**Module 1: Introduction to Generative AI and Prompt Engineering**

**Topics:**

- What is Generative AI?

- Understanding Prompt Engineering in Generative AI

- Applications and importance of Generative AI in AI and NLP (e.g., text generation, image creation, etc.)

- Overview of large language models (LLMs) like GPT, BERT, and DALL·E

- The role of prompts in shaping generative outputs

- Basic prompt crafting: Structure, clarity, and context

**Activities:**

- Case studies of effective prompt usage in Generative AI

- Hands-on: Writing your first prompts for text and image generation

- Group discussion: Ethical implications of Generative AI in society

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**Module 2: Fundamentals of AI Models and Prompt Interpretation**

**Topics:**

- How Generative AI models interpret and respond to prompts

- Understanding model parameters: Temperature, tokens, and stop sequences

- Difference between open-ended and specific prompts

- Customizing outputs based on model constraints and guidelines

**Activities:**

- Experimenting with model parameters to observe changes in outputs

- Hands-on: Fine-tuning prompts for various types of content (e.g., creative text vs. technical writing)

- Review session: Analyze and critique examples of open-ended vs. specific prompts

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**Module 3: Designing Effective Prompts for Generative AI**

**Topics:**

- Principles of effective prompt design in Generative AI (e.g., clarity, specificity, and creativity)

- Common challenges in prompt engineering and troubleshooting strategies

- Techniques for optimizing prompts for better outputs

- Crafting prompts for various generative tasks: Text generation, summarization, translation, data extraction, and creative writing

**Activities:**

- Crafting prompts for various tasks like creative writing, technical explanations, and summarization

- Group activity: Identify and fix poorly designed prompts to enhance model output

- Peer review: Share prompts and refine them collaboratively

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**Module 4: Advanced Techniques in Prompt Engineering**

**Topics:**

- Chain-of-thought prompting for step-by-step reasoning

- Few-shot and zero-shot prompting for efficient task execution

- Leveraging context, examples, and previous responses for coherent outputs

- Exploring prompt tuning and advanced model training for specialized tasks

**Activities:**

- Hands-on: Using examples and detailed instructions to guide outputs effectively

- Case studies: Real-world advanced prompts in applications like legal document generation, automated coding, and customer support chatbots

- Interactive discussion: Best practices for fine-tuning prompts for specific outputs

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**Module 5: Domain-Specific Prompt Engineering**

**Topics:**

- Adapting prompts for specific domains: Healthcare, finance, education, marketing, and more

- Ethical considerations and biases in generative prompt design

- Legal and societal implications of AI-generated content

**Activities:**

- Brainstorming session: Crafting industry-specific prompts for healthcare, education, business, and entertainment applications

- Crafting domain-specific prompts to solve real-world problems (e.g., generating medical summaries or legal documents)

- Group project: Design prompts for a specific industry application (e.g., customer service, content marketing)

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## Module 6: Tools and Platforms for Generative AI and Prompt Engineering

**Topics:**

- Exploring tools and platforms: OpenAI Playground, Hugging Face, LangChain, and custom APIs for generative AI

- Automating prompt workflows and integrating generative AI models into larger systems

- The role of APIs in fine-tuning generative outputs

**Activities:**

- Hands-on: Building and experimenting with prompt workflows using platforms and tools

- Interactive demo: Using generative AI tools to build real-time applications (e.g., chatbots, content generation platforms)

- Discussion: Exploring the ethical considerations of using APIs for generative AI in production environments

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## Module 7: Enhancing Creativity with Prompt Engineering

**Topics:**

- Creative writing prompts: Inspiring stories, poems, and artistic content

- Visual prompts for generating images, videos, and design concepts

- Leveraging AI for ideation in creative industries (art, entertainment, marketing)

- Combining AI-generated content with human creativity

**Activities:**

- Hands-on: Experiment with creative prompts to generate stories, poems, and images

- Group activity: Collaborate on creating a short story or a creative marketing campaign using AI-generated content

- Peer feedback: Evaluate and refine the creativity and quality of outputs

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**Module 8: Model Fine-Tuning and Customization**

**Topics:**

- Introduction to model fine-tuning: How to adapt a pre-trained model to a specific task

- Transfer learning in Generative AI models

- Customizing outputs for specialized domains (e.g., medical, legal, technical writing)

- Training your own models for advanced generative tasks

**Activities:**

- Hands-on: Fine-tuning a model for a specialized task using platforms like Hugging Face

- Case study: Customizing a language model for customer support or medical applications

- Group project: Fine-tune a model to generate domain-specific content

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**Module 9: Ethical and Responsible Use of Generative AI**

**Topics:**

- Understanding and mitigating biases in generative models

- Ethical considerations: Transparency, accountability, and misuse of AI

- Responsible use of generative AI in content creation, marketing, and customer service

- Mitigating risks of deepfakes, misinformation, and harmful content

**Activities:**

- Group discussion: Ethical challenges in AI-generated content and how to address them

- Hands-on: Implementing ethical guidelines and bias reduction strategies in prompts

- Workshop: Create a code of ethics for generative AI in your industry

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**Module 10: Future of Generative AI**

**Topics:**

- Emerging trends in generative AI (e.g., multi-modal models, reinforcement learning)

- Future advancements in large language models and their applications

- The impact of generative AI on different industries and the workforce

- Potential risks and rewards of widespread generative AI adoption

**Activities:**

- Research: Investigate the latest advancements in generative AI and present findings

- Group debate: The future of generative AI in education, business, and entertainment

- Guest speaker or interview: Experts in the field of AI share their vision for the future