OAKLAND UNIVERSITY™

STEM OUTREACH OPPORTUNITY

REGISTRATION IS OPEN FOR 2017 SUMMER STEM CAMPS

Oakland University's School of Engineering and Computer Science offers weekly programs for **upper elementary, middle and high school students** who want to explore Science, Technology, Engineering and/or Mathematics (STEM). Students are taken through a series of hands-on, student-centered experiences where they learn a little bit about each of the engineering fields. Students build and test equipment and conduct experiments in the various STEM disciplines.

2017 Summer Camp Descriptions

Week long summer **Day Camps** are offered Mondays through Fridays in June, July and August from 8 a.m. to 3 p.m. on the campus of Oakland University.

NEW FOR 2017

Oakland University is offering an overnight Engineering Exploration **Residential Camp** from June 25 to 30. Students will spend each day at camp and experience other on-campus activities in the evening while staying in a residence hall on campus.

Oakland University also offers **Custom Camps**. Enabled by our curricula, we provide a camp and activities that fit your goal for STEM enrichment. Tell us your program goals and we deliver. Custom groups can be tailored for groups of 12 or more. Dates TBD. To learn more about Custom Camps, please email mrdonoghue@oakland.edu.

Advanced Mathematical Problem-Solving and Computer Science for High School Students

August 14 – 18

Open to high school students

This camp is for students who are advanced in mathematics. Students will spend half of the day working through story problems that will involve different math, science, engineering, critical-thinking and problem-solving skills.

Advanced Mathematical Problem-Solving and Computer Science for Middle School Students

August 7 – 11

Open to middle school students

This camp is for students who are advanced in mathematics. Students will spend half of the day working through story problems that will involve different math, science, engineering, critical-thinking and problem-solving skills.

Algebra I Readiness

August 7 – 11

Open to middle and high school students

This mathematics course is for students who are struggling with Algebra I. Employing a "problem-based classroom" teaching approach, the instructor will give the students a binder full of Algebra I practice problems. Students will complete problems in pairs.

Algebra II Readiness

July 31 – August 4

Open to middle and high school students

This mathematics course is for students who are struggling with Algebra II. Employing a "problem-based classroom" teaching approach, the instructor will give the students a binder full of Algebra II practice problems. Students will complete problems in pairs.

Analogue and Digital Circuits

July 24 – 28

Open to upper elementary, middle and high school students

This camp is designed for students who have an interest in electrical engineering. Aspects of electrical engineering are introduced in a hands-on manner. Students will spend each day doing lab activities designed to get them thinking about electrical engineering.

Bioengineering

June 26 – 30, August 14 – 18

Open to upper elementary, middle and high school students

This camp is designed for students who have an interest in Bioengineering. Students will get an overview of what Bioengineering is and how it is used in the real world.

Computer Science Advanced

July 5 – 7, July 17 – 21

Open to middle and high school students

This camp is for students who have already attended a computer science camp, or are themselves advanced computer programmers. Topics will be more challenging and continue into deeper programming concepts.

Computer Science Basic

June 26 – 30, July 31 – August 4

Open to middle and high school students

This camp is designed for students who have an interest in computer science. Students will learn computer programming, website coding and development, app development for mobile devices, and video game design.

Energy and Structures

July 31 – August 4

Open to upper elementary, middle and high school students

This camp is designed for students who have an interest in mechanical engineering. Students will be introduced to a variety of disciplinary topics including building roller coasters to study energy conversion, velocity and acceleration, building and testing wind anemometers and turbine blades, energy management topics in homes, energy conservation, making and testing battery cells, and other relevant project-based topics.

Engineering Exploration

June 12 – 16, July 5 – 7, July 24 – 28, August 7 – 11

Open to upper elementary, middle and high school students

This camp is designed for students who are new to our summer camps and want to learn about the full variety of core STEM concepts. Different types of engineering are introduced each day in a hands-on, student-centered manner. Students will spend each day performing lab experiments and activities designed to give them a broad view of STEM disciplines.

Geometry Readiness Camp

July 31 – August 4

This mathematics course is for students from grades 6-12 who are struggling with Geometry. Employing a "problem-based classroom" teaching approach, the instructor will give the students a binder full of Geometry practice problems. Students will complete problems in pairs. Students who struggled in a previous Geometry or Algebra I course would be a good fit for this camp.

Ground Robotics

June 19 – 23 (elementary only), June 26 – 30 (middle school only), July 10 – 14 (high school only), July 17 – 21 (elementary only), July 31 – August 4 (middle school only), August 7 – 11 (high school only)

Open to upper elementary, middle and high school students

This introductory-level camp is for students who are new to robotics. Students will work with Lego Mindstorms and VEX Robots depending on grade level and capability. The Mindstorm will introduce basic GUI (Graphical User Interface) programing. With VEX, students will begin by building the basic clawbot and work with the remote controlled robot to compete in a team-based activities against other teams.

Minecraft

June 19 – 23, July 10-14, August 14 – 18

Open to upper elementary and middle school students

This course is for students who are only somewhat familiar with Minecraft, either from using it online or in a video game. Students will spend each day in a lab playing the game, but with an educational component to each challenge.

Pre-Algebra Readiness Camp

August 14 – 18

Open to middle and high school students

This mathematics course is for students who are struggling in their math courses. Employing a "problem-based classroom" teaching approach, the instructor will give the students a binder full of pre-algebra practice problems. Students will complete problems in pairs. Then they will review them on the board, with their peers, and with the instructors. Students who struggled in a previous Geometry or Algebra I course would be a good fit for this camp.

VEX Robotics

July 24-28, August 14 – 18

Open to middle and high school students

This introductory-level camp is for students who are currently on a VEX Robotics team or plan to be on one this upcoming school year. The curriculum in this camp will be designed in collaboration with the Robotics Education & Competition (REC) Foundation. Employing a "project-based classroom" teaching approach, the instructor will give the students the directions for building the basic clawbot and allow them to build in groups of two to five, depending on class size. Once the robots are built, the instructors will teach RobotC programming.

RESIDENTIAL PROGRAM

Engineering Exploration Residential Camp

June 25 – 30

Open to high school students

This camp is designed for students who would like to be exposed not only to the different types of engineering but receive the entire university experience. Students will spend each day, 8:00 am to 3:00 pm, attending the engineering exploration camp. In the evenings, students will experience other activities on campus including the recreation center, the fire pit, and residence halls.

Student should be new to our summer camps and want to learn about the full variety of core STEM concepts. Different types of engineering are introduced each day in a hands-on, student-centered manner. Students will spend each day performing lab experiments and activities designed to give them a broad view of STEM disciplines. For example, students will build Edison Light Bulbs with mason jars, graphite, and batteries, or put together analog circuits, or write computer code for a certain purpose, or make slime to learn about physical and chemical reactions. These lab exercises are designed to be informative and fun, with a big 'wow' factor attached.

Learn More

For more information, including detailed program descriptions, age ranges, prices, drop-off and pick-up procedures, visit oakland.edu/secs/outreach-programs or e-mail SECSOutreach@oakland.edu.

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