

Project Preparation: AI-Assisted Study Guide & Literature Review

Due Date: March 30, 2026
Groups: 3 Students per group

Objective

The goal of this assignment is to use Generative AI (such as Gemini, ChatGPT, or Claude) to bootstrap your final project literature review. You will prompt the AI to create a structured study guide that divides your topic into distinct engineering roles, verify the AI's output to filter out hallucinations, and perform a secondary refinement step to narrow your focus.

Step 1: The Initial AI Prompt

You have already chosen the final paper topic for your group. Nominate one group member to prompt an AI with a highly specific request. **Do not just ask it to "write about the topic."** You must instruct the AI to generate a structured study guide.

Use a prompt similar to this template, adjusting it for your specific topic:

"I am an engineering student doing a project on [Insert Topic, e.g., Medical Radiopharmaceuticals and Target Alpha Therapy]. We have a group of 3 students. Please generate a study guide for us.

First, provide a 'Common Material' section with 2-3 links to foundational overviews that all of us should read.

Second, divide the core engineering challenges into three distinct, highly technical roles (e.g., Thermal-Hydraulics, Radiochemistry, Mechanical Design). For each role, recommend 2-3 specific topics to research.

Crucially, provide real URLs and DOIs for your recommendations. Prioritize peer-reviewed journal articles and technical reports (like DOE/OSTI). Limit Wikipedia to only the foundational 'Common Material' section."

Step 2: The Verification Phase (Mandatory)

Warning: AI models frequently hallucinate (invent) DOIs, URLs, and paper titles.

Once the AI generates your study guide, you must physically verify every single link and citation.

- If a link is dead or goes to the wrong paper, use Google Scholar, the Hesburgh Library databases, or ResearchGate to find the actual paper the AI was attempting to reference.
- If the paper simply does not exist, find a real, equivalent peer-reviewed paper that covers the specific sub-topic the AI suggested.

Step 3: Initial Reading and Refinement (The Two-Step Process)

Once you have verified your sources, divide the labor. Each student must read the common material and the 2-3 papers assigned to their specific role.

After your initial reading, regroup and discuss what you have learned. You will likely discover that the AI's initial guide was too broad.

The Refinement Prompt: Go back to the AI and prompt it again using your newly acquired technical vocabulary to dive deeper. For example:

- *"We read the initial papers. For Student 2's radiochemistry section, we want to focus specifically on the radiolytic degradation of TBP solvent during the extraction of Actinium-225. Please provide 3 peer-reviewed journal articles specifically analyzing this degradation mechanism and how to mitigate it."*

Verify these new links just as you did in Step 2.

Deliverables (Due March 30)

Submit a single PDF per group containing:

1. **The Initial Prompt & Output:** The exact text of your first prompt and the AI's unedited response.
2. **The Verification Log:** A brief list noting which AI links were real, which were hallucinated, and the corrected citations/URLs you found to replace the fake ones.
3. **The Refinement Prompt & Output:** The exact text of your second, highly specific prompt, and the AI's unedited response.
4. **The Final Reading List:** A cleanly formatted bibliography (in IEEE or APA format) of the verified, peer-reviewed papers your group will actually use for the final project, divided by student roles.