

## **Title: EGR 404: Building Tools with Generative AI**

### **Instructor**

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### **Credit Hours: 3**

**Description:** In this online course, you will discover the transformative power of Generative Artificial Intelligence (GenAI) with a hands-on approach. The course dives into the vendor-provided GenAI user interface, quickly transitioning to harnessing the robust capabilities of GenAI Application Programming Interface (API). It features practical labs where you will build custom chatbots, automate processes, develop specialized assistants, analyze data, and integrate GenAI with tools like email and calendar. The students will further explore cutting-edge applications like multi-agent AI teams. This course emphasizes practical skills and real-world applications, preparing you for the future of AI, where GenAI is set to revolutionize industries and drive innovation.

### **Tentative Schedule:**

#### **Lectures**

Lec 1: Prompt and Context Engineering

Lec 2: Utilizing GenAI for automating processes.

Lec 3: Using GenAI for coding and debugging.

Lec 4: OpenAI Application Programming interface (API)

Lec 5: Using Responses and Agent APIs to build advanced multi-agent applications.

#### **Hands-on Labs**

Lab 1: Creating your first AI Assistant (with access to tools).

Lab 2: Automating Google Services with GenAI.

Lab 3: Coding and debugging with GenAI.

Lab 4: Building a web-based chatbot with a knowledge base.

Lab 5: Building a multi-agent e-commerce customer service app.

### **Prerequisite**

Experience with computer programming in any language is helpful but not required.

### **Delivery mode**

Synchronized online for both classes and labs.

### **Required text**

Students do not need to buy textbooks but are expected to get OpenAI membership and pay for API usage. The estimated cost is less than \$50.