

# Teaching AI and Teaching with AI

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## Introduction

A technical education should prepare students to work effectively with the tools that will define their field. AI is becoming that tool.

Yet legacy institutions aren't positioned to respond—faculty are stretched thin, departmental structures are rigid, and curricula built over decades resist wholesale revision. New programs can do what established ones cannot: build education from the ground up with AI integration as a foundational principle.

At Chiba Tech we are designing such a program. We ask: how do we design learning experiences that remain meaningful when students have access to powerful AI collaborators?

Our framework rests on two complementary pillars: 1) teaching students to work effectively with AI tools, and 2) using AI as a medium through which students develop knowledge and skills for the workplace.

## Pillar 1: Teaching AI

The first pillar addresses a universal need: students across all disciplines must integrate AI tools into their regular workflow. This pillar is about developing judgment and self-awareness that will transfer regardless of which specific tools exist.

### Setting Up an Effective AI Workflow

Students need to learn how to set up working environments that support thinking rather than replacing it. The right setup helps you slow down when needed, surfaces questions you hadn't considered, and creates natural checkpoints for reflection. We want students to design workflows that make them more thoughtful, not just faster.

### Enabling Large Projects

Students should be able to tackle ambitious, sustained projects, not just quick tasks that fit a single AI conversation. This requires teaching strategies for managing extended work: how to maintain plans, break down large goals, preserve context across sessions, and keep AI collaborators aligned with evolving objectives. These skills let students use AI as a collaborator on complex, long-term work.

### Security and Privacy Awareness

AI tools require sharing information—but what should and shouldn't be shared? Students need to understand what data flows where, how to handle sensitive information, and the basics of how AI systems can be manipulated (such as prompt injections). Educators need to be aware of privacy concerns when using AI tools in the

classroom. As AI becomes more integrated into workflows and connected to external systems, this operational security awareness becomes increasingly important.

## **Collaboration with Humans**

Meaningful workflows are not just between humans and AI. Good setups facilitate collaboration with other people too. We want shared context, handoffs, and working asynchronously on the same problem. AI becomes part of a broader collaborative environment, not a private tool.

## **Pillar 2: Teaching with AI**

The second pillar is using AI as a medium with which students develop genuine conceptual understanding. This requires designing learning experiences where AI assistance is not merely permitted but expected, yet where meaningful learning still occurs.

### **From Problem Solving to Problem Posing**

AI systems are problem-solving agents. Humans remain essential for identifying what's worth solving, framing ambiguous situations into tractable problems, and recognizing when a "solution" addresses the real need. Education at Chiba Tech must shift toward developing these problem-posing abilities.

### **Rethinking Assessment**

Traditional assessment asks whether an answer is correct. In an AI-integrated context, we must ask different questions: Is the problem well-posed? Was the approach appropriate? Can the student identify errors in AI-generated solutions? Can they improve upon AI outputs in meaningful ways? Assessment shifts from evaluating answers to evaluating questions and judgment.

### **Designing for an Uncertain Future**

Today's AI limitations may be tomorrow's solved problems. Rather than designing assignments around current AI weaknesses (e.g. by focusing on prompt engineering or finding errors in outputs), we want to develop students' capacity to work productively with AI systems of any capability level. The core question remains constant: what uniquely human contributions are valuable, and how do we develop students' ability to make them?

## **Conclusion**

The integration of AI into education is not optional. Students and faculty are already using these tools, and their capabilities will only grow. The question is whether educational institutions will lead this transition thoughtfully or be forced to adapt reactively. By building curricula with AI collaboration as a foundational assumption, we can develop graduates who are competent users of AI tools and thoughtful collaborators.