

Academic Year 2023-2024

High School – After School Workshops:

- AI Artificial Intelligence Scholars
- Forensic Science
- Molecular Biology
- Microbiology
- Model Congress
- Debate Workshops
- Advanced Competitive Debate: Practice and preparation
- Philosophy
- Film Making



1/ Artificial Intelligence Scholars (T1-T4

Tuesdays 3-4PM)

Inspirit AI offers an interdisciplinary, project-based artificial intelligence education taught by Stanford, MIT, and top university graduates

What do self-driving cars, Alexa, iPhone's face recognition technology, and ChatGPT have in common? They are driven by modern advances in artificial intelligence. Whether you're interested in law, healthcare, art, or economics, AI is poised to transform every discipline and industry in the future. AI is already all around us today, and by the end of the program, students will understand the underlying concepts and motivations behind technology such as computer vision, natural language processing, and neural networks.

In this in-person, project-based program students explore the foundations of machine learning and explore different applications of machine learning models. In the first half of the course (1st semester), students learn AI's core technologies including applications, foundational concepts, and programming tools. In addition, they will learn about different types of machine learning models, and apply the models to real data sets. In the second half of the course, students will complete an instructor-led group project applying AI to the discipline of their



choice (e.g., music, healthcare, astrophysics, finance, etc.), utilizing the programming skills they developed in the first half.

The program will take place over fall 2023 and spring 2024, after school on campus. We expect that students enrolled in fall will continue in the spring to build a socially-impactful project. To participate in the spring program students must also participate in fall.

Course Structure

Machine Learning Talks

Learn about machine learning algorithms and techniques in a uniquely interactive, engaging format, before you apply that knowledge in live coding labs.

Hands-On Python Coding

Develop valuable skills in Python, machine learning, and artificial intelligence in our hands-on coding labs, using cutting-edge research to solve real-world problems like breast cancer diagnosis, building self-driving cars, and more.

Project-Based Learning

In our AI for Social Good project, students will be able to apply their newly acquired talents in a collaborative, challenging environment, applying AI to a domain they're passionate about (e.g., music, healthcare, astrophysics, finance, etc.). Students can use these projects in their résumés and college applications.

Featured Projects

DNA Detectives for COVID-19

Using genomic data, create machine learning models to trace the origins of COVID-19 strains to understand its spread!

Finding Exoplanets

Train models with data from NASA's Kepler space telescope to detect and characterize exoplanets, potentially helping us discover alien life!

Pneumonia Detection

Experiment with computer vision techniques to train an AI model to detect pneumonia from X-ray images of lungs! Explore how radiologists can collaborate with AI to improve patient outcomes.

2/ Forensic Science (T1-T4 Mondays 3-4PM)

The forensic science course is designed to introduce students to the scientific principles and techniques used in the investigation of crimes. The course covers a range of topics related to forensic science, including the collection and analysis of physical evidence, the interpretation of forensic data, and the role of forensic science in the criminal justice system. Students will learn about the history and evolution of forensic science, the scientific method, and the importance of critical thinking in the field.

The course begins by introducing students to the basic principles of forensic science, including the analysis of crime scenes, the collection and preservation of evidence, and the use of laboratory techniques in the analysis of physical evidence. The course focuses on the specific techniques used by forensic scientists to analyze physical evidence, including the analysis of hair, fibers, fingerprints, impressions, and documents. Students will learn about blood-typing and spatter patterns, toxicology, and DNA analysis, and how these techniques are used to identify suspects and build a case. Throughout the course, students will study notorious cases, such as the Lindbergh baby kidnapping and the assassination of John F. Kennedy, to understand the history and evolution of forensic science. Students will also engage in mock investigations, using their newly acquired analytical techniques to examine the evidence, draw conclusions, and solve cases.

Overall, this course provides students with a comprehensive understanding of forensic science, including its history, principles, and techniques. By the end of the course, students will have a strong foundation in the scientific methods and critical thinking skills required for success in IB Biology and IB Chemistry Courses work.

3/ Molecular Biology (2nd Semester T1-T4 Mondays 3-4PM)

This workshop is offered to high school students T1-T4 - on Thursdays

Could a single genetic mutation be the key to eradicating heart disease, or instrumental in developing new ways to treat hypertension?

This course explores the principles and methods geneticists use every day to explore these possibilities, covering concepts taught in an introductory college genetics course. The students will review basic concepts of heredity, then delve into more complex concepts such as polygenic inheritance and sex-linked traits. They will study the genetics of relatively simple organisms such as bacteria and how they are used in current genetic research, and consider the genetics of more complex organisms, including humans. They will also explore the effects of mutations, including the genetic basis of cancer and inherited disorders, and how they increase variation within a population. In the laboratory, the students will go beyond basic techniques of DNA extraction, digestion, and amplification to perform bacterial cloning and dihybrid crosses, observing inherited phenotypes in a descendent generation. Along the way, guided by your instructor, they will learn to debate controversial topics in the field like stem cell research and genetically modified foods.

4/ Microbiology (2nd Semester T1-T4 Mondays 3-4PM)

Today's 3D microscopes that can capture the nerve connections in a brain are a far cry from the magnifying lenses ground by hand in the 13th century. Yet both share a place in scientists' fascination with the microscopic world.



In this course, you'll examine and compare living unicellular and multicellular organisms such as algae, elodea, rotifers, and paramecia, and learn to differentiate between bacterial, animal, and plant cells. You and your classmates will get comfortable doing laboratory tasks like staining, preparing wet mounts, extracting DNA, inoculation, building models, and writing lab reports while examining atoms and larger molecules, and exploring the various ways microscopes are used in fields like pathology, microbiology, and forensic science. You'll learn to think and do research like a real scientist and gain an introduction to high school biology along the way. workshop is offered to high school students T1-T4 - on Thursdays

3/ Model Congress (Tuesdays 3-4PM)

This training is offered to high school students T1-T4 - on Tuesdays

In these workshops the students learn about the electoral process, lobby for issues they are passionate about, draft and deliver bills, amend legislation, debate about international policy and learn how to effectively represent a constituent body of their choosing. The materials from The Constitutional Rights Foundation, ICivics (founded by Justice Sandra Day O'Connor) and the National Model U.S. Congress are used in classes. These resources have been proven to improve students' civic knowledge, presentation and core literacy skills.

New research has also shown that the use of the aforementioned materials has also led to increased participation in the democratic process. The objective in this course is to educate the next generation, nurture and inculcate a passion for civics and history and encourage young people to advocate for themselves.

The instructor of this class is Ms. Amanda Sawyer, Founder, Director, Dedimus Potestatem. Her program was developed in conjunction with The University of Cambridge.

4/ Debate Workshops (Mondays 3-4PM)

The objective of this program is to prepare students for the myriad situations that require formal and informal presentations. It is offered on Mondays

Students will learn to craft and present arguments and inform, persuade and motivate an audience in a variety of ways. The grading rubric was adapted with the permission of Neil Mercer, the Director of research and Head of Faculty at The University of Cambridge.

This course includes:

- The Impromptu Speech
- The Informative Speech
- The Persuasive Speech
- Parliamentary Debate



This program is focused on social skills, public speaking and presentation, and was developed in conjunction with The University of Cambridge.

5/ Advanced Competitive Debate: Practice & Preparation (Wednesdays)

This class is for more seasoned competitive debaters that wish to focus solely on preparing and practicing for the upcoming debate tournaments.

It will focus on more advanced debate techniques, such as persuasive openings, sustainable counter plans, solvency, calls to action, fulfilling the burden of proof and how to handle impromptu challenging situations in a competitive debate environment.

This class is for debaters that wish to grow as competitive speakers –

6/ Philosophy (Fridays 3-4PM)

The focus of the Philosophy class is to examine and understand the ideas behind the most popular philosophies embraced throughout the world. To do this, students examine ethical situations through the lens of these philosophies and engage in a Socratic style debate.

Students are presented with an ethical question and they must identify stakeholders and players within the dilemma, discuss the key moral issues and present opposing viewpoints.

The course is taught by Mr. Andy Snyder, Philosophy professor from CUNY associated with Dedimus Potestatem.

7/ Film Making (Thursdays 3-4PM)

Young people all over the world have begun using social media platforms to amplify minority voices, educate people about social justice issues and share science, poetry, art, movement, culture and more. In this class students will learn to capture brief videos that share important and inspiring messages with the world, analyze movements from other young activists that have impacted their communities and use these platforms to advocate for a better world.

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