Miami Dade College

Course Description

CAI1320C | Introduction to Prompt Engineering | 3.00 credits

This course introduces students to prompt engineering, focusing on foundational concepts and practical applications across various tools. Students will learn to craft prompts that enhance creativity, precision, and efficiency, leveraging AI to optimize workflows and productivity.

Course Competencies:

Competency 1: The student will demonstrate a foundational understanding of artificial intelligence (AI) by:

1. Defining AI and its main components, like machine learning and neural networks, and explaining their roles in building intelligent systems
2. Describing key AI applications, such as recommendation systems and computer vision, and their effects on industries like healthcare and finance
3. Identifying current AI limitations, including its reliance on data quality and challenges with generalization

Competency 2: The student will demonstrate a foundational understanding of generative AI by:

1. Explaining what generative AI is and how it creates new content, such as text, images, and audio, using machine learning models
2. Identifying common generative AI applications, like chatbots, image synthesis, and music composition, and discussing their potential uses and impacts
3. Describing the basic mechanisms behind generative AI models, such as training on large datasets to recognize patterns and generate outputs
4. Discussing the differences between generative AI and other types of AI, such as predictive models, to understand its unique capabilities in content creation

Competency 3: The student will demonstrate knowledge of large language model (LLM) fundamentals by:

1. Explaining what large language models are and how they use vast amounts of text data to generate human-like responses
2. Describing key concepts related to LLMs, such as tokenization, context, and model parameters, and their roles in shaping output quality
3. Identifying common uses for LLMs, including text completion, translation, summarization, and question-answering, and their impact on various fields
4. Discussing the limitations of LLMs, such as sensitivity to prompt phrasing and challenges with complex reasoning or factual accuracy

Competency 4: The student will demonstrate an understanding of prompt engineering fundamentals by:

1. Defining prompt engineering and its role in guiding AI responses, including how well-crafted instructions can improve response accuracy and relevance
2. Differentiating between prompt types and selecting suitable types based on objectives
3. Using basic prompting strategies to guide responses for specific tasks
4. Iterating prompts with incremental improvements to tone, detail, and format to achieve more accurate and effective responses

Competency 5: The student will demonstrate the use of prompt engineering for diverse uses by:

1. Designing prompts tailored to specific fields, such as education, business, and creative writing, and using personas to adjust responses for varied audiences
2. Incorporating advanced techniques to ensure prompts match the intended voice
3. Using prompt libraries and reference guides to maintain consistency and precision, especially when managing complex tasks
4. Experimenting with different prompt structures and templates to optimize responses
5. Applying techniques like prompt chaining for complex task management
6. Evaluating and refining prompts to increase specificity and accuracy

Competency 6: The student will demonstrate the use of prompt engineering to enhance productivity across different applications by:

1. Automating repetitive tasks, such as summarizing information, drafting communications, and generating content, with a focus on maintaining clarity and precision in outputs
2. Structuring prompts to analyze data, identify trends, and create organized outputs that support decision-making and presentation needs
3. Designing prompts to retrieve relevant data in real-time and integrate multimodal elements like text, images, or audio for enriched outputs across different contexts
4. Utilizing libraries and structured techniques to streamline workflows and align AI assistance with specific productivity objectives

Competency 7: The student will demonstrate strong problem-solving, critical thinking, and communication skills in prompt engineering by:

1. Breaking down complex tasks into manageable components, designing step-by-step prompts that address specific aspects of a larger problem effectively
2. Evaluating and refining AI-generated outputs through critical analysis, identifying assumptions and making targeted adjustments to improve accuracy, relevance, and clarity
3. Crafting clear and precise prompts that communicate objectives effectively, tailoring language and format to suit different contexts, audiences, and AI models
4. Collaborating with others to enhance prompt strategies, sharing insights and feedback to improve prompt design and align AI outputs with shared goals

Competency 8: The student will demonstrate an understanding of ethical considerations in prompt engineering by:

1. Identifying ethical issues related to AI-generated content (e.g., bias, misinformation)
2. Describing methods for minimizing biases in prompts
3. Demonstrating awareness of data privacy in AI interactions
4. Discussing the broader implications of AI-generated content in various settings

Learning Outcomes:

- Solve problems using critical and creative thinking and scientific reasoning.
- Formulate strategies to locate, evaluate, and apply information.
- Use computer and emerging technologies effectively.