# AI-262: Using Amazon Kiro for agentic coding and spec-driven development (SDD)

**Course Length:** 2 days or 4 half days

**Course Description:**

AI-powered coding tools such as Amazon Kiro are rapidly transforming how software is designed, implemented, and maintained. This course teaches participants how to move beyond simple prompt-based coding and adopt a systematic, agentic approach that improves productivity without sacrificing quality, governance, or maintainability.

Participants will learn how to use Kiro's Vibe and Spec modes to implement "vibe coding" and Specification-Driven Development (SDD) respectively. SDD's structured methodology spans the whole software development life cycle (SDLC) and ensures that software development remains aligned with business intent, technical constraints, and long-term sustainability. The course combines conceptual foundations with extensive hands-on exercises, enabling participants to immediately apply these techniques to real-world projects.

**Training objectives:**

By the end of this training, participants will be able to:

- Understand the differences between Kiro's Vibe and Spec mode
- Understand the concepts of MCP servers and tools, and configure and use them in Kiro
- Create new applications and modify existing ones consisting of multiple files
- Use Kiro to create and run unit and integration tests
- Generate documentation for applications based on source code and user prompts
- Use Kiro for source control tasks

- Understand the limitations of "vibe-coding and the need for a more structured methodology which spans the whole software development life cycle (SDLC)
- Understand the main principles, advantages and disadvantages of Specification-Driven Development (SDD)
- Explain the meaning and importance of SDD steps
- Use SDD in greenfield projects
- Use SDD in brownfield projects

**Main topics:**

**GitHub Kiro with "vibe coding"**

- Kiro Chat modes: Vibe and Spec
- Configuring and using MCP tools and toolsets
- Using Kiro to create and modify multi-file applications
- Using Kiro to create and run unit and integration tests
- Using Kiro for documentation
- Using Kiro for source control
- Configuring and using asynchronous agents

**Specification-Driven Development (SDD)**

- Limitations of "vibe coding" and the need for a more structured methodology which spans the whole software development life cycle (SDLC)
- What is Specification-Driven Development (SDD)?
- SDD workflow in Kiro:
  - Steering (a.k.a. constitution) phase
  - Requirement phase
  - Design phase
  - Implementation Planning phase
  - Execution Phase
- Applying SDD in greenfield projects
- Applying SDD in brownfield projects

**Structure:** roughly 50% lecture, 50% hands on lab exercises. The lab exercises are executables with Python, JavaScript/Typescript, Java, C# or C/C++.

**Target audience**: Software developers and testers as well as their technical managers who want to understand and use Kiro in "vibe coding" and spec-driven software development.

**Prerequisites:**

- Experience with VS Code or similar IDEs
- Experience using ChatGPT or similar chat-based AI tools
- Basic knowledge of the programming language used during the lab exercises

This training is part of the AI portfolio of Component Soft which explores essential AI topics, such as:

- AI-101: Intro to GenAI with Large Language Model (LLMs) and LLM-based apps.
- AI-141: Using GitHub Kiro as coding assistant
- AI-161: Using Amazon Q as coding assistant
- AI-242: Using Github Copilot and spec-kit for agentic coding and spec-driven development (SDD)
- AI-262: Using Amazon Kiro for agentic coding and spec-driven development (SDD)
- AI-434: GenAI Application Development with LLMs
- AI-452: Agentic AI Application Development with LLMs