future Scope of AI	
II **Generative AI Tools and Applications**	**Generative AI Tools and Applications** **Introduction to Generative AI** • What is Generative AI? • Features and Capabilities of Generative AI • Understanding Large Language Models (Conceptual Overview) **Popular Generative AI Tools** • ChatGPT • Gemini • Microsoft Copilot • Claude • Perplexity AI **Applications of Generative AI** • Content Creation • Email and Report Writing • Presentation Preparation • Translation and Summarization • Research Assistance • Learning and Skill Development **Limitations of Generative AI** • Incorrect Information • Hallucinations • Dependence on User Input	15
III **Prompt Engineering Fundamentals**	**Prompt Engineering Fundamentals** **Introduction to Prompt Engineering** • Meaning and Importance of Prompt Engineering • Characteristics of Effective Prompts • Components of a Prompt **Prompting Techniques** • Direct Prompting • Role-Based Prompting	15

	• Step-by-Step Prompting • Few-Shot Prompting • Question-Based Prompting **Prompt Design and Improvement** • Writing Clear Instructions • Providing Context • Specifying Output Format • Prompt Testing and Refinement • Improving AI Responses **Practical Prompt Writing** • Prompts for Education • Prompts for Business • Prompts for Research • Prompts for Content Creation	
IV **Ethical AI and Practical Applications**	**Ethical AI and Practical Applications** **Ethical and Responsible AI** • AI Ethics • Privacy and Security Issues • Copyright and Intellectual Property • Bias and Fairness in AI • Responsible Use of AI Tools **AI for Productivity** • AI for Academic Work • AI for Business Communication • AI for Data Interpretation • AI for Career Development • AI for Entrepreneurship **Case Studies and Future Trends** • Real-World AI Applications • Success Stories of AI Adoption • Emerging Trends in AI • Future Opportunities and Challenges	15

Reference Books

1. Russell, S., & Norvig, P. (2024). *Artificial intelligence: A modern approach* (4th ed.). Pearson Education.
2. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. MIT Press.
3. Raschka, S., & Mirjalili, V. (2025). *Machine learning with Python and Scikit-Learn, TensorFlow, and PyTorch* (4th ed.). Packt Publishing.
4. Poole, D. L., & Mackworth, A. K. (2023). *Artificial intelligence: Foundations of computational agents* (3rd ed.). Cambridge University Press.
5. Huyen, C. (2025). *AI engineering: Building applications with foundation models*. O'Reilly Media.

6. Phoenix, J., & Taylor, M. (2024). *Prompt engineering for generative AI: Future-proof inputs for reliable AI outputs*. O'Reilly Media.
7. Alammar, J., & Grootendorst, M. (2024). *Hands-on large language models: Language understanding and generation*. O'Reilly Media.
8. Subramanian, S., D., S., & Contributors. (2024). *Building LLM applications for production*. O'Reilly Media.
9. Fregly, C., Barth, A., & Eigenbrode, S. (2025). *Generative AI on AWS* (2nd ed.). O'Reilly Media.
10. Bahree, A. (2024). *Practical generative AI: Applications, techniques, and implementation strategies*. Apress.
11. Kaushik, S. (2023). *Artificial intelligence and machine learning*. McGraw Hill Education India.
12. Sharma, A. (2024). *Generative AI and prompt engineering: A practical guide*. BPB Publications.
13. Goyal, N. (2024). *Applied artificial intelligence using Python*. BPB Publications.
14. Raj, P., & Raman, A. (2023). *Artificial intelligence: Concepts and applications*. Khanna Publishing House.
15. Srivastava, D. (2024). *Generative AI for developers and researchers*. BPB Publications.

Web references:

1. https://platform.openai.com/docs
2. https://platform.openai.com/docs/guides/prompt-engineering
3. https://ai.google.dev
4. https://www.promptingguide.ai
5. https://docs.anthropic.com
6. https://huggingface.co/docs
7. https://learn.microsoft.com/ai
8. https://www.deeplearning.ai/short-courses
9. https://developers.google.com/machine-learning/crash-course
10. https://www.unesco.org/en/artificial-intelligence/recommendation-ethics

L:: Lecture, **T::** Tutorial, **P::** Practical

CCE:: Continuous & Comprehensive Evaluation

(CCE theory includes Mid Semester Examination, Assignment, MCQ Quizzes, Seminar, Reflective Notes, Class Participation, Case Analysis and Presentation, Slip Tests (Announced/ Surpirsed), Attendance etc. or any combination of these)

PWE: Practical Work Examination

(PWE includes Laboratory Practical Work, Project Work, Viva simulation exercise work etc.)

SEE:: Semester End Evaluation