

PHYS/GLBL 280
Writing Lab 01/26/2026

Course Website

<https://courses.physics.illinois.edu/phys280/sp2026/>

Questions about the syllabus/website?

AI Chatbots

AI Platform	Free Tier	Premium Plan (Individual)	Student Discount/Free Trial	Free vs Premium Feature Differences
ChatGPT (OpenAI)	Free - Limited GPT-4o access, ~10 messages/5 hours	Plus: \$20/month Pro: \$200/month	No student discount currently	FREE: GPT-4o limited, slower responses, no priority access, basic GPT-4 PLUS: GPT-4o unlimited, faster responses, priority access during peak times, DALL-E 3 image generation, Advanced Voice, o1-mini access PRO: Unlimited o1 (smartest model), unlimited GPT-4o, Advanced Voice
Claude (Anthropic)	Free - Limited GPT-4o access, ~10 messages/5 hours	Pro: \$20/month (\$17 if yearly) Max: \$100-200/month	No student discount currently	FREE: Claude Haiku/Sonnet with daily message limits (varies), slower responses PRO: Claude Sonnet 4.5 access, 5× higher usage limits, priority access, longer conversations, Claude Code browser tool MAX: 20× usage limits vs free tier
Gemini (Google)	Free - Gemini 1.5 Flash model	AI Pro: \$19.99/month AI Ultra: \$249.99/month	1 YEAR FREE for students DEADLINE: Jan 31, 2026 (7 days away!)	FREE: Gemini Flash model, limited features, basic responses PRO: Gemini 2.5 Pro model, Deep Research, 2TB Google Drive storage, Gemini integration in Gmail/Docs/Sheets, priority access ULTRA: Highest usage limits, <u>Veo</u> 3 video generation, 30TB storage, Gemini 3 Deep Think reasoning.

AI Platform	Free Tier	Premium Plan (Individual)	Student Discount/Free Trial	Free vs Premium Feature Differences 
Microsoft Copilot	Free - Basic access	Pro: \$20/month Microsoft 365 Copilot: \$30/user/month (requires Microsoft 365)	No student discount	FREE: Basic GPT-4 access, limited responses, basic features PRO: Priority access to latest models, faster responses, GPT-4 Turbo, image creation with DALL-E 3, integration with Microsoft apps
Perplexity AI	Free - Unlimited quick searches + 5 Pro searches/day	Pro: \$20/month	Periodic student offers (check website)	FREE: Basic search, limited AI models, 5 Pro searches daily, web citations PRO: 300+ Pro searches/day, access to GPT-4o, Claude Sonnet, Gemini Pro, file upload analysis, API access
Grok (xAI)	Free - 2 prompts every 2 hours	X Premium+: \$40/month SuperGrok: \$30/month SuperGrok Heavy: \$300/month	No student discount	FREE: Very limited (2 prompts/2 hours), basic Grok model X PREMIUM+: Grok 4 access, integrated with X/Twitter, real-time info, image editing SUPERGROK: Higher limits, standalone access HEAVY: Maximum usage for power users

AI Platform	Free Tier	Premium Plan (Individual)	Student Discount/Free Trial	Free vs Premium Feature Differences
Poe (Multi-model)	Free - Limited daily messages	Plus: \$4.99/month Pro: \$19.99/month	No student discount	FREE: Limited messages to all models (ChatGPT, Claude, Gemini) PLUS: More models, more daily compute points PRO: 1M compute points/month, access to all premium models in one platform
DeepSeek (China)	100% Free - Unlimited	N/A - No paid tier	Free	FREE: Powerful reasoning models (DeepSeek-V3, R1), chain-of-thought reasoning, competitive with paid alternatives, no premium tier exists

Risks of AI Usage

1. Hallucinations (Fake facts): Generative AI is known to fabricate legal text. It might invent a non-existent Article in the *Non-Proliferation Treaty (NPT)* or cite a fake study on uranium enrichment. In this course, citing a hallucinated treaty clause is a major academic and professional failure.
2. Loss of Voice (Homogenization): Over-reliance on AI results in "robotic," standardized text. In policy analysis, your unique cultural and critical perspective is vital. AI tends to produce generic "UN-speak" that strips away the nuance and "soul" of your argument.

Risks of AI Usage Cont.

3. The “Author” Problem: AI cannot be an author because it cannot be held legally or ethically responsible. If your policy recommendation violates international law because of an AI error, *you* are 100% responsible. “The AI told me so” is never a valid excuse.

4. De-Skilling: If you use AI to summarize every reading or draft every paragraph, you lose the ability to critically analyze dense nuclear texts yourself. This leads to a superficial understanding of a field that demands deep expertise.

Advantages of AI Usage

1. **Streamlining Mechanical Tasks:** AI acts as a high-speed assistant for formatting, template filling, and standardizing documentation, allowing writers to focus on complex "rhetorical responsibility" and user experience design.
2. **Linguistic and Stylistic Consistency:** For technical reports, AI ensures terminology consistency and grammatical fluency. It is particularly beneficial for non-native English speakers, acting as a "linguistic mediator" to overcome language barriers and focus on technical content.

Advantages of AI Usage Cont.

3. Code & Data Summarization: In fields like physics and engineering, AI can debug code (e.g., Python, MATLAB), explain complex algorithms, or summarize dense technical data for broader audiences.
4. Brainstorming & Outlining: AI helps overcome "writer's block" by generating structured outlines, suggesting topic angles, and proposing counter-arguments to test technical theses.
5. Iterative Refinement: Writers can use AI to generate alternative phrasings or simplify specific sections of a technical manual, serving as a "subordinate drafting tool" under human supervision.

First Writing Assignment

Due Date: Wednesday, January 28, 10pm

Scenario: You are a writer for *Scientific American*, and your editor has assigned you to revise a brief report, written by a colleague, on the events related to the revocation of J. Robert Oppenheimer's security clearance in 1954. Your colleague's report has a number of issues making it unacceptable for publication in *Scientific American*. Your editor is looking for substantive revision of the report, **not just proofreading**. The report should be a summary of these events written for a general audience, not an editorial or discussion of whether or not the case was decided correctly in your opinion. News reporting should remain objective and focused on the facts of the case. The report should be based on the following sources: 1. "Letter on the Oppenheimer Affair," reference [1]. 2. "The Oppenheimer Case," reference [2]. The article appeared in *Physics Today* 7(7) in 1954 (doi: 10.1063/1.3061714). 3. Material from the PBS Atomic Bomb documentary *The Bomb*, where applicable, reference [3].

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Procedure

1. Perform your own analysis of the essay without AI and compile a list of problems (factual, formatting, style)
2. Instruct your AI tool to carry out an identical analysis and compile its own list of problems (consider uploading a different article from Scientific American as a reference for style)
3. Based on both your own list and AI's, produce your own draft of the revision without AI
4. Use your AI tool to create a revision
5. Create your own final version of the essay based on your revision and comparison with AI's version to improve
6. **IMPORTANT:** Record all AI prompts and outputs in your writer's memo

Guidelines

- Revision is a critical skill to develop to become an effective writer. Here, we are looking for substantial revision of the essay. This will require more than proofreading the essay for mechanical errors and grammatical mistakes. We expect you to do a similar amount of revision on your future writing assignments.
- Please refer to the [Resources](#) page for more guidance on revision (e.g., Writers Workshop). Generally, you'll revise "higher-order Issues" such as completeness, organization, and accuracy before "lower-order issues" such as conciseness, word choice, and grammar.
- Follow all the specifications described in the [Phys 280 Style and Format Guide](#).
- The title should adhere to the style of the news report genre (i.e., "Required Essay 1" is *not* appropriate) and should be in 12-point font.

Guidelines Cont.

- Your revision of the essay should be **single-spaced and at least 0.75 pages in length and no longer than 1 page** (not counting the writer's memo or AI disclosure statement), when printed in the format specified in the [Phys 280 Style and Format Guide](#), including the title, headers, and footers.
- Audience: In revising this report, assume that your audience is generally curious about science and is familiar with scientific concepts at a high-school or early-college level. To get a sense of how *Scientific American* presents information and the style of its news and policy reporting, you should consult the following examples: [article 1](#) and [article 2](#). Writers for *Scientific American* use short sentences to create engaging and easily-read text. Avoid unnecessary words, especially adjectives and adverbs, as a news report should present the facts of the case concisely and clearly. A report of this length has no room for digression or repetition.

Guidelines Cont.

- Citation of sources: You do not need to give citations when the information you use is common knowledge. In deciding what is common knowledge, consider what could be known by a typical University of Illinois student (not enrolled in Phys 280) in 1954. If in doubt, include a citation. The sources you are to use in revising this report are clearly specified above. You may cite them simply by including the number of the source in brackets after a statement in need of citation, rather than a traditional citation. Example 1: This statement requires citation [3]. Example 2: “A direct quote from a source also requires a citation” [1]. Do not include a bibliography or a list of references.
- You will be graded on your revision's coverage of the news story, organization and clarity of content, and ability to conform to the writing style of *Scientific American* (see rubric). We also will grade your use of AI-tools.
- Don't forget to include the writer's memo for RE1 and your AI disclosure statement.

AI Disclosure Statement

Discloses the use of AI in technical writing. The statement specifies the tool used and briefly describes how the tool was used. It includes a certification that the author takes responsibility for the verification of all facts and content.

(This is different from the writing memo. Your log of AI prompts and responses is included in the memo, not this disclosure statement)

Writing Memo

- ~8-15 sentences
- Answer the following question:
 - "What is your previous experience in technical writing? In non-technical writing?"
 - What do you consider your strengths in writing? Which writing skills would you like to improve?
- Include the two lists of problems identified in the original essay (your list and AI's). Include a log of AI prompts and responses.
- Include the two revision drafts (yours and AI's). Include a log of AI prompts and responses.

Writing Memo Cont.

- Short answers to the following questions:
 - Are there factual errors the AI did not identify?
 - A brief analysis of the differences between your own draft revision and the AI draft revision. You might comment on the overall structure, factual correctness, style, use of vocabulary (eg. use of professional arms control terms).
 - Which aspects of your own draft do you prefer over the AI draft?
 - Is there a difference in voice? What does the AI miss that you find important in your own revision?
- Please include a sentence stating how much time you used for this assignment.

Features:	Description:	Range:	Comments on student paper for each feature (noting problems and strengths):
Coverage of issues and information	<ul style="list-style-type: none"> - AEC commission - Affiliation to communist groups - Opposition to H-bomb - Clearance revoked - Reaction from fellow physicists and associates 	15% High Mid Low	
Precise and accurate use of concepts	Factually correct summary of events	5% High Mid Low	
Explanation & argument	Neutral reporting. Does not make an argument. No discussion or editorializing.	5% High Mid Low	
Professional style	<p>Geared toward audience that is generally curious about science and is familiar with scientific concepts at a high-school or early-college level.</p> <p>Reporting from the perspective of a contemporary writer in 1954</p> <p>Concision</p> <p>Clarity</p> <p>Brevity</p> <p>Congruent with Scientific American news report style</p> <p>Use of sources: [1] and [2] are required; [3] is recommended</p> <p>The use of direct quotes should mirror the sample articles</p>	20% High Mid Low	

Conformity to conventions	<p>0.75-1 pages Appropriate title, centered Header and date in correct format Page numbers 12-point Times New Roman font throughout (including page numbers) 1.25" side margins and 1" top margins and .5" bottom margins. Citation practices specified on prompt.</p> <p>(1st mistake -10, 2nd mistake -10)</p>	<p>20%</p> <p>High</p> <p>Mid</p> <p>Low</p>	
Copy editing and use of standard language	<p>Have all spelling, formatting and grammar issues identified and fixed? Use of professional terms.</p>	<p>10%</p> <p>High</p> <p>Mid</p> <p>Low</p>	
Use of AI	<p>AI statement Quality of author provided list and draft Prompts provide relevant information to AI-tool (content and style references, explanation of context) Use of AI list and revision draft to improve author list and revision. Analysis of difference between author and AI revision.</p>	<p>25%</p> <p>High</p> <p>Mid</p> <p>Low</p>	
Overall Comments:			

Demonstration of AI Use for this Assignment

Input

This is a report draft submitted to Scientific American. It requires a substantive revision, not just proofreading. It should provide a summary of events, written for a general audience, and not an editorial or discussion of whether or not the case was decided correctly. Respond with a revised version only.

1-26-2019

Security Clearance Revocation

The personnel security board established by the Atomic Energy Commission released a report finding the employment of former General Advisory Committee chairman Robert Oppenheimer to be

Output

Security Clearance Revocation of J. Robert Oppenheimer (1954)

In late 1954, the United States Atomic Energy Commission (AEC) revoked the security clearance of J. Robert Oppenheimer, the physicist who had directed the Manhattan Project during World War II and later served as chairman of the AEC's General Advisory Committee. The decision followed a high-profile security hearing held amid Cold War concerns about loyalty, secrecy, and national defense.

The process began on December 23, 1953, when Oppenheimer received a letter from AEC General Manager Kenneth D. Nichols outlining allegations that questioned his suitability to hold a security clearance. The concerns focused on Oppenheimer's past associations with individuals connected to left-wing and Communist organizations in the 1930s and 1940s, as well as his opposition to the development of the hydrogen bomb during its early planning stages. At the time, U.S. officials were increasingly wary of Communist influence, particularly in sensitive scientific and military programs.

Discussion: Which Issues Related to Nuclear Weapons Do You Consider Most Important?

- risk of accidental nuclear war between major nuclear powers
- threat from nuclear armed North Korea
- nuclear program in Iran
- US nuclear armament insufficient for effective deterrence
- proliferation to additional countries (eg. South Korea, Saudi Arabia)
- theft of nuclear materials by terrorist groups/nuclear terrorism
- need for modernization of nuclear armament
- cost of operating and modernizing nuclear arsenals
- environmental impact of nuclear arms production