TAC Summary on AI and Physics Instruction

Purpose

The Physics Department Teaching Activities Committee (TAC) offers the following guidance on AI in physics instruction. Our central concern is learning. Students develop their understanding of physics by working through problems: choosing principles, testing approaches, making and correcting mistakes, interpreting results, and building physical intuition. AI can support this process, but relying on generated solutions can bypass the intellectual work through which understanding develops.

Our guiding principle is that:

AI should support learning, not substitute for a student's own reasoning.

Below is a short summary of our recommendations for students and instructors. A more detailed discussion will be posted on the physics department website.

Recommendations for Students

1. Your understanding is built by working through problems yourself.

Students who rely on AI to solve homework problems are unlikely to develop the understanding needed for success in physics. Reading a polished solution can create the illusion of understanding, but genuine mastery comes from the process of struggling with a problem: deciding what principle applies, often trying different approaches, making errors, correcting them, and learning to recognize what a physically reasonable answer looks like.

AI can be an extremely powerful tool for organizing information, explaining ideas, and providing feedback. But using it well requires maturity and judgment. The best way to develop that judgment is first to work problems yourself, without immediately turning to AI for a solution.

In physics, the process matters. Thinking hard about a problem is what develops intuition.

2. If your course permits AI, use it as a tutor rather than an answer generator.

If your course permits AI use, we recommend doing so only after you have made a serious attempt on your own. Ask for a conceptual explanation, questions that help you identify where your reasoning breaks down, a limited hint, feedback on your own attempted setup, or a simpler analogous problem. Do not ask AI to solve an assigned problem or produce a submission for you. The detailed discussion on the physics department website will include concrete suggestions and sample prompts for using AI as a tutor.

After receiving help, put the tool aside and reconstruct the reasoning yourself. If you cannot explain every step or solve a closely related problem without assistance, you have not yet finished learning from the interaction.

3. You are responsible for what you submit.

The work you submit must reflect your own reasoning. If your course permits AI tutoring, use it to help you work through problems yourself, not to generate solutions for submission. Follow your instructor's rules on permitted use and disclosure, and be prepared to explain every step without AI assistance.

Recommendations for Instructors and TAs

1. State a clear course policy and explain its purpose.

Each instructor should specify what AI uses are permitted, restricted, or prohibited and give concrete examples. The policy should also address disclosure, citation, and consequences for violations. Instructors and TAs should discuss the policy together so that students receive consistent guidance. The important point is that students should not have to guess.

A useful distinction is between using AI as a tutor and using AI as a solution generator. For example, students might be permitted to ask AI for conceptual explanations, hints, or critiques of their own attempted solutions. They should not ask AI to solve assigned homework problems for them or submit AI-generated derivations as their own work.

For lab reports, papers, presentations, and code, instructors should specify which stages—research, drafting, calculation, coding, editing, or debugging—may involve AI. Students should be assessed on the reasoning and skills the course is intended to develop, not on how polished their final submissions appear to be.

2. Homework should remain central to learning, but should not be the primary basis for assessment.

Homework remains essential for practice and feedback, but submitted solutions are not, by themselves, a reliable measure of individual understanding. We recommend that instructors pair homework with regular, low-stakes, in-person assessments, such as short quizzes, board work, or oral explanations.

A particularly useful model is to draw quiz questions directly from the homework or from closely related variants. This both incentivizes students to work through the homework themselves and reinforces the message that homework is preparation for understanding, not merely a product to be submitted.

3. Exams should be conducted in controlled in-person settings.

We recommend that exams in physics courses be given in class or in another controlled in-person setting, with no access to AI tools or other unauthorized electronic resources.

For sufficiently small classes, oral exams or short oral follow-ups may also be valuable. These can be especially effective for assessing conceptual understanding, identifying gaps in reasoning, and encouraging students to take ownership of their solutions.

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