

# Stanford | Pre-Collegiate Studies



2018–2019 Program Guide



# Contents

## Find Yourself at Stanford

---

Welcome to Stanford	
Pre-Collegiate Studies.....	5

## Residential Summer

### Enrichment Programs

---

Stanford Pre-Collegiate	
Summer Institutes .....	6
Stanford Summer	
Humanities Institute .....	10
Stanford Summer Arts Institute .....	11
Stanford University	
Mathematics Camp (SUMaC).....	12

Stanford Medical Youth	
Science Program (SMYSP).....	13
Stanford AI4ALL.....	16

## Enrichment Circles

---

Stanford Math Circle.....	18
Stanford Science Circle.....	18
Stanford Humanities Circle .....	19

## International Collaborations

---

Stanford Pre-Collegiate	
International Institutes .....	20
Stanford Honors Academies .....	23

## Take College Classes Online

---

Stanford Pre-Collegiate University-Level  
Online Math & Physics ..... 24

## Which Program is Right for You?

---

Programs-at-a-Glance Chart ..... 26  
Application & Contact Information ..... 27



### **Financial Aid** *Scholarships Available*

*Stanford Pre-Collegiate Studies is pleased to offer limited financial aid to high-achieving, low-income students. Aid is available to both U.S. and international students.*



# Welcome to Stanford Pre-Collegiate Studies!

With participation from across the U.S. and around the world, our offerings attract bright, intellectually adventurous, and passionate students who are excited to come together on the Stanford campus and explore unique courses, build lasting friendships, and gain new insights into themselves. **Stanford Pre-Collegiate Studies** offers amazing academic enrichment opportunities through more than a dozen programs.

Our instructors are experts in their fields and eager to share their enthusiasm for their subjects and their love of teaching. Building on themes of collaboration, critical thinking, and engaging classrooms, we create a magic formula of curriculum, participants, and instructors, producing vibrant and intellectually stimulating learning environments.

We invite you to explore and discover with us!

**Rick Sommer, Ph.D.**

*Executive Director, Stanford Pre-Collegiate Studies*

## **Mission Statement**

*“We are an innovative center for pre-collegiate education committed to Stanford’s ideals of academic excellence and respect for diversity of backgrounds and experiences. We bring together intellectually curious students from around the world in engaging learning communities, designed to foster critical thinking, promote personal growth, and inspire dedication to lifelong learning in the next generation of global citizens.”*



# Explore Your Passions

## Stanford Pre-Collegiate Summer Institutes

Stanford Pre-Collegiate Summer Institutes is a summer residential program held on the Stanford campus that is centered on intensive study in a single subject. Participants live in residence halls for three weeks and get to know peers from around the world.

Over the years, we have welcomed participants from



**50**  
States



**80**  
Countries

### Immerse Yourself

Stanford Pre-Collegiate Summer Institutes provides a taste of the Stanford classroom experience and challenges students with advanced content that is not typically found in the high-school curriculum.

Our courses develop critical-thinking and problem-solving skills, expose students to current research directions, and offer a challenging and rewarding academic experience in an environment with others who share a passion for learning.



Grades **8-11**



**50+**  
Courses Offered  
Each Summer



**100%**  
Of Participants Live  
on Campus



Photos: Micaela Go





## Hands-On Experience

*“The other students were just as driven and motivated as I am. The teacher was really knowledgeable and passionate about the subject. He focused on a lot of hands-on experience and real-life application.”*

## Our Courses

Not for credit or grade, our courses provide in-depth and interactive exploration of advanced topics. Our instructors design custom courses that provide a deep dive into their areas of expertise and highlight new areas of research. Our courses feature content more typically found in a college curriculum. Instructors are assisted by undergraduate and graduate student mentors who serve a dual role of Residential Counselor and Teaching Assistant.

## Course Highlights

- Artificial Intelligence
- Bioscience & Biotechnology
- Business & Entrepreneurship
- Engineering
- Computer Simulations & Interactive Media
- Creative & Expository Writing
- Cryptography
- Deliberative Democracy
- Game Design
- International Relations
- Number Theory
- Quantum Mechanics
- Screenwriting
- Theory of Relativity



## Residential Life & Community

The Stanford Pre-Collegiate Summer Institutes integrates academics and social activities into every aspect of the program. Participants live in residence with classmates attending the same course and interact daily with peers who share their interests and academic passions.

The program includes outdoor recreational activities that offer participants the opportunity to exercise, socialize, make friends, and have fun. Activities are designed for a variety of interests. Weekend excursions take participants to points of cultural, historical, or recreational interest in the Bay Area.

*“I had an overall amazing experience. I really loved how inviting and inclusive all of the people here were and I’ll never forget my experience. I was pushed out of my comfort zone in all the best ways. I honestly think this program will have a life-long impact on my confidence, my perspective, and my life in general.”*

—Stanford Pre-Collegiate Summer Institutes Participant



### Global Focus *Real Connections*

*Bright peers and engaged mentors from around the world, expert instructional and residential staff, and the beautiful Stanford University campus create a truly special and unforgettable experience.*



# Stanford Summer Humanities Institute

In this three-week residential program, rising high school juniors and seniors explore the big questions at the heart of the humanities in seminars led by distinguished Stanford professors.

 Grades **10–11**



## **Diverse Community** *Profound Discussions*

*“The discussion extends from the classroom, to the dorm, and then to breakfast. We’re able to carry the discussions and the debates everywhere we go because the people here are just so interesting and so smart.”*

Grow as a scholar, writer, and thinker this summer at the Stanford Summer Humanities Institute. Our courses focus on specific topics, using history, literature, art, philosophy, and film to study the past, understand the present, and help build the future. Participants investigate complex questions and write research papers that allow them to pursue ideas that excite them.



# Stanford Summer Arts Institute

Participants come together for a three-week intensive arts residential program offering academically challenging, interdisciplinary courses in architecture, visual design, and music.

 Grades **9–11**

Build on your existing passion for art, music, or design by attending an intensive course that emphasizes academic excellence and creative expression. Stanford Summer Arts Institute expands the boundaries of traditional disciplines, allowing you to build your skills as a student and budding artist by emphasizing how the arts interact with science, history, technology, and more.



## Discover Your Inner Artist

*Stanford is a hub for the arts. Unlock your creativity by exploring Stanford's arts district, seeing paintings at the Cantor Museum and Anderson Collection, or listening to performances at Bing Concert Hall.*

# Stanford University Mathematics Camp

Stanford University Mathematics Camp (SUMaC) welcomes an elite group of talented rising high school juniors and seniors from around the world for intensive study in advanced mathematics.

 Grades **10–11**



## Meet Professor Olga Russakovsky

*“SUMaC jump-started my career. I majored in Math at Stanford, got a Ph.D. in Computer Science and became a professor in AI. I even started my own advanced pre-collegiate program, Stanford AI4ALL.”*

The Stanford University Mathematics Camp (SUMaC) leads participants on a journey in advanced mathematics through lectures, guided research, and group problem solving. In a social environment centered on mathematics, participants explore current lines of mathematical research, the historical development of important areas of mathematics, and applications across scientific disciplines.



# Stanford Medical Youth Science Program

Stanford Medical Youth Science Program (SMYSP) offers a five-week biomedical enrichment program for academically talented, low-income, and underrepresented students.

 Grades **10–11**

High school sophomores and juniors from select Northern and Central California counties are invited to apply. The twenty-four participants work closely with Stanford faculty, researchers, students, and health care professionals. Participants intern at the Stanford Hospital, take an anatomy course at the Stanford School of Medicine, and work in teams on a health-research project.



## Community Engaged Learning

*“Not only has SMYSP given me a better idea of what I wish to pursue in the future, it has also offered a welcoming and safe environment for all the participants.”*



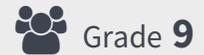


# Find Yourself at Stanford



# Stanford AI4ALL

Stanford Pre-Collegiate Studies partners with the national non-profit AI4ALL and the Stanford Artificial Intelligence Laboratory (SAIL) to offer a three-week summer residential program, with the mission of developing pathways for young women to become leaders in the field of AI.



## Who Will Change Artificial Intelligence?

*In past years, participants watched a live Hexacopter demo, took a trip to Google, interacted with haptic robots, saw demonstrations of self-driving cars, and networked with professionals from a wide range of AI companies.*

Stanford AI4ALL exposes participants to the field of Artificial Intelligence. Participants learn about cutting-edge research, work in teams led by AI graduate students on the application of AI in fields such as health care, and explore the social impact of AI through lectures, demonstrations, and mentorship. This program is part of a national effort to increase diversity in computer science.

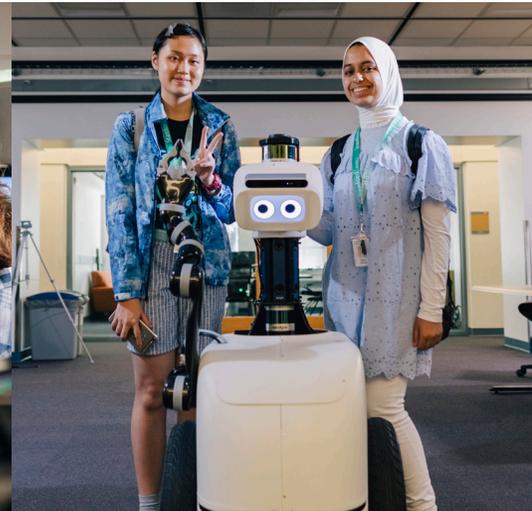




Photo: Micaela Go



# Enrichment Circles

## Stanford Math Circle

---

Stanford Math Circle offers sessions for elementary, middle, and high school students. Each dynamic class is guided by mathematicians, educators, and scholars from Stanford and the wider Bay Area. Students work on problems involving complex and advanced mathematical topics, explore logical reason, and learn how to think like a mathematician.

## Stanford Science Circle

---

Stanford Science Circle offers students in grades 7–12 the opportunity to explore the vast and exciting world of science. The classes promote science interest through engaging lectures and hands-on activities. Students learn directly from faculty, researchers, and graduate students from the Bay Area. Each quarter focuses on a different science field, including bioscience and geology in past quarters.





Grades **1-12**



Circles  
Meet Weekly



Located On  
Stanford Campus

## Stanford Humanities Circle

Stanford Humanities Circle invites students in grade 6-12 who are passionate about history, literature, art, and writing. These discussion-based classes allow students to work with each other and with Stanford graduate students and instructors to engage with classic questions, new ideas, and interdisciplinary study of cultures and world history. Each quarter focuses on a theme such as creative writing, philosophy, or ethics.



### About Stanford *Enrichment Circles*

*Circles are quarter-long, after-school programs for local students interested in the humanities, science, and math. Circle sessions are held weekly on the Stanford campus and occur in Fall, Winter, and Spring. Each meeting is mostly self-contained, requiring little to no homework so they are compatible with students' other school commitments.*



# International Collaborations

## Stanford Pre-Collegiate International Institutes

The Stanford Pre-Collegiate International Institutes offers an exciting opportunity for schools and organizations from around the world to bring academically talented high school students to Stanford University for an engaging educational and multicultural experience.



**20+**  
Countries  
Represented



Grades **9-11**

### Bringing the World to Stanford

Stanford Pre-Collegiate International Institutes provides motivated pre-college students an extraordinary American college-life experience. The intellectually challenging program encourages participants to develop skills in problem solving, collaborative work, and critical and creative thinking. By attending daily workshops on multiple topics, participants have the opportunity to expand their horizons. In addition to coursework, this program places an emphasis on building a global community through academic activities like the multinational, team-based Global Solutions Project and the fun-filled Multicultural Exhibition where participants share their culture and history.

# Global Focus. Multicultural Experience.

## Multicultural Exhibition

Participants share elements of their country's heritage through an exhibition-style event that engages others in their cultural history. Each country creates a booth with music, food, informational posters, and souvenirs. The Multicultural Exhibition provides a unique experience to explore the world without ever leaving the Stanford campus.

## Global Solutions Project

Participants are divided into multi-country cohorts to solve world problems by collaborating to develop a country. Participants form lasting relationships with peers from around the world through these activities. Each participant practices high level research by exploring an existing world problem and sharing their findings with their cohort. Together, cohorts engage in difficult decision making by practicing skills taught in their workshops and then present their research as a final project.



## Academic Enrichment

---

Our innovative curriculum emphasizes course topics that are not typically seen in high school. Our workshops are exploratory in nature and are taught in a seminar-style setting with an emphasis on participation, interaction, communication and developing critical thinking skills.

Instructors bring their particular areas of expertise to provide insight into a variety of academic and professional fields. Instructors' qualifications typically include graduate degrees from Stanford or other top universities.

## Workshop Topics and Schedule

---

Participants attend workshops on different topics each morning and afternoon in small groups of 12-15. Each group is assigned a balance of science, technology, humanities, arts and leadership development topics.

## Sample Academic Offerings

---

- Anthropology
- Artificial Intelligence\*
- Bioscience Exploration
- Business & Entrepreneurship \*
- Creative Writing \*
- Cryptography
- Decision Science
- Design Thinking\*
- Digital Anatomy Lab
- Economics
- Effective Non-Verbal Communication
- Electronic Music Composition
- Expository Writing\*
- Environmental Science\*
- Genomics
- History and Art
- International Relations
- Leadership\*
- Legal Studies\*
- Journalism
- Mathematical Logic & Problem Solving\*
- Neuroscience\*
- Optical Phenomena
- Political Science
- Presentation Skills
- Robotics
- Social Innovation
- Software Engineering & Game Design\*
- Technology and Identity
- Visual Storytelling with Digital Media\*



**Workshop Highlight**  
*Decision Science*

*In this workshop, participants learn a framework for making better decisions called "Decision Quality." Developed at Stanford, this model helps teams solve complex problems and improve critical thinking and communication skills.*

# Honors Academies

Stanford Honors Academies are two-week intensive courses on advanced topics for academically talented middle and high school students in Grades 6–11 from select international locations.

## Academic Enrichment

Honors Academies are in-depth versions of enrichment topics similar to those taught at Stanford Pre-Collegiate International Institutes. Courses are drawn from a wide variety of subject matters, and the list of potential topics appears on the previous page. Their purpose is to help prepare students for our other programs at Stanford by introducing them to our curriculum in a non-residential format.

Honors Academies courses are only offered in collaboration with schools and organizations that bring student groups to Stanford Pre-Collegiate International Institutes.





# Take College Classes Online

## University-Level Online Math & Physics

Stanford Pre-Collegiate University-Level Online Math & Physics courses are offered throughout the year and give students the opportunity to earn Stanford Continuing Studies credit through a broad offering of math and physics courses not typically offered in secondary schools.



Earn Stanford Continuing Studies Credit



Grades **9-12**

### Course Highlights

These online courses allow high school students to work through advanced material at their own pace with the support of expert instructors in live online sessions.

- Complex Analysis
- Elementary Theory of Numbers
- Intermediate Mechanics
- Light and Heat
- Linear Algebra
- Modern Algebra
- Modern Physics
- Multivariable Differential Calculus
- Multivariable Integral Calculus
- Partial Differential Equations
- Real Analysis



# Programs At A Glance

## Which program is right for you?

Use our online program finder at:

[spcs.stanford.edu/programs](https://spcs.stanford.edu/programs)

	Elementary 1 - 5	Middle School 6 - 7	High School 8 - 9	High School 10 - 12	Summer	Academic Year	Number of Weeks	Global Student Body	Local Student Body	Cont. Studies Credit	Certificate/No-Credit	Residential	Commuter	Online
Stanford Pre-Collegiate Summer Institutes			✓	✓	✓		3	✓			✓	✓		
Stanford Summer Humanities Institute				✓	✓		3	✓			✓	✓		
Stanford Summer Arts Institute			✓	✓	✓		3	✓			✓	✓		
Stanford University Mathematics Camp (SUMaC)				✓	✓		4	✓			✓	✓		
Stanford Medical Youth Science Program (SMYSP)				✓	✓		5		✓		✓	✓		
Stanford AI4ALL			✓		✓		3	✓			✓	✓		
Stanford Math Circle	✓	✓	✓	✓		✓			✓		✓		✓	
Stanford Science Circle		✓	✓	✓		✓			✓		✓		✓	
Stanford Humanities Circle		✓	✓	✓		✓			✓		✓		✓	
Stanford Pre-Collegiate International Institutes			✓	✓	✓		2	✓			✓	✓		
Stanford Honors Academies		✓	✓	✓	✓	✓	2	✓			✓		✓	
Stanford University-Level Online Math & Physics			✓	✓	✓	✓		✓		✓				✓

# Apply Today!

---

Admission for most Stanford Pre-Collegiate Studies programs is competitive. Each program has different application requirements and deadlines. Test scores are required for some but not all programs. Please refer to program websites for more detailed information.

## We Want to Hear From You

---

### Stanford Pre-Collegiate Studies

✉ [precollegiate@stanford.edu](mailto:precollegiate@stanford.edu)

### Summer Residential Enrichment Programs

✉ [precollegiate@stanford.edu](mailto:precollegiate@stanford.edu)

☎ 650-721-9325

🔗 [summerinstitutes.stanford.edu](http://summerinstitutes.stanford.edu)

🔗 [summerhumanities.tanford.edu](http://summerhumanities.tanford.edu)

🔗 [summerartsinstitute.stanford.edu](http://summerartsinstitute.stanford.edu)

🔗 [sumac.stanford.edu](http://sumac.stanford.edu)

🔗 [smysp.stanford.edu](http://smysp.stanford.edu)

🔗 [ai4all.stanford.edu](http://ai4all.stanford.edu)

### Enrichment Circles

✉ [precollegiate@stanford.edu](mailto:precollegiate@stanford.edu)

☎ 650-721-2947

🔗 [mathcircle.stanford.edu](http://mathcircle.stanford.edu)

🔗 [sciencecircle.stanford.edu](http://sciencecircle.stanford.edu)

🔗 [humanitiescircle.stanford.edu](http://humanitiescircle.stanford.edu)

### International Collaborations

✉ [internationalinstitutes@stanford.edu](mailto:internationalinstitutes@stanford.edu)

☎ 650-721-2947

🔗 [internationalinstitutes.stanford.edu](http://internationalinstitutes.stanford.edu)

### University-Level Online Math & Physics

🔗 [ulo.stanford.edu](http://ulo.stanford.edu)

### Office of Science Outreach (🔗 [oso.stanford.edu](http://oso.stanford.edu))

---

The Office of Science Outreach (OSO) encourages and assists Stanford faculty and students to engage in science outreach on and off campus. Families can check the website for a comprehensive listing of K-12 science and engineering programs at Stanford.

# Stanford University

**Stanford Pre-Collegiate Studies**  
Ventura Hall, 220 Panama Street  
Stanford, CA 94305-4101

## Connect with Us

 [precollegiate@stanford.edu](mailto:precollegiate@stanford.edu)

 [stanford.precollegiate](https://www.facebook.com/stanford.precollegiate)