

Facilitators: Caleb McDougal, Abrar Chowdhury

Location: Port Aransas Room

Software: Copilot: <https://copilot.microsoft.com/>

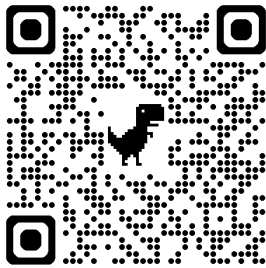
Perplexity: <https://www.perplexity.ai/>



Introduction to AI Prompt Engineering: This session will provide an overview of common AI engines, and guide participants as they craft prompts to perform common tasks such as: creating topical summaries, performing market research, and engineering design ideation. This session is designed for individuals with little or no AI experience.

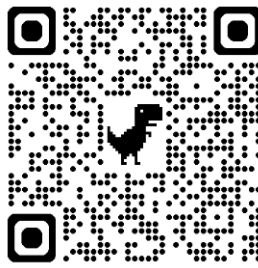
INTRO TO PROMPTING - BASIC INFORMATION AND INSTRUCTIONS

TOOLS WE WILL USE



Copilot

<https://copilot.microsoft.com/>



Perplexity

<https://www.perplexity.ai/>

OTHER TOOLS

Prompt Engineering:

CoPilot
Perplexity
Gemini
Claude
Grok

AI IS A TOOL NOT A REPLACEMENT

When using these tools, always
use your engineering judgement



Disclaimer: The Gulf Coast Center of Excellence and DOE do not endorse or advocate the use of any one AI tool over another or take responsibility for their misuse

THE RICECO PROMPTING FRAMEWORK

Use this structure to build
effective prompts

- R** **ROLE**
Tell the AI who it should act as.
- I** **INSTRUCTION**
Include the specific task or command
- C** **CONTEXT**
Provide essential background or references.
- E** **EXAMPLES**
Provide examples to show, not just tell what you want
- C** **CONSTRAINT**
Set clear limits and rules (tone, length, etc.).
- O** **OUTPUT**
Choose the specific format (list, essay, code).

Tips and Best Practices

Keep Data Secure

- Don't use secure data
- Check generated output
- Consider paying for plans that ensure data and app security



Conserve Tokens

- Be aware of "token" limitations
- Leverage multiple accounts as needed

For workshop
materials, energy
saving tips, and more,
visit our website at
<https://gccoe.org>

The following instructions were created specifically for the IETC 2026 Hands-On AI Workshop, Copilot and Perplexity were used, this can be adapted for any AI Tool

Generate Topical Summaries

- Use the provided RICECO prompt below and compare it with a less precise prompt to see the impact.

Role: Address me from the point of view of an energy consultant providing recommendations on energy efficiency in my facility

Instructions: Provide a report of prioritized energy efficiency recommendations for my steam boiler system

Context: I have a boiler that runs 24 hours a day 365 days a year with 80% combustion efficiency producing 10,000 lb/hr steam at 150 psig. Boiler feedwater consists of 35% makeup water at 60 °F. The ABMA impurity limit is 3000 ppm, and current tests show 1700 ppm in the boiler. Feedwater contains 375 ppm.

Examples: Find and use energy efficiency reports for boiler systems online as an example

Constraints: Limit the projects to those that have average payback of less than 3 years and limit the report length to one page. Ask me questions to fill in any missing information you need to perform the calculations.

Output: Generate the results in a report format with bullet points for each recommendation and prioritize them by payback period with expected annual savings when calculations are possible with the provided data.

Perform Market Research

- Using Perplexity generate a market research report of various air compressors that could replace your current compressor. Compare available upfront pricing and energy efficiency specifications for each. Generate a prioritized list of which compressors would work best. System specifications are below:

The current system operates at 100 psig and provides up to 300 CFM with a duty factor of 0.75 It operates 18 hours a day 365 days a year.

Enhance Engineering Design Ideation

- Using the RICECO technique, with Copilot or Perplexity, engineer a prompt that will help you generate a broader range of possible options for the following task:

You are designing an IIOT device using off-the-shelf equipment to measure data and help identify energy savings opportunities. The device will be used for a dust collection system. The only available space for the device is in a small nook high on the wall behind the system. So, it must be able to fit into a 2-inch-wide nook; it needs to mount to a flat surface, and due to its inaccessibility, it must have a battery life of 2 months. It must be able to handle a dirty environment while remaining reliable. The data you need is flow rate to ensure the system is functioning properly at high load times.

Explore for Yourself

- Build your own RICECO prompt to explore something specific you are interested in. Be sure to keep your secure data safe and share with the group!