# Course-Level AI Implementation Plan

## Overview

This template provides a structured approach for incrementally integrating AI tools into an engineering course. It is designed to be adaptable across engineering disciplines and course levels, from introductory to advanced.

## Implementation Timeline

### Phase 1: Preparation and Planning (Before Semester)

#### Week -4 to -3: Tool Exploration and Selection

* Complete personal exploration of 2-3 AI tools relevant to your course
* Document specific capabilities and limitations for your subject matter
* Select primary tool(s) for integration
* Review institutional policies on AI use
* Identify areas where AI could address existing course challenges

#### Week -2 to -1: Course Material Adaptation

* Review existing learning objectives through an AI lens
* Determine “AI-allowed,” “AI-restricted,” and “AI-enhanced” components
* Modify 1-3 existing assignments to incorporate AI
* Create documentation requirements for AI use
* Develop AI onboarding materials for students
* Update syllabus with AI policies and expectations

### Phase 2: Initial Implementation (Weeks 1-5)

#### Week 1: Introduction and Onboarding

* Introduce AI tools and policies during course introduction
* Conduct baseline assessment of student AI familiarity
* Demonstrate basic AI tool usage relevant to your course
* Assign first low-stakes AI exploration activity

#### Week 2-3: Guided Exploration

* Implement structured AI practice activities
* Provide examples of effective vs. ineffective prompts
* Facilitate discussion on AI strengths/limitations
* Create opportunities for student questions and troubleshooting

#### Week 4-5: First Integrated Assignment

* Implement first formal AI-integrated assignment
* Provide clear documentation requirements
* Collect student feedback on experience
* Address emerging challenges and misconceptions

### Phase 3: Expansion and Refinement (Weeks 6-10)

#### Week 6-7: Enhanced Integration

* Introduce more advanced AI usage techniques
* Implement discipline-specific applications
* Begin scaffolding toward higher-order thinking with AI
* Conduct formative assessment of AI integration impact

#### Week 8-10: Collaborative Implementation

* Facilitate peer learning around effective AI use
* Implement group activities using AI tools
* Introduce critical evaluation of AI outputs
* Begin preparation for AI-aware assessments

### Phase 4: Advanced Implementation and Assessment (Weeks 11-15)

#### Week 11-13: Advanced Applications

* Implement complex, discipline-specific AI applications
* Connect AI use to professional practice
* Focus on critical evaluation and enhancement of AI outputs
* Prepare students for AI-aware final assessments

#### Week 14-15: Reflection and Evaluation

* Conduct summative assessment including AI components
* Facilitate student reflection on AI learning journey
* Gather comprehensive feedback for course refinement
* Document outcomes and lessons learned for future iterations

## Implementation Worksheet

### Course Context

**Course Title:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Level:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Typical Enrollment:** \_\_\_\_\_\_\_\_\_\_\_\_

**Subject Area:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Current Challenges:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Primary Learning Objectives:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### AI Integration Goals

**Primary Integration Goal 1:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Primary Integration Goal 2:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Success Metrics:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Tool Selection

| AI Tool | Specific Applications in Course | Implementation Complexity (1-5) | Student Access Plan |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Assignment Transformation Plan

| Existing Assignment | Current Format | AI Integration Approach | Documentation Requirements | Assessment Modifications |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

### Student Support Plan

**Onboarding Activities:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Resources to Provide:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Troubleshooting Approach:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Accessibility Considerations:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Policy Development

**AI Use Policy Summary:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Documentation Requirements:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Academic Integrity Provisions:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Assessment Strategy

**Formative Assessment Approaches:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Summative Assessment Approaches:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Process vs. Product Evaluation Balance:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Implementation Challenges and Mitigation Strategies

| Anticipated Challenge | Mitigation Strategy | Contingency Plan |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

## Sample Language for Syllabus

### Example 1: Gradual Implementation Model

AI Tools in This Course:  
  
This course takes a developmental approach to AI tools, preparing you for their professional use while ensuring you develop fundamental skills. The course is divided into three phases:  
  
Phase 1 (Weeks 1-5): AI tools are restricted to specific, marked activities to ensure development of baseline skills.  
  
Phase 2 (Weeks 6-10): AI tools are permitted for designated parts of assignments with proper documentation of use.  
  
Phase 3 (Weeks 11-15): AI tools are fully integrated, with emphasis on critical evaluation and enhancement of AI outputs.  
  
Throughout all phases, you must document your AI use according to the Documentation Guidelines provided. Undocumented AI use will be considered an academic integrity violation.

### Example 2: Task-Based Implementation Model

AI Tool Policy:  
  
This course uses a task-based approach to AI tools. For each assignment, specific components will be designated as:  
  
- AI-Restricted: No AI tools permitted (focuses on fundamental skill development)  
- AI-Allowed: AI tools permitted with documentation (focuses on efficient workflow)  
- AI-Enhanced: AI tools required with critical evaluation (focuses on professional judgment)  
  
Each assignment will clearly indicate these designations. Students must complete the Documentation Form for any AI use, which becomes part of the assignment submission. The form includes:  
1. Which AI tool was used  
2. Exact prompts/inputs provided  
3. How the AI output was evaluated and modified  
4. Reflection on the limitations of the AI approach

## Evaluation and Iteration

At the conclusion of the semester:

1. **Review Implementation Outcomes:**
   * Student performance on learning objectives
   * Quality of AI-assisted work
   * Student feedback on AI integration
   * Challenges encountered and solutions developed
2. **Document Lessons Learned:**
   * What worked well
   * What needs refinement
   * Unexpected outcomes
   * Technical issues encountered
3. **Plan Next Iteration:**
   * Adjustments to assignments
   * Refinements to policies
   * Additional support resources needed
   * Expansion to other course components

*This implementation plan was developed as part of the “Strategies for Integrating Generative AI in Engineering Education” in collaboration with Claude-3.7 Sonnet.*