

AI for Engineers Course

Course description

Learn to use leading AI tools, including Microsoft Copilot, Claude, and ChatGPT, to support everyday engineering and R&D work. This practical course covers how generative AI works, why it can produce inaccurate information, and how to ground responses in technical documents and company data. Through demonstrations and exercises, you will personalize each tool, write effective prompts, search workplace information, and choose the right AI tool for research, data analysis, and document tasks. Engineering examples include bill of materials searches, equipment and test logs, technical summaries, and preparation for design reviews. You will also explore deep research features, data analysis tools, and project workspaces that keep AI focused on your own files. Throughout the course, you will practice reviewing AI outputs and applying engineering judgment before using the results.

Course outline of topics covered

- **Generative AI fundamentals.** Large language models, tokens, predictive text, hallucinations, and human review.
- **Comparing Copilot, Claude, and ChatGPT.** Strengths, limitations, and best-fit engineering tasks for each tool, and how enterprise versions protect company data.
- **Grounding AI in engineering information.** Using technical manuals, project trackers, and supplied files; identifying missing data and unsupported assumptions.
- **Navigating the AI interfaces.** Chat layouts, model selection, web search versus work data, file uploads, and enterprise data protection concepts in each tool.
- **Personalizing your AI tools.** Custom instructions, memory, chat history, temporary chats, and project workspaces in Copilot, Claude, and ChatGPT.
- **Writing and managing effective prompts.** Role, context, task, format, and examples. Refining prompts and reusing them across tools.
- **Searching workplace knowledge.** Using Copilot with Microsoft 365, and connecting Claude and ChatGPT to shared files to find and summarize project information and prepare meeting updates.
- **Research and technical synthesis.** Using deep research features in each tool, selecting sources, reviewing citations, comparing approaches, and preparing reports.
- **Engineering data and analysis workflows.** Using Copilot in Excel and the data analysis features in Claude and ChatGPT to search BOM data, extract information from multiple file types, and explore trends and outliers.
- **Projects, agents, and reusable assistants.** Building Claude Projects, custom GPTs, and Copilot agents that answer questions about shared content, summarize documents, and create FAQs.
- **Validating and communicating results.** Checking source evidence, calculations, and assumptions, and adapting technical summaries for engineering and cross-functional audiences.

What you will learn in this AI for Engineers course

By the end of this course, you will be able to:

- Explain how generative AI produces responses and recognize why plausible answers can still be inaccurate.
- Compare Copilot, Claude, and ChatGPT and select the best tool for a given engineering task.
- Personalize each tool with instructions that reflect your engineering role, terminology, output preferences, and constraints.
- Construct prompts using role, context, task, format, and examples to request useful technical outputs.
- Ground requests in supplied documents and data, and ask the AI to identify missing information and assumptions.
- Find and synthesize project information from workplace files, communications, and shared knowledge sources.
- Use AI to support BOM lookups, extraction across files, technical research, and summaries of engineering information.
- Build project workspaces and reusable assistants that answer questions about shared content and generate summaries or FAQs.
- Review AI-generated findings against source evidence and calculations, and tailor summaries for different audiences.

Skills learned in this course

- Prompt writing and refinement
- AI tool comparison and selection
- Personalization and memory management across AI tools
- Grounding responses in technical source material
- Workplace search and information synthesis
- Technical research and source evaluation
- Engineering data extraction and exploratory analysis
- BOM lookup and cross-reference workflows
- Building projects, custom GPTs, and agents
- Document summarization and FAQ generation
- Technical communication for different audiences
- AI output verification and human-in-the-loop review