



PRESENTED BY THE RICE  
UNIVERSITY CENTER FOR  
ENGINEERING LEADERSHIP AND  
POWERED BY WORLDSTRIDES

# RICE ELITE TECH CAMP

2024



LEARN MORE

# ABOUT RICE ELITE TECH CAMP

WorldStrides has partnered with Rice University's Center for Engineering Leadership (RCEL) to bring Rice ELITE Tech Camp to life for passionate high schoolers looking to build their skills as the future of the engineering and technology industries.

Many of the most important changes needed by our world today are driven by engineers. Engineering and tech leaders are at the forefront of the world's advancement, and Rice ELITE Tech Camp was designed to build the skills, motivation, and opportunities needed by those Emerging Leaders in Technology and Engineering (aka ELITE).

At Rice ELITE Tech Camp, students will be tackling college-level engineering concepts and skills that have been expertly tailored to the needs of a high school student. Each course was designed by a Rice University-affiliated Head Instructor, and students will interact with Rice University Student Instructors on a daily basis. These are currently enrolled, high-achieving engineering students who are passionate to share their knowledge.

At the conclusion of their week-long session, students will walk away with skills that are transferable across any of the engineering disciplines as well as a stronger understanding of what it takes to be a leader. Students will hone their professional communication skills, begin to learn the foundations of project management, and learn how to navigate the different career paths available in engineering and technology.

Read on for an in-depth description of our courses as well as an overview of daily life at the camp.



# Summer 2024 Session Dates

JUNE 16 | JUNE 23 | JULY 7 | JULY 14

All sessions are available either in-person or virtually.  
Courses offered vary by session date.



**The Rice Center for Engineering Leadership was established in 2009 to inspire, educate, and develop ethical leaders in technology who aim to excel in research, industry, non-engineering career paths, and entrepreneurship.**

# Course Descriptions

## 3D MODELING & 3D PRINTING

In Person: June 16 | June 23 | July 7 | July 14      Virtual: June 17 | July 15

In this course, students will learn how to design a 3D environment and how to prepare files for DFaM (design for additive manufacturing). Students will then design and build their own unique 3D models and watch them come to life in the 3D printer.

### HEAD INSTRUCTOR

**Thomas Clifton**, M.S. in Industrial Engineering & Product Design

*Day Job:* Manager of university innovation and entrepreneurship program

## DEEP LEARNING: DEPLOYING AI TO MAINTAIN SMART CITIES

In Person: June 16 | June 23 | July 7 | July 14      Virtual: June 17 | June 24 | July 8 | July 15

In this course, students will use Python to design and implement a neural network algorithm capable of classifying structure images as damaged and determine the level of damage. Work like this is essential to civil engineers in charge of designing, constructing, and maintaining highways, bridges, and other important infrastructure.

### HEAD INSTRUCTOR

**Millard McElwee**, Ph.D. in Civil Engineering

*Day Job:* Associate at a global engineering consulting firm

## LEARNING C++ FOR HUMAN SPACEFLIGHT ENGINEERING

In Person: June 16 | June 23 | July 7 | July 14      Virtual: June 17 | June 24 | July 8 | July 15

In this course, students will study the concepts of fluid mechanics that allow scientists to design smaller, faster, and more economical rockets. Then, they will hone their programming skills in C++ to put these concepts to life to test rocket design parameters and the effect of spaceflight on the human body.

### HEAD INSTRUCTOR

**Gagan Srivastava**, Ph.D. in Mechanical Engineering

*Day Job:* University faculty member of mechanical engineering and corporate research engineer

## LEARNING PYTHON TO SOLVE ENGINEERING PROBLEMS

In Person: June 16 | June 23 | July 7 | July 14      Virtual: June 17 | July 15

In this course, students will learn to solve thermal energy problems like a mechanical engineer as they develop their own Python code to model temperature changes when food is cooked and predict when it will reach a temperature that is safe for consumption. Then, students will establish a home experiment to test and verify the accuracy of their code. This work is conducted every day by companies such as Proctor & Gamble, NASA, and Tesla.

HEAD INSTRUCTOR

**Elon Terrell**, Ph.D. in Mechanical Engineering

*Day Job:* University faculty member of mechanical engineering and computational tribologist

## TRIFECTA TECH: THE INTERNET OF THINGS, MACHINE LEARNING & PYTHON CODING

In Person: June 16 | June 23 | July 7 | July 14      Virtual: June 24 | July 8

In this course, students will study different Applied Machine Learning (ML) concepts and the Internet of Things (IOT) through modules that leverage real-time sensors. Students will also code examples in Python and MySQL and deploy their code for testing.

Students will walk away from this course understanding how technology is applied in multiple different industries as well as understanding the underlying connection between ML and IOT concepts and core subjects.

HEAD INSTRUCTOR

**Steve Holmes**, Ph.D. Candidate in Learning Science, Cognition, and Computational Thinking

*Day Job:* Technology services entrepreneur

## ROBOTIC ENGINEERING I: ADDING ROBOT MUSCLES TO YOUR INVENTIVE IDEAS

*In-Person Only* June 16 | June 23 | July 7 | July 14

This course will introduce students to the design and use of electric motors in automation (including robots). We will discuss the types of motors and how to select the right type for the application. We will talk about motor controllers and how to make them operate using signals from an Arduino. Concepts of torque, speed, power and efficiency will be introduced to allow students to pick the correctly sized motor for their project. We can discuss solenoids and linear actuators and how they are used to power and control hydraulic and pneumatic systems which are other popular means to give robots muscle.

HEAD INSTRUCTOR

**David Trevas**, Ph.D. in Mechanical Engineering

*Day Job:* University faculty member of mechanical engineering

# New Courses & Locations

## NEW LOCATIONS FOR 2024!

The future of technology & engineering has never been brighter and as the industry expands, so have we. In order to ensure as many passionate students as possible can attend Rice ELITE Tech Camp, we've partnered with two exceptional universities to expand our reach and allow more students to participate.

[ELITE-ATLANTA](#) | Emory University July 7 Residential (July 8 Commuter)

[ELITE-LOS ANGELES](#) | UCLA June 23 Residential (June 24 Commuter)

## ROBOTIC ENGINEERING II: ADDING SENSORS FOR YOUR ROBOT TO SEE, HEAR, FEEL, AND SMELL

*In-Person Only* June 16 | June 23 | July 7 | July 14

Future engineers who want to work with robots often think of humanoid robots. However, any intelligent machine that can gather information about its surroundings and decide how to act is a robot. Sensors are the devices that give robots access to this. In this class, you will learn how to allow your robot to see, hear, feel (e.g., force, pressure, temperature), and even smell (e.g., detect levels of CO<sub>2</sub> or other matter in the air). Students in this course will learn to deploy sensors and work with the Arduino platform within a robotics context. They will gain hands-on experience and experimentation. *NOTE: Students do not need to take Robotics I in order to take Robotics II.*

### HEAD INSTRUCTOR

**David Trevas**, Ph.D. in Mechanical Engineering

*Day Job:* University faculty member of mechanical engineering

## SELF-DRIVING TECHNOLOGY: GUIDANCE, NAVIGATION, AND CONTROLS

*In-Person Only* June 16 | June 23 | July 7 | July 14

A gentle introduction to the art of GNC. Students will be introduced to the foundations of guiding, navigating, and controlling things in a 3D world. Coursework will include hands-on examples of the underlying principles in self-driving cars. Explore the unique innovations of electronic vehicles versus the aerospace approach to GNC. Students will engage in light numerical coding recipes but walk away with a firm understanding of the need for Kalman filters, the need for quaternions in the 3D rotational space, and lastly what a career in signal processing and machine learning would entail for a student seeking to enter the field of electric vehicles.

### HEAD INSTRUCTOR

**Marquette Trishaun**, B.S. in Electrical and Electronics Engineering

*Day Job:* STEM education entrepreneur

# OUR STUDENTS AND PARENTS SAY...

"I really enjoyed being able to interact with college students graduating from computer science, as it is where I see myself a few years into the future. My instructor was able to show us a few of his college assignments, which offered a lot of insight into what studying CS would be like."

- Sebastian C., Senior

"The course exceeded my expectations in terms of learning, atmosphere, and providing me with a better understanding of future learning and career paths."

- Anna B., Freshman

"I learned a lot more than I thought - it wasn't just your average coding course. The people there and the program content itself were amazing."

- Massimo A., Sophomore

"Both of my classes dove much deeper into the topics than I expected while still staying at an intermediate level that was understandable. Leadership labs had the largest impact on me as it demonstrated the importance of critical thinking in relation to engineering problems"

- Luke L., Junior

**84%**

of students said their course(s) provided them with a better understanding of career options in this program field.

**97%**

of students said their course(s) gave them a deeper knowledge base of the program content.

**84%**

of students said their instructor(s) made learning fun.

**97%**

of students agreed that their instructor(s) had a strong knowledge of the curriculum & activities.

**100%**

of parents said their students' experience met or exceeded their expectations.

"I didn't know what to expect when I applied for the camp, but I learned what I signed up for and the instructors were fun and knowledgeable. Learning how to code using python and having everything centered around it impacted me the most and I enjoyed that it was very hands-on."

- Victoria N., Sophomore

"The leadership sessions were most impactful for my son to learn more about project management, presentation styles, and all of the opportunities at RCEL."

- Cynthia C., Parent

"It was much more fun than a similar camp I did at another university. I thought it would be as fun or less, but it was more fun and also much more learning oriented."

- Aiden V., Senior

"The biggest thing for me was learning how to code with C++ and connecting the coding process to other fields like math and physics. The course helped me understand this process as well as thinking critically to code solutions to math and physics problems."

- Osman P., Sophomore

# IN PERSON

	DATES	TUITION
RESIDENTIAL PROGRAM	June 16, June 23 July 7, July 14	\$3,795
COMMUTER PROGRAM	June 17, June 24 July 8, July 15	\$1,695

## Residential program

SUNDAY — SATURDAY

Students will choose two courses from the offered list—one AM, one PM. Courses will include 3 hours of course time per day, including asynchronous instruction and application work. Engineering Leadership workshops will take place daily, and evening activities will focus on College Readiness and the College Experience.

## Commuter program

MONDAY — FRIDAY

Students will choose two courses from the offered list—one AM, one PM. Courses will include 3 hours of course time per day, including asynchronous instruction and application work. Engineering Leadership workshops will take place daily, after lunch.

DAILY DROP-OFF / CHECK-IN WINDOW  
8:00 a.m. – 8:30 a.m.

DAILY PICK-UP / CHECK-OUT WINDOW  
5:15 p.m. – 5:45 p.m.

# VIRTUAL

Students will choose one or two courses that are available for that week. Courses will include 3 hours of work time per day, including asynchronous instruction and application work.

	DATES	TUITION
VIRTUAL PROGRAM	June 17, June 24 July 8, July 15	\$695





# Program Options

Most courses are offered in-person and virtually, to reach as many future tech and engineering leaders as possible.



## SCHOLARSHIPS

WorldStrides offers a limited number of partial scholarships to qualified students each year based upon financial need, scholastic merit, leadership achievement, and eligibility for our diversity, equity, and inclusion scholarship. Submission of a scholarship application is required to be considered for an award. Students also have the opportunity to create fundraising drives to help offset the cost of tuition.

WorldStrides offers a variety of financial assistance options, including our comprehensive [fundraising guide](#). Please contact our team at 844-219-7334 for more information.

## PAYMENT PLANS

Our payment installment plan will be offered upon your enrollment.

# FAQ's

## WHAT'S INCLUDED IN TUITION?

All course activities & materials, instruction, and supervision are included in tuition. For residential students, program tuition includes accommodations on a university campus and all meals. For commuter students, program tuition includes classroom facilities access and lunch each day.

Transportation to and from the program is not included in tuition. For residential students, shuttle service between the airport and the program location may be purchased at an additional fee.

## SAFETY & SUPERVISION FOR RESIDENTIAL

The safety and security of all students is our number one priority. We greet residential students at designated airport locations within our flight window, conduct nightly room checks, and patrol student areas throughout the day and evening.

Staff are available 24 hours a day in case of emergency. The student-to-staff ratio is approximately 12:1.

## OUR STAFF

**Head Instructors:** Industry professionals who have earned Ph.Ds. in the topic of their course and extensive real-world experience in engineering and technology.

**Student Instructors:** High-achieving Rice University undergraduate and graduate students in engineering and computer science.

**Evening Advisors:** These individuals are career or future educators who work with our age group throughout the school year. They receive thorough training on the curricular and health & safety components of the program and bring extensive experience with youth development and in-classroom management. Their professional experiences promote an engaging-yet-challenging on-campus environment.

We are proud of the diversity that our staff brings to the program, coming from all parts of the U.S. and the world. This diversity is designed to reflect our student population.

## HEALTH & SAFETY

As always, the well-being of our scholars and staff is our priority. We implement first-rate health, safety, and risk-management protocols into all our programs, based on recommendations from our Health & Safety Team and medical advisors. We're also committed to evolving our policies and protocols to reflect our program partners' requirements, public policy, and the Centers for Disease Control and Prevention (CDC) guidelines. To see our current standards, visit: [worldstrides.com/safety-and-security/](https://worldstrides.com/safety-and-security/)





# Ready to build the future?



[REGISTER](#)

