

**G O A**

| Student Program |

**SUMMER 2024**

# **STUDENT COURSE CATALOG**



[www.globalonlineacademy.org](http://www.globalonlineacademy.org)

The mission of Global Online Academy (GOA) is to reimagine learning to enable students to thrive in a globally networked society.

GOA provides a positive, interactive, and intellectually rigorous environment for students to learn. We offer courses that connect students to topics they care about, and the opportunity to learn alongside a global network of peers as passionate and curious as they are.

We have identified the following six core competencies – the specific set of skills and habits of learning – that our students develop in practical, hands-on ways, no matter which GOA course they take:

1. **Collaborate** with people who don't share your location.
2. **Communicate and empathize** with people who have perspectives different from your own.
3. **Curate and create** content relevant to real-world issues.
4. **Reflect** on and take responsibility for your learning and that of others.
5. **Organize** your time and tasks to learn independently.
6. **Leverage** digital tools to support and show your learning.

To build these skills, GOA courses are:

#### **Globally connected**

Even though our courses are online, students get to know their teachers and classmates by using technology to build relationships. Our small classes have students from many different schools, led by expert teachers. Students log in multiple times a week to engage in discussions, collaborate on projects, and share ideas.

#### **Challenging**

GOA courses are designed to be as intellectually rigorous as any course at a home school. GOA courses are mostly asynchronous: students do not show up on certain days at certain times. Instead, teachers publish a calendar of activities, and within that framework, students work on their own schedules, gaining critical independent learning skills along the way. Students have a videoconference experience approximately every 10 days, more frequently in our intensive summer courses.

#### **Relevant**

We want students to pursue their passions. Our courses offer practical, hands-on experience in how these ideas can be applied to the world outside of school. Students have a voice and a choice in the work they do and the ideas they explore.

To see our full list of offerings and register, please visit:

<https://globalonlineacademy.org/student-program/summer-courses>

# Pursue a Learning Pathway

Students seeking to demonstrate depth of interest and expertise in a field of study can pursue one of GOA's eight pathways to earn a Pathway Certification.

When a student earns a Pathway Certification, the certification is highlighted on their GOA transcript, which provides additional context and description of a student's GOA experience. The GOA-issued transcript includes a list of courses the student has taken and the competencies mastered in those courses as well as Pathway Certification earned. Schools will continue to record grades from GOA courses on the school's transcript as well.

In order to earn a Pathway Certification, students must take three (or more) courses from a particular pathway. GOA's eight pathways are:

- ↑→ **ART, MEDIA & DESIGN**
- ↑→ **COMPUTER SCIENCE & ENGINEERING**
- ↑→ **BUSINESS, ECONOMICS & FINANCE**
- ↑→ **GLOBAL STUDIES**
- ↑→ **HEALTH SCIENCES**
- ↑→ **JUSTICE, ETHICS & HUMAN RIGHTS**
- ↑→ **MATHEMATICS & QUANTITATIVE REASONING**
- ↑→ **PSYCHOLOGY & NEUROSCIENCE**

*Please note: Not all courses are included in a pathway and some courses are cross-listed in more than one pathway. All courses eligible for Pathway certification must be completed through GOA.*

## Earn a Global Learning Certification

Students who take three (or more) GOA courses spread across multiple learning pathways will earn a Global Learning Certification. This certification is highlighted on the student's GOA transcript and includes a list of courses the student has taken and the competencies mastered in those courses. All semester, yearlong, and summer courses will count toward a Global Learning Certification.



These courses are eligible for Pathway or Global Learning certification.

### ART, MEDIA & DESIGN

Architecture

Computer Science II: Game Design & Development

Creative Nonfiction Writing

Digital Photography

Fiction Writing

### JUSTICE, ETHICS & HUMAN RIGHTS

Genocide & Human Rights

Introduction to Legal Thinking

### MATHEMATICS & QUANTITATIVE REASONING

Problem Solving with Engineering & Design

### COMPUTER SCIENCE & ENGINEERING

Computer Science I: Computational Thinking

Computer Science II: Analyzing Data with Python

Computer Science II: Game Design & Development

Computer Science II: Java

Cybersecurity

Introduction to Artificial Intelligence

Problem Solving with Engineering & Design

### PSYCHOLOGY & NEUROSCIENCE

Abnormal Psychology

Introduction to Psychology

### BUSINESS, ECONOMICS & FINANCE

Business Problem Solving

Introduction to Branding & Marketing

Investing I

Microeconomics

Personal Finance

### GLOBAL STUDIES

Genocide & Human Rights

International Relations

### HEALTH SCIENCES

Health & Fitness

Medical Problem Solving I

Summer at GOA offers some of our most popular courses in an intensive seven-week format. Students should expect to commit 10-12 hours per week\* for a summer version of GOA's signature semester-length course.

**Summer 2024**  
**Monday, June 17 - Friday, August 2**

*\*For Algebra I, Geometry, or Precalculus, which are designed to replace yearlong high school courses, students should expect to dedicate 15-20 hours per week.*

GOA is accredited by the New England Association of Schools and Colleges and by the Western Association of Schools and Colleges. We will deliver an official transcript to students from non-member schools who complete the course. Students from member schools might be eligible for credit from their schools for summer GOA courses: they should check with their GOA site director or their school.

### Abnormal Psychology

This course provides students with a general introduction to the field of abnormal psychology from a western perspective while exploring the cultural assumptions within the field. Students examine the biopsychosocial aspects of what society considers abnormal while developing an understanding of the stigma often associated with psychological disorders.

Through book study, videos, article reviews, and discussions, students consider how our increasingly global world influences mental health in diverse settings. In learning about the different areas of western abnormal psychology, students study the symptoms, diagnoses, and responses to several specific disorders such as anxiety, depression, eating disorders, or schizophrenia.

Students develop an understanding of how challenging it can be to define “normal” as they begin to empathize with those struggling with mental distress. Throughout the course, students are encouraged to attend to their own mental well-being. The course culminates in an independent project where students showcase their learning with the goal of making an impact in their local communities.

#### Psychology & Neuroscience

#### Algebra I

This intensive seven-week summer course is engineered to fast-track your journey through the foundational Algebra I curriculum, and to lay a strong foundation for a successful transition from middle school into high-school Algebra. Students in this course will master key algebraic concepts such as linear equations and systems of linear equations. In addition, students will be exposed to inequalities, functions, and polynomials (including quadratics).

Students will be guided through solving equations, understanding the properties of numbers, and grasping the intricacies of mathematical relationships. Special emphasis is placed on mastering basic operations with polynomials, understanding the coordinate plane, and tackling word problems that translate into algebraic equations.

To ensure you're set up for higher-level math, we'll also lay the groundwork for Algebra II topics, such as quadratic equations and systems of equations. Alongside the subject matter, the course aims to cultivate analytical reasoning and problem-solving skills, crucial for your future studies in STEM.

Given the accelerated pace, be prepared to put in 15–20 hours a week. This course condenses a year's worth of material into a seven-week sprint, so buckle up!

At the end of the course, the Algebra I teachers will make a recommendation to a student's home institution as to whether the student has mastered the key competencies of Algebra I.

**Prerequisite:** Pre-Algebra or its equivalent

### Architecture

In this course, students build an understanding of and apply skills in various aspects of architectural design. While gaining key insights into the roles of architectural analysis, materials, 3D design, and spatial awareness, students develop proficiency in architectural visual communication.

The course begins by learning the basic elements of architectural design to help analyze and understand architectural solutions. Through digital and physical media, students develop an understanding of the impact building materials have on design. At each stage of the course, students interact with peers from around the globe, learning and sharing how changes in materials, technology, and construction techniques lead to the evolution of contemporary architectural style and visual culture.

The course culminates with a final project in which each aspiring architect has the opportunity to work toward a personal presentation for the GOA Catalyst Exhibition. Students, through a variety of outcomes, present an architectural intervention that they have proposed as a solution to an identified need, one emanating from or focused within their own community. Throughout the course, students refer to the design process and use techniques to track, reflect, and evidence their understanding of architecture.

#### Art, Media & Design

#### Business Problem Solving

How could climate change disrupt your production and supply chains or impact your consumer markets? Will tariffs help or hurt your business? How embedded is social media in your marketing plan? Is your company vulnerable to cybercrime? What 21st-century skills are you cultivating in your leadership team?

Students in this course tackle real-world problems facing businesses large and small in today's fast-changing global marketplace where radical reinvention is on the minds of many business leaders. Students work collaboratively and independently on case studies, exploring business issues through varied lenses including operations, marketing, human capital, finance and risk management as well as sustainability. As they are introduced to the concepts and practices of business, students identify, analyze, and propose solutions to business problems, engaging in research of traditional and emerging industries, from established multinationals to startups.

#### Business, Economics & Finance

#### College Essay Workshop

This is a two-week workshop designed to help rising 12th-grade students get a head start on the college application process. During the first week of the workshop, students will attend synchronous video conferences and work sessions designed to get them from ideation, to an outline and ultimately to a draft. The second week of the workshop will be centered around small-group feedback sessions

during which students and teachers will work to improve initial drafts. Students will walk away from this two-week workshop with a strong working draft of an essay that they can continue to refine for their college applications.

**Note:** Unlike other GOA courses, this workshop is ungraded and non-credit-bearing.

### **Computer Science I: Computational Thinking**

*This course (or its equivalent) is a prerequisite to all Computer Science II classes at GOA.* Computational thinking centers on solving problems, designing systems, and understanding human behavior. It has applications not only in computer science but also myriad other fields of study. This introductory-level course focuses on thinking like a computer scientist, especially understanding how computer scientists define and solve problems.

Students begin the course by developing an understanding of what computer science is, how it can be used by people who are not programmers, and why it's a useful skill for all people to cultivate. Within this context, students are exposed to the power and limits of computational thinking.

Students are introduced to entry-level programming constructs that help them apply their knowledge of computational thinking in practical ways. They learn how to read code and pseudocode as well as begin to develop strategies for debugging programs. By developing computational thinking and programming skills, students will have the core knowledge to define and solve problems in future computer science courses.

While this course would be beneficial for any student without formal training as a programmer or computer scientist, it is intended for those with no programming experience.

↗ **Computer Science & Engineering**

### **Computer Science II: Analyzing Data with Python**

In this course, students utilize the Python programming language to read, analyze, and visualize data. The course emphasizes using real-world datasets, which are often large, messy, and inconsistent. Because of the powerful data structures and clear syntax of Python, it is one of the most widely used programming languages in scientific computing.

Students explore the multitude of practical applications of Python in fields like biology, engineering, and statistics.

**Prerequisite:** Computer Science I: Computational Thinking or its equivalent

↗ **Computer Science & Engineering**

### **Computer Science II: Game Design & Development**

In this course, students design and develop games through hands-on practice. Comprised of a series of "game jams," the course asks students to solve problems and create content, developing the design and technical skills necessary to build their own games.

The first month of the course is dedicated to understanding game design through game designer Jesse Schell's "lenses": different ways of looking at the same problem and answering questions that provide direction and refinement of a game's theme and structure. During this time, students also learn how to use Unity, a professional

game development tool, and become familiar with the methodologies of constructing a game using such assets as graphics, sounds, and effects, and controlling events and behavior within the game using the C# programming language.

Throughout the remainder of the course, students work in teams to brainstorm and develop new games in response to a theme or challenge. Students develop their skills in communication, project and time management, and creative problem-solving while focusing on different aspects of asset creation, design, and coding.

**Prerequisite:** Computer Science I: Computational Thinking or its equivalent

↗ **Art, Media & Design; Computer Science & Engineering**

### **Computer Science II: Java**

This course teaches students how to write programs in the Java programming language. Java is the backbone of many web applications, especially eCommerce and government sites. It is also the foundational code of the Android operating system and many tools of the financial sector.

Students learn the major syntactical elements of the Java language through object-oriented design. The emphasis in the course is on creating intelligent systems through the fundamentals of Computer Science. Students write working programs through short lab assignments and more extended projects that incorporate graphics and animation.

**Prerequisite:** Computer Science I: Computational Thinking or its equivalent

↗ **Computer Science & Engineering**

### **Creative Nonfiction Writing**

Tell your own stories and the stories of the world around you! This course centers on the art of shaping real experiences into powerful narratives while growing foundational writing skills. Participants read, examine, and write diverse works of creative nonfiction including personal narratives, podcasts, opinion editorials, profile pieces, and more.

Emphasizing process over product, this writing workshop provides opportunities to create in new ways. Students practice essential craft elements (e.g., voice, style, structure) while reflecting on stories from their own lives, communities, and interests. They also build a personalized library of inspiring mentor texts, consider opportunities for publication, and develop sustainable writing habits.

Both in real-time video chats and online discussion spaces, students support one another intentionally. Feedback is an essential component of this course, and students gain experience in the workshop model, actively participating in a thriving, global writing community. Creative nonfiction has never been as popular as it is today; participants experience its relevance in their own lives as they collaboratively explore this dynamic genre.

↗ **Art, Media & Design**

### **Cybersecurity**

Cybercriminals leverage technology and human behavior to attack our online security. This course explores the fundamentals of, and vulnerabilities in, the design of: Computers (computer components, connectivity); Networks

(design, Domain Name Services, and TCP/IP, hubs, switches, and routers); and The internet (DNS, HTTP, routing protocols, and access control for internet devices).

From understanding the intricacies of data protection and networking principles to exploring the physical architecture of networks, ciphers, and encryption techniques, the course is meticulously designed to equip students with a holistic understanding of the cybersecurity landscape. Delve into the human element of cyber attacks, navigate the world of machines, dissect malware anatomy, and grapple with the delicate balance between privacy and tracking. Gain expertise in encryption, data recovery, and enterprise security, culminating in an exploration of emerging trends. This course ensures students emerge with the knowledge and skills necessary to safeguard against evolving cyber threats in our interconnected digital age.

*There is no computer science prerequisite for this course, though students with some background will certainly find avenues to flex their knowledge.*

↑ → **Computer Science & Engineering**

### Digital Photography

In an era where everyone has become a photographer obsessed with documenting most aspects of life, we swim in a sea of images posted on Instagram, Facebook, Snapchat, Pinterest, and other digital media. To that end, why is learning how to use a digital camera important and what does taking a powerful and persuasive photo with a 35mm digital single lens reflex (DSLR) camera require?

Digital Photography explores this question in a variety of ways, beginning with the technical aspects of using and taking advantage of a powerful camera and then moving to a host of creative questions and opportunities. Technical topics such as aperture, shutter, white balance, and resolution get ample coverage in the first half of the course, yet each is pursued with the goal of enabling students to leverage the possibilities that come with manual image capture. Once confident about technical basics, students apply their skills when pursuing creative questions such as how to understand and use light, how to consider composition, and how to take compelling portraits.

Throughout the course, students tackle projects that enable sharing their local and diverse settings, ideally creating global perspectives through doing so. Additionally, students interact with each other often through critique sessions and collaborative exploration of the work of many noteworthy professional photographers whose images serve to inspire and suggest the diverse ways that photography tells visual stories.

**Prerequisite:** Students must have daily access to a DSLR camera.

↑ → **Art, Media & Design**

### Fiction Writing

This course connects students interested in creative writing (primarily short fiction) and provides a space for supportive and constructive feedback. Students gain experience in the workshop model, learning how to effectively critique and discuss one another's writing in an online environment. In addition to developing skills as readers within a workshop setting, students strive to develop their own writing identities through a variety of exercises.

The course capitalizes on the geographic diversity of the students by eliciting stories that shed light on both the commonalities and differences of life experiences in different locations. Additionally, students read and discuss the work of authors from around the globe.

Students' essential responsibilities are twofold: to engage in the class as readers and writers and to focus on their development as readers and writers. Both require participation in discussions of various formats within the course's online community, as well as dedicated time outside of class reading and providing feedback on one another's work as well as writing original pieces for the workshop.

↑ → **Art, Media & Design**

### Genocide & Human Rights

Students in this course study several of the major 20th-century genocides (Armenian, the Holocaust, Cambodian, and Rwandan), analyze the role of the international community in responding to and preventing further genocide (with particular attention to the Nuremberg tribunals), and examine current human rights crises around the world.

Students read primary and secondary sources, participate in both synchronous and asynchronous discussions with classmates, write brief papers, read short novels, watch documentaries, and develop a human rights report card website about a nation of their choice.

↑ → **Global Studies; Justice, Ethics & Human Rights**

### Geometry

This intensive summer course is designed to provide an accelerated path through the traditional high school geometry curriculum. Focusing on Euclidean geometry, students examine topics relating to parallel lines, similar and congruent triangles, quadrilaterals, polygons, and circles.

Students can expect to analyze lengths, areas, and volumes of two- and three-dimensional figures and explore transformations and other manipulations. Particular attention is paid to introductory trigonometry with right triangles and the study of circles (radians, sectors, arc length, etc). In addition, the development of a mature, logical thought process will begin through a formal introduction to arguments, deductions, theorems, and proofs.

Because this course covers topics that are typically presented in a yearlong course, students should expect to dedicate 15–20 hours per week during the intensive seven-week summer session.

**Prerequisite:** A strong background in Algebra I or its equivalent

### Health & Fitness

In this course, students take a comprehensive look at multiple factors that influence our bodies over a lifetime to maintain an active and healthy lifestyle. Students gain physical literacy by identifying, applying, analyzing, and evaluating components of fitness, exercise (FITT) principles, principles of training, phases of movement, and athletic performance.

Students set personal improvement goals for both fitness and movement skills utilizing baseline testing and performance analysis. Each week students complete a variety of physical exercises to target specific areas of fitness and

movement to assist in achieving their goals. Reflection and feedback will inform students regarding their improvement.

The course culminates in a student-led project where students explore, synthesize, and implement an exercise- or sport-specific topic that directly impacts their lives. Topics of exploration include but are not limited to: nutrition in sport, exercise psychology or mental health in sport, sport exploration for the lifetime, exercise science or sport-specific performance and biomechanics, careers in sport, and community-based improvement design and implementation.

### ↑ → Health Sciences

#### International Relations

Are China and the U.S. on a collision course for war? Can the Israelis and Palestinians find a two-state solution in the holy land? Will North Korea launch a nuclear weapon? Can India and Pakistan share the subcontinent in peace? These questions dominate global headlines and our daily news feeds.

In this course, students go beyond soundbites and menacing headlines to explore the context, causes, and consequences of the most pressing global issues of our time. Through case studies, students explore the dynamics of international relations and the complex interplay of war and peace, conflict and cooperation, and security and human rights. Working with classmates from around the world, students also identify and model ways to prevent, mediate, and resolve some of the most pressing global conflicts.

*Note: Beginning in the Summer 2024, GOA will offer pilot sections of International Relations that will leverage AI tools to support students taking the course in a variety of languages other than English. If you want to be in a multilingual section of this course, whether to participate in a more fully global community as an English-speaker, or to lean into studying International Relations in your native language, sign up for "International Relations (Multilingual)" on the registration page.*

### ↑ → Global Studies

#### Introduction to Artificial Intelligence

Aspects of artificial intelligence permeate our lives and the algorithms power your favorite apps. How much do you really know about how AI works or how it is changing the world around us?

This course explores the history of research into artificial general intelligence and the subsequent focus on the subfields of narrow AI: neural networks, machine learning and expert systems, deep learning, natural language processing, and machine vision and facial recognition. Students also learn how AI training datasets cause bias and focus on the ethics and principles of responsible AI: fairness, transparency and explainability, human-centeredness, and privacy and security.

### ↑ → Computer Science & Engineering

#### Introduction to Branding & Marketing

In our increasingly digitized world, we are bombarded by ads every day and presented with an immeasurable amount of content across all media platforms. It has become increasingly difficult for brands to break through the noise and capture the attention of their intended audience. In this course, students learn what it takes to build an effective brand that can authentically connect with consumers and create long-term brand equity.

The course starts with introducing what a brand is and goes on to explore how different branding elements, such as visual identity, advertising strategy, and content marketing, as well as the intangible elements of the customer journey, come together to create a unique brand experience.

By applying marketing theories, interviewing experts, and analyzing modern case studies, students develop and strengthen their competencies as brand strategists. Students also examine how responding to important ethical, social, and environmental issues can impact the brand's success. The course culminates in a final project where students collaborate to design an impactful brand campaign for a mission-driven company, organization, or initiative.

### ↑ → Business, Economics & Finance

#### Introduction to Legal Thinking

Inspired by GOA's popular Medical Problem Solving series, this course uses a case-based approach to give students a practical look into the professional lives of lawyers and legal thinking. By studying and debating a series of real legal cases, students sharpen their ability to think like lawyers who research, write, and speak persuasively.

The course focuses on problems that lawyers encounter in daily practice, and on the rules of professional conduct case law. In addition to practicing writing legal briefs, advising fictional clients, and preparing opening and closing statements for trial, students approach such questions as the law and equity, the concept of justice, jurisprudence, and legal ethics.

### ↑ → Justice, Ethics & Human Rights

#### Introduction to Psychology

What does it mean to think like a psychologist? In Introduction to Psychology, students explore three central psychological perspectives — the behavioral, the cognitive, and the sociocultural — in order to develop a multifaceted understanding of what thinking like a psychologist encompasses. The additional question of "How do psychologists put what they know into practice?" informs study of the research methods in psychology, the ethics surrounding them, and the application of those methods to practice.

During the first five units of the course, students gather essential information that they apply during a group project on the unique characteristics of adolescent psychology. Students similarly envision a case study on depression, which enables application of understandings from the first five units. The course concludes with a unit on positive psychology, which features current positive psychology research on living mentally healthy lives.

Throughout the course, students collaborate on a variety of activities and assessments, which often enable learning



about each other's unique perspectives, while building their research and critical-thinking skills in service of understanding the complex field of psychology.

*Optional: Students in this course can simultaneously enroll in the ungraded Academic English Accelerator in order to get additional support with their English in the context of their work in this course.*

## ↑ Psychology & Neuroscience

### Investing I

*This course is a prerequisite to Investing II at GOA.* In this course, students simulate the work of investors by working with the tools, theories, and decision-making practices that define smart investment. Students explore concepts in finance and apply them to investment decisions in three primary contexts: portfolio management, venture capital, and social investing.

After an introduction to theories about valuation and risk management, students simulate scenarios in which they must make decisions to grow an investment portfolio. They manage investments in stocks, bonds, and options to learn a range of strategies for increasing the value of their portfolios. In the second unit, students take the perspective of venture capital investors, analyzing startup companies and predicting their value before they become public. In the third unit, students examine case studies of investment funds that apply the tools of finance to power social change.

Throughout the course, students learn from experts who have experience in identifying value and managing risk in global markets. They develop their own ideas about methods for weighing financial risks and benefits and leave this course not just with a simulated portfolio of investments, but the skills necessary to manage portfolios in the future.

*Optional: Students in this course can simultaneously enroll in the ungraded Academic English Accelerator in order to get additional support with their English in the context of their work in this course.*

## ↑ Business, Economics & Finance

### Medical Problem Solving I

*This course is a prerequisite to Medical Problem Solving II at GOA.* In this course, students collaboratively solve medical mystery cases, similar to the approach used in many medical schools. Students enhance their critical-thinking skills as they examine data, draw conclusions, diagnose, and identify appropriate treatment for patients.

Students use problem-solving techniques in order to understand and appreciate relevant medical/biological facts as they confront the principles and practices of medicine. Students explore anatomy and physiology pertaining to medical scenarios and gain an understanding of the disease process, demographics of disease, and pharmacology. Additional learning experiences include studying current issues in health and medicine, interviewing a patient, and creating a new mystery case.

*Optional: Students in this course can simultaneously enroll in the ungraded Academic English Accelerator in order to get additional support with their English in the context of their work in this course.*

## ↑ Health Sciences

### Microeconomics

In this course, students learn about how consumers and producers interact to form a market and then how and why the government may intervene in that market. Students deepen their understanding of basic microeconomic theory through class discussion and debate, problem solving, and written reflection.

Students visit a local production site and write a report using the market principles they have learned. Economic ways of thinking about the world help them better understand their roles as consumers and workers, and someday, as voters and producers.

## ↑ Business, Economics & Finance

### Personal Finance

In this course, students learn financial responsibility and social consciousness. They examine a wide array of topics including personal budgeting, credit cards and credit scores, career and earning potential, insurance, real estate, financial investment, retirement savings, charitable giving, taxes, and other items related to personal finance.

Students apply their understanding of these topics by simulating real-life financial circumstances and weighing the costs and benefits of their decisions. Throughout the course, students have the opportunity to learn from individuals with varying perspectives and expertise in numerous fields. By reflecting on their roles in the broader economy as both producers and consumers, students begin to consider how they can positively impact the world around them through their financial decisions.

## ↑ Business, Economics & Finance

### Precalculus

In this intensive summer course, students deepen and apply their understanding of mathematics in order to be prepared for higher-level courses. The emphasis is on understanding functions, including transformations, domain/range, and visual representations. In addition, students deepen their understanding of the concept of equivalence through numerical, graphical, and algebraic representations. This includes developing fluency with algebraic manipulation.

Much of the work involves problem solving and the application of previous and current skills to new situations. Projects include opportunities to apply topics such as polynomials, matrices, trigonometry, and sequences and series to real-world scenarios. Students analyze situations, create models, develop solutions to problems, and then reflect on this work. The course culminates in a project that provides students a chance to explore a situation and bring to bear the skills they have learned to analyze it and present their understanding of the situation.

This course is intended for students who are looking to accelerate through a Precalculus course and, as such, concepts and topics are presented quickly allowing for time to apply the skills to novel situations. This course replicates what is typically a yearlong course, so students should expect to dedicate 15–20 hours per week during the seven-week summer session.

**Prerequisite:** Algebra 2 or its equivalent

## **Problem Solving with Engineering & Design**

This course investigates various topics in science, technology, engineering, and mathematics using a series of projects and problems that are both meaningful and relevant to the students' lives. Students develop engineering skills, including design principles, modeling, and presentations, using a variety of computer hardware and software applications to complete assignments and projects.

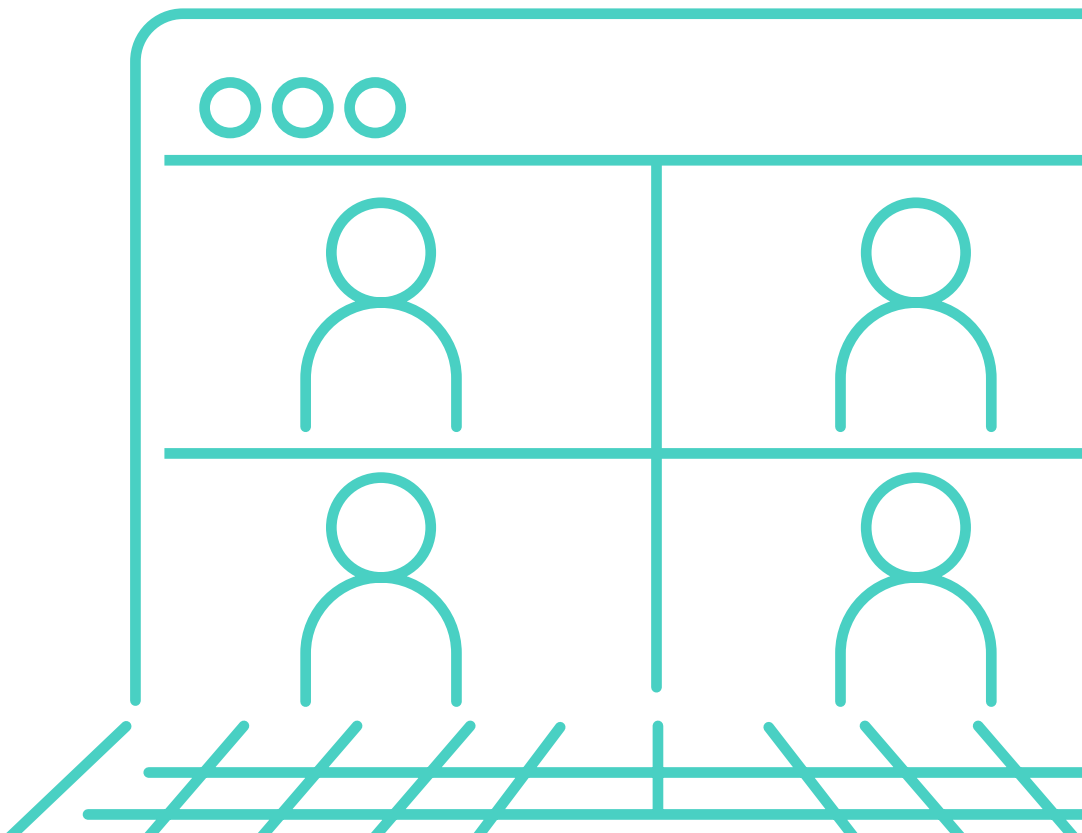
This is a course that focuses on practical applications of science and mathematics to solve real-world issues. Project-based learning, working in collaborative teams, and designing prototypes are essential components of the course. Throughout the program, students step into the varied roles engineers play in our society, solve problems in their homes and communities, discover new career paths and possibilities, and develop engineering knowledge and skills.

*There are no particular math or science prerequisites for this course, just an interest in using STEM to solve problems and a desire to learn!*

 **Computer Science & Engineering; Mathematics & Quantitative Reasoning**

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[www.globalonlineacademy.org](http://www.globalonlineacademy.org)

To see our full list of offerings and register, please visit:

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