Introduction to AI for High School Syllabus

High School - One Month (20 hours)

Course Overview and Goals

With Artificial Intelligence becoming integral to many industries, exposing students to AI prepares them for a world where AI literacy will be an essential skill, whether they are building AI technologies or simply using it.

In this semester-long course, students will dive into the world of Artificial Intelligence through engaging lessons and hands-on projects. They will explore core topics such as machine learning, generative AI, prompt engineering, ethics, and the real-world applications of AI in society. Students will also have opportunities to build, test, and reflect on their own AI projects to deepen their understanding.

By the end of the course, students will have a more nuanced understanding of the benefits and challenges associated with AI.

Learning Environment

This course utilizes a blended classroom approach. The content is fully web-based, with students working within the CodeHS platform as well as third-party tools. Each module of the course is broken down into lessons. Lessons consist of content delivered through video and article connections, reflections, and hands-on tool explorations.

Technology Requirements

To complete this course, students will need access to the following third-party AI tools:

- ChatGPT, Gemini, and/or Copilot
  Students will need access to an LLM for many of the activities in this course. The activity instructions are designed so they can be completed with ChatGPT, Gemini, Copilot, but other LLMs could work as well.
- Google Teachable Machine
  This tool allows students to create machine learning models without any coding or technical expertise. Without this tool, several lessons will need to be modified.

See the course whitelist for a list of all third-party websites: codehs.com/lms/course_whitelist/hs-intro-ai-1-month

Prerequisites

This course is designed for complete beginners with no previous background in computer science or AI but can be taken by students who have experience with these fields.

More Information

Browse the content of this course at https://codehs.com/course/23378/explore

Course Breakdown

Module 1: Intro to AI (6 hours)

In this module, students will gain an understanding of the main concepts and vocabulary around AI.

Objectives / Topics Covered	• Introduction to Artificial Intelligence • Generative vs Predictive AI • Large Language Models • Prompt Engineering

Example Assignments	• Generative vs Predictive: Explore Google Experiments
	  ○ Students explore different applications of AI through Google Experiments
	• Large Language Models: Chatbot Arena
	  ○ Students compare LLMs through the Chatbot Arena tool
	• Prompt Engineering: Generate an Image
	  ○ Students use prompt engineering techniques to generate an image

Module 2: Machine Learning (5 hours)

Students will learn the fundamentals of machine learning, covering its lifecycle, supervised, unsupervised, and reinforcement learning, and explore bias within learning models.

Objectives / Topics Covered	• Introduction to Machine Learning • Supervised Learning • Unsupervised Learning • Reinforcement Learning

Example Assignments	• Introduction to ML: CNN Visualization
	  ○ Students observe how a CNN gathers data on an image and makes a prediction as to what it could represent
	• Supervised Learning: Apples vs Bananas
	  ○ Students use Teachable Machine to build a model that categorizes apples and bananas
	• Unsupervised Learning: Bird Sounds
	  ○ Students explore how an AI used unlabeled data to categorize bird sounds
	• Reinforcement Learning: Reinforcement Learning Game
	  ○ Students engage with a visual depiction of reinforcement learning.

Module 3: Training AI Models (4 hours)

In this hands-on module, students will learn how to train AI models using Teachable Machine and will explore the use cases for AI in various industries.

Objectives / Topics Covered	• How Are AI Models Trained? • AI Models in Industry • Bias in Training

Example Assignments	• How Are AI Models Trained: Turning on a Light
	  ○ Students train and use an AI model to control a program
	• AI Models in Industry
	  ○ Students pick an industry to explore use cases of AI
	• Bias in Training
	  ○ Students explore multiple ways bias creeps into AI programs through

	the use of bad training data

Module 4: Risks of AI (5 hours)

Students will explore the ethical implications and risks of AI technology, including bias, hallucinations, security, misinformation, and legal challenges, ending in a debate about AI.

Objectives / Topics Covered	• Effects of Using Biased AI • Hallucinations and Security Risks • Deepfakes and Misinformation • Project: AI on Trial

Example Assignments	• Effects of Using Biased AI
	  ○ Students explore how using biased AI affects people in negative ways
	• Hallucinations and Security Risks: Image Prompt Injection
	  ○ Students explore the security risks involved with using LLMs and they simulate a prompt injection using an image
	• Deepfakes and Misinformation
	  ○ Students learn how deepfakes are created and how they can spot and defend themselves from the dangers they pose
	• Project: AI on Trial
	  ○ Students explore the legal challenges that generative AI faces and they prepare for and engage in a debate around this topic