Penn Engineering
University of Pennsylvania

# ENGINEERING
## SUMMER ACADEMY at PENN

## JULY 2021

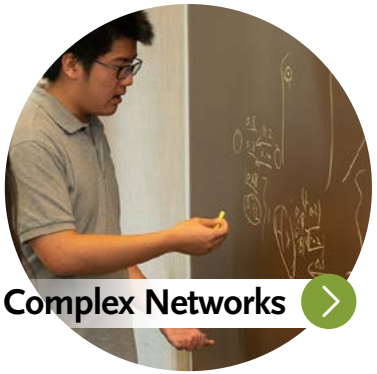
**PRIORITY APPLICATION DEADLINE:**
**February 19th**

**FINAL APPLICATION DEADLINE:**
**March 26th**

*HIGH-TECH. IVY LEAGUE. IN THE HEART OF THE CITY.*

# ENGINEERING
SUMMER ACADEMY at PENN


Biotechnology


Complex Networks


Computer Graphics

Highly talented and motivated high school students are invited to apply to the ENGINEERING SUMMER ACADEMY at PENN for an intensive, three-week academic experience like no other!

With one of our six courses, you can take your STEM interests to the next level and earn college credit (1 Penn cu). Combining sophisticated theory with hands-on practical experience in our cutting edge laboratories, ESAP challenges students to work harder, smarter, and more creatively than they ever have before.


Computer Science


Nanotechnology


Robotics

Penn Engineering
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# Biotechnology

*"I enjoyed my time at ESAP especially because I was able to experience what college life will be like"*

**BIOT 2019**



Biotechnology has been revolutionized by the techniques of genetic engineering which are used to design new proteins, produce drugs, and investigate disease mechanisms. In this course, students will learn some of the fundamentals of molecular biology and have the chance to carry out molecular cloning experiments in a lab. Eligible students should have at least 1 year's coursework in biology. Prior coursework in chemistry is highly recommended.



# Computer Graphics

*"The teachers and staff were amazing and worked really hard so everyone would have a fun but challenging work experience and would always be available to help us if we needed it!"*

CGRA 2020



Students will be introduced to the character pipeline for games and animation. It will include design, anatomy, modeling, texturing, rigging, programming, and animation overall. They will learn, in part, through visits to Penn's own LiveActor motion capture studio, the Human Modeling and Simulation Center (HMS), and a field trip to a related company. Prior coursework in Photoshop, Maya, or other modeling tools is useful, but not required.

# Computer Science

*"ESAP helped me to love computer science even more than I did before. I learned cool things and improved my coding skills a lot. Thank you for this great opportunity."*

**COMP 2020**

Computer science involves translating a complex problem into a computing solution by learning how to create data models and think algorithmically. Students in this course will be introduced to both the practical work of programming and the important foundations of computer science. This course is for beginners with little to no programming experience. Students with advanced computer science knowledge may not find the course to be as challenging, but they will benefit from the rigorous college-level curriculum and peer interaction in a college environment.

# Complex Networks

Network science investigates the structure of large complex networks and their behaviors and properties. New technologies are then designed to control and manipulate their behaviors to produce greater benefits for society. Students will learn some of the basic tools, methods, and algorithms for analysis of networked systems, as well as practical applications of this rapidly growing field. Coursework in physics and advanced math is required.

*"The content was challenging, but Professor Preciado taught it to us in an exciting way that made the experience rewarding and enjoyable."*

NETWORKS 2020

The fast-growing field of nanotechnology is the study of the control of matter on an atomic and molecular scale, with significant and exciting future applications in life sciences, medicine, and engineering. Through lecture, lab, and group projects, the course will cover topics in nanomaterials, nanofabrication techniques, imaging nanostructures, real-life applications of nanotechnology, nanoscience ethics, and other concepts. Eligible students should have coursework in Chemistry.

# Nanotechnology








*"This program was the highlight of my summer. I am still talking about it now, and there was no better way to spend three weeks."*

NANO 2019

Students will be introduced to the state of the art in robotics, including sensing, actuation and control, and embedded programming. Each day consists of lecture and lab time, where the students will work in small groups. The course will culminate with an exciting final project, which will showcase their newly minted skills. Prior coursework in physics, advanced math, and C programming is required. Solidworks or Autocad experience is recommended.

# Robotics

*"I really enjoyed my summer here at Penn. The program is super interesting and inspiring, and I would definitely recommend it to my schoolmates."*

ROBO 2019

## PROGRAM INFO

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|---|---|
| PRIORITY APPLICATION DEADLINE: | **FEBRUARY 19TH, 2021** |
| FINAL APPLICATION DEADLINE: | **MARCH 26TH, 2021** |
| PROGRAM DATES: | **JULY 2021** |

**NOTICE REGARDING COVID-19:**
It is our hope to be able to provide a full, in-person program this summer. However, that decision will depend on university, state and local government guidelines regarding the coronavirus pandemic. Please visit our website for the latest updates.

**Apply Now**