Introduction to AI Syllabus

High School - One Month (20 hours)

Course Overview and Goals

Artificial Intelligence (AI) is a quickly growing field. In this course, students will have a chance to explore key aspects of AI, including machine learning, large language models, bias in models, and the impacts they have on our society. Students will have a chance to engage with multiple AI tools throughout the course, such as ChatGPT, Gemini, and Teachable Machine.

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

Students will need to create logins to interact with certain sites used within the course and will need webcam access for a few of the lessons. AI tools used in this course include the following:

- ChatGPT
- Gemini
- Hugging Face
- Google Experiments
- TensorFlow
- adamharley.com
- Google Teachable Machine
- GitHub
- Survival of the Best Fit
- Lakera

Note: Review all websites ahead of time to confirm they follow your district's AI policy. Substitute any that aren't approved with district-approved options.

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

AI Tools/Permissions	• Google Experiments • Chatbot Arena • ChatGPT/Gemini • Hugging Face

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.

AI Tools/Permissions	• TensorFlow • adamharley.com • Google Teachable Machine • Google Experiments • GitHub

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

AI Tools/Permissions	• Google Teachable Machine • Survival of the Best Fit

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

AI Tools/Permissions	• ChatGPT/Gemini • Lakera