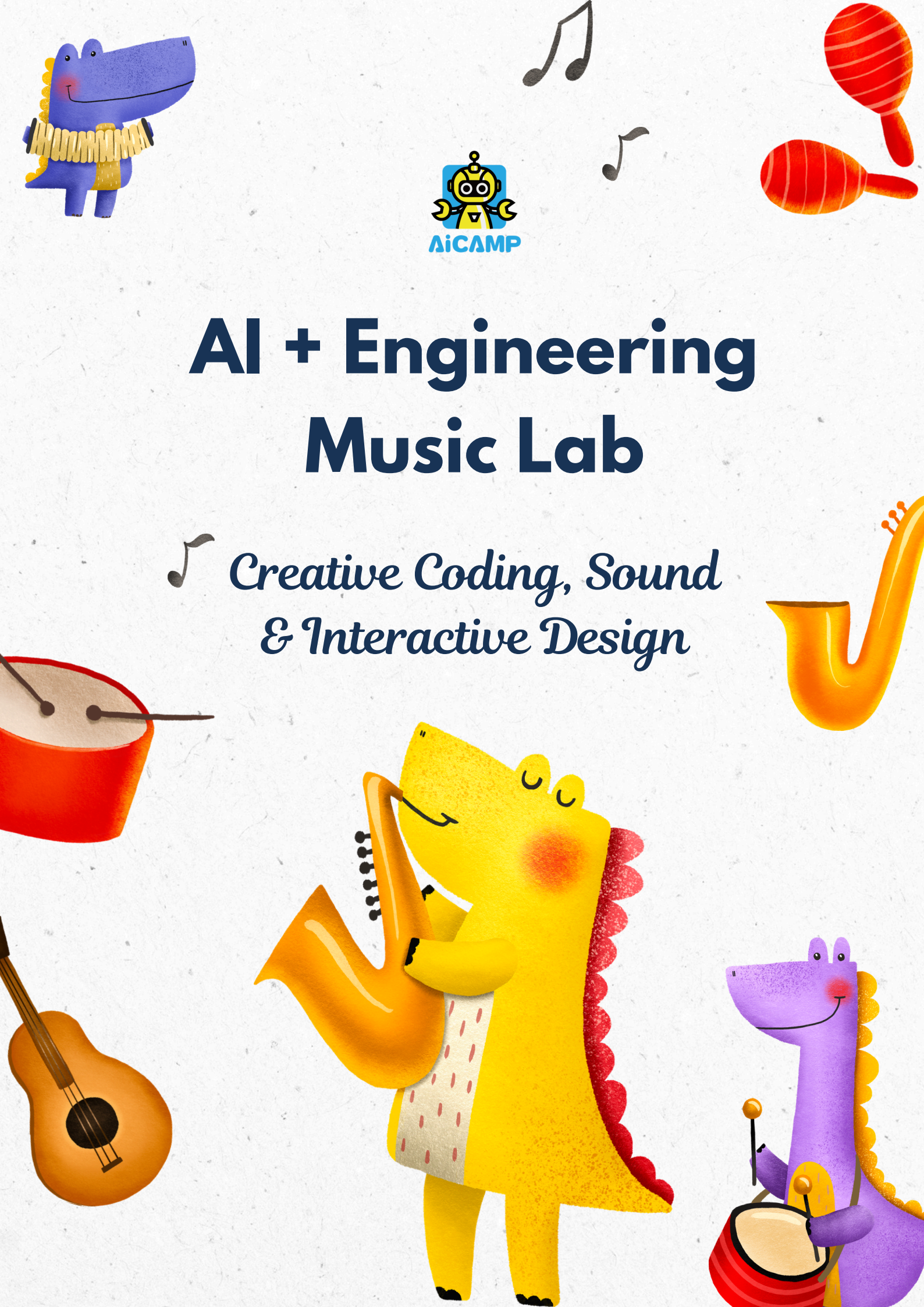
AiCAMP

AI + Engineering Music Lab

Creative Coding, Sound & Interactive Design



Learning Roadmap

In this 9-week weekend program, students will explore how AI, engineering, coding, and music can work together to create interactive sound experiences. Through hands-on projects, students will learn programming concepts, experiment with AI-assisted creativity, and apply the engineering design process to build their own interactive music machine.

Week 1 | Welcome to AI Music Engineering

Focus: AI, music technology, engineering design, and creative coding

Students explore how computers and AI can support music creation. They learn that technology design starts with a user, purpose, mood, and experience.

Student Outcome:

Music experience design brief

Week 2 | Sequencing and Algorithmic Music

Focus: Step-by-step instructions, sequencing, and debugging

Students learn that both code and music follow ordered instructions. They create a short coded music sequence using beats, melodies, and sound effects.

Student Outcome:

Short coded music sequence

Week 3 | Loops, Patterns, and Repetition

Focus: Loops, rhythm patterns, and efficient coding

Students identify repeated patterns in music and use loops to build rhythm and structure. They also begin to understand how AI systems recognise patterns.

Student Outcome:

Loop-based soundtrack

AI systems recognise patterns.

Student Outcome:

Loop-based soundtrack

Week 4 | Events, Triggers, and Interactive Sound

Focus: Input, output, events, and interaction design
Students design sounds that respond to user actions such as keyboard presses, mouse clicks, buttons, or sensors. They create an interactive soundboard.
Student Outcome:
Interactive soundboard or sound-trigger project

Week 5 | AI, Mood, and Sound Design

Focus: AI-assisted creativity, mood, sound choices, and responsible AI
Students use AI tools to support idea generation, mood planning, or sound design. They learn to evaluate AI suggestions and make their own creative decisions.
Student Outcome:
Mood-based music prototype

Week 6 | Functions and Modular Design

Focus: Functions, reusable code, and organised project design
Students learn how functions help organise code into reusable sections, such as intro, beat, chorus, effect, or ending. They build a more structured music project.
Student Outcome:
Music project using functions

Week 7 | Build an Interactive AI Music Machine

Focus: Final project planning and prototype building
Students combine sequencing, loops, events, functions, and AI-assisted design to begin building their final interactive music project.
Student Outcome:
First working prototype

Week 8 | Test, Improve, and Add Engineering Features

Focus: Testing, debugging, feedback, and improvement
Students test each other's projects, identify bugs or design problems, and improve their interaction, sound quality, timing, or user experience.
Student Outcome:
Improved final project

Week 9 | Showcase and Reflection

Focus: Presentation, reflection, and responsible technology use
Students present their final interactive AI music projects, explain their design process, and reflect on what they learned about AI, engineering, coding, and creativity.
Student Outcome:
Final presentation and reflection