

## Self-eSTEM 2025 STEM Exploration Camp Description

### Camp Summary Description

- **Date:** Monday, July 14 – Saturday, July 19, 2025
- **Location:** Oakland Technical High School (4351 Broadway, Oakland, CA 94611)
- **Hours:** 9:00am – 4:30pm PST
- **(Saturday only,** the “Close Out Celebration” event hours are 11:00am – 1:00pm PST)
- **Theme:** From Blocks to Breakthroughs: The Future is Autonomous and Code Your Way to Robotics & AI
- **Project-based activity:** Participants will engage in robotics-focused ideation to define and explore real-world challenges in mobility and automation.

**Description:** As the world adapted to the global pandemic and continues to adapt through this digital age, robotics and automation will be the “new normal.” The World Economic Forum (WEF) shared a recent report that “a new generation of smart machines, fueled by rapid advances in artificial intelligence (AI) and robotics, could potentially replace a large proportion of existing human jobs.” WEF stated **“automation will replace about 85 million jobs by 2025,... and... the future tech-driven economy will create 97 million new jobs,”** ([Forbes.com](https://www.forbes.com)).

Participants will leverage their STEM skills to develop innovative solutions that address real-world challenges in **mobility** and **AI/automation**. Using robots as autonomous (self-driving) vehicles, students will design and create their own micro-cities or environments. Through problem-based learning, they will assemble and program small robots, applying coding concepts and techniques to solve mobility-related and automation problems.

As part of the experience, students will receive an introduction to city planning and design principles. Our Innovators will then **build 2D and 3D models of cities and environments**, and program their robots to complete tasks that tackle specific mobility or automation challenges. The integrated lessons include the application of math, NGSS science, arts and ELA embedded in technology and engineering. **Coding with robots introduces critical thinking, problem solving, the scientific method, algorithms, and more!** Our Innovators will continue to practice Self-eSTEM’s **“Future of Work”** skills and principles by presenting their work to peers and community partners.

In addition to the fun, interactive games and activities, Innovators will take a corporate business trip to **Intuitive Surgical’s** headquarters to learn about careers in medical tech, software development, coding and robotics trends. **By the end of camp**, the participants will achieve the following learning objectives:

- Increase knowledge and awareness of the city planning, engineering design cycle, autonomous cars (**AI/automation**) and robots
- Gain hands-on experience in how robots are assembled (**hardware and key components**), controlled and programmed (via **block-based and python coding**)
- Improve their tech and math skills through the application of computer science principles by creating and coding their very own robots
- Strengthen their **social-emotional skills** to build confidence, collaborate with others, and drive make better decision-making
- Increase awareness and interest in **STEM career pathways** in science, autonomous/AI programming and robot automation

## Agenda Overview

Monday, July 14	Tuesday, July 15	Wednesday, July 16	Thursday, July 17	Friday, July 18	Saturday, July 19
9:00am-4:30pm	9:00am-4:30pm	9:00am-4:30pm	9:00am-4:30pm	9:00am-4:30pm	11:00am-1:00pm
Overview, Project Requirements, City Planning, Challenge Selection & Robots Assembly	City Design & Build (Engineering), Autonomous Cars & Computer Programming	Programming Robots & continue project activities	STEM Partner field-trip to <b>Intuitive Surgical</b> in to Sunnyvale from <b>10am-2pm</b>	Continuation of Monday, through Thursday project activities  <b>Team Pitch Presentation</b>	<b>Close Out Celebration</b> (Food, Presentations, Certificates, Photos & Guest Speaker).
-	-	-	<b>Parents &amp; Volunteers</b> Charter bus pick-up & drop-off at Oakland High School.	-	<b>Parents &amp; Volunteers</b> Please sign-up to attend the celebration.