

AI Tools and Applications

I Year B. Tech. I Semester

(Common to All Branches)

**(CHEM, CIVIL, CSE, CSM, CSD, CSC, CSF, ECE, ECE (VLSI), EEE, EEE (EV), IT, MECH,
MECH (R & AI))**

Course Code:

L T P C

1 0 2 2

Course Outcomes (COs):

After completing the course, students will be able to:

CO1: Explain the concepts and applications of Generative AI Tools.

CO2: Apply prompt engineering techniques to obtain effective AI outputs.

CO3: Use AI tools for programming, documentation, and software development.

CO4: Develop multimedia content using Generative AI tools.

CO5: Design AI-enabled applications following ethical, legal and security considerations.

UNIT-I

(6 Hours)

Introduction to AI Tools: Definition and Background of AI- Fundamentals of AI- Generative AI, And Large Language Models (LLMs) (Introduction only)-Applications of Generative AI. AI Tools: ChatGPT, Gemini AI, Notebook LM, and Google AI Studio - Responsible AI.

UNIT-II

(6 Hours)

Prompt Engineering- AI assisted writing and summarization-Creating documents for a given context-Creating greetings with images- with animation using apps like CANVA.

UNIT-III

(6 Hours)

AI Tools for Coding : Creating code in any given language for a given problem using one AI tool and giving it for debugging in another AI tool. Changing code from one language to another- Test case Generation.

UNIT-IV

(6 Hours)

Power point presentation making using AI Tools- Gamma AI and Gemini AI - Preparing a PPT for a given topic by incorporating audio, video, animation and music.

UNIT-V

(6 Hours)

AI-enabled applications using Generative AI tools – AI Workflow Automation- Future Trends in Generative AI.

TEXTBOOKS

1. Generative AI 360⁰ : Practical Guide to ChatGPT, Midjourney & AI Tools to Boost Productivity & Creativity | For Professionals, Marketers & Entrepreneurs by Hitesh Motwani | ZebraLearn, 2025.
2. ChatGPT and other Generative AI Tools : An insight and application guide for latest Generative AI Tools by Hem Raj, ISBN : 978-93-6087-605-0, Shashwat Publication, 2025.
3. Foundations of Artificial Intelligence and Prompt Engineering: A Comprehensive Textbook for Students, Educators, and Practitioners by Dr. Manish Rana, Dr. Manimala Mahato, Dr. Vinutha T. P. Gupta, Ms. Bhagyashree Patil, Swastik International Publication , ISBN No: 978-93-49196-16-2, 2025.
4. Hands-On Large Language Models, Jay Alammar and Maarten Grootendorst, O'Reilly Media, 1st Edition, 2024. ISBN: 978-1098150960

REFERENCE BOOKS

1. Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig, Pearson Education, 4th Edition, 2021. ISBN: 978-0134610993
2. Deep Learning, Ian Goodfellow, Yoshua Bengio, Aaron Courville, MIT Press, 2016. ISBN: 978-0262035613
3. The Ethics of AI, Mark Coeckelbergh, Oxford University Press, 2020. ISBN: 978-0198822319
4. Ethics of Artificial Intelligence, S. Matthew Liao (Editor), Oxford University Press, 2020. ISBN: 978-0190905034
5. Machine Learning with PyTorch and Scikit-Learn, Sebastian Raschka, Yuxi Liu, Vahid Mirjalili, Packt Publishing, 2nd Edition, 2022. ISBN: 978-1801819313

AI Tools and Applications Lab

List of Experiments

1. **Explore Generative AI Tools:** Perform the same question-answering task using ChatGPT, Gemini AI, NotebookLM and Google AI Studio, and compare the outputs.
2. **AI-Based Information Generation:** Use a Generative AI/LLM tool to generate an explanation of a given engineering topic and evaluate the relevance, accuracy and completeness of the response.
3. **Document Analysis using NotebookLM:** Upload a given document/reference material to NotebookLM and generate a summary, important points and questions based on the document.
4. **Responsible AI Analysis:** Give different prompts to an AI tool and identify issues related to bias, misinformation, privacy, copyright and responsible use of AI.
5. **Basic Prompt Engineering:** Generate an answer to a given problem using zero-shot, role-based and structured prompts and compare the outputs.
6. **AI-Assisted Writing and Summarization:** Use an AI tool to write a short article on a given topic and generate a concise summary of the article.
7. **Context-Based Document Creation:** Provide a specific context and generate a formal document such as a notice, report, invitation or academic communication using an AI tool.
8. **AI Greeting Card with Image and Animation:** Create a personalized greeting using AI-generated text and images and add animation using Canva or a similar application.
9. **AI-Based Program Generation:** Use an AI tool to generate a program in C/Python/Java for a given problem and execute and verify the program.
10. **AI-Assisted Debugging:** Generate a program using one AI tool, introduce/identify errors, and use another AI tool to debug and correct the program.
11. **Programming Language Conversion:** Use an AI tool to convert a given program from one programming language to another and verify the converted program.
12. **AI-Based Test Case Generation:** Give a programming problem and its solution to an AI tool and generate normal, boundary, invalid and edge test cases.
13. **AI-Based PPT Generation:** Generate a PowerPoint presentation on a given engineering topic using Gamma AI.
14. **PPT Generation using Gemini AI:** Use Gemini AI to prepare the content/structure for a presentation and convert it into a presentation.
15. **Multimedia-Enhanced Presentation:** Prepare an AI-generated PPT incorporating suitable images, audio and video for a given topic.
16. **Animated AI Presentation:** Create an AI-assisted presentation containing animated elements, transitions, narration/audio and background music.
17. **Develop an AI-Enabled Application:** Design a simple application using a Generative AI tool for a real-world problem such as education, healthcare, agriculture or marketing.
18. **AI Workflow Automation:** Design an automated workflow in which an input is processed by an AI tool and the generated output is automatically used in the next step.
19. **Generative AI Productivity Workflow:** Create an end-to-end workflow for a task such as document creation → summarization → presentation/content generation using multiple AI tools.
20. **Future Trends in Generative AI:** Explore a recent Generative AI technology/application and prepare a demonstration/report explaining its functionality, applications, benefits and responsible-AI considerations.