

SCLA STEM Program

WHAT IS STEM?

STEM stands for Science, Technology, Engineering, Math. STEM courses and programs have never been more valuable than they are today. Business leaders have been seeking individuals with 21st-century learning capabilities for the past two decades, and STEM is simply another way SCLA can prepare students for careers beyond high school.

HOW IS IT TAUGHT?

Project Lead The Way (PLTW)—the curriculum SCLA uses for some of its STEM courses—uses the Activity-Project-Problem approach. Students use industry tools and technology in hands-on experiences where they develop skills in communication, collaboration, critical thinking, and creativity. Problem-solving is the name of the game, and both the PLTW and non-PLTW courses are loaded with it.

WHY IS IT VALUABLE FOR SCLA STUDENTS?

The need for individuals to fill STEM-related careers has exploded, and students explore components of these careers throughout the curriculum. Significant college scholarships are available for STEM-related programs.

WHO CAN TAKE STEM CLASSES AT SCLA?

In grades 6-8, all students take a semester-long STEM class each year. In grades 9-12, STEM classes are offered as electives. Enrollment is limited for each section, so early enrollment is important.

IS THERE A COURSE FEE?

There is no fee for grades 6-8 for the required STEM science courses. In grades 9-12, there is an initial \$500 fee for the student's first course. This fee helps offset costs of technology and materials specifically for these courses.

WHAT STEM CLASSES ARE OFFERED AT SCLA?

MIDDLE SCHOOL (three-year rotation)

Design and Modeling (DM) - Students apply the design process and use modeling software to solve problems.

Automation and Robotics (AR) - Students design robots using mechanisms, program them, and troubleshoot.

Green Architecture (GA) - Students explore principles of construction and home design, integrate components to maximize energy efficiency, and design homes using CAD software.

HIGH SCHOOL

Engineering Essentials (EE) - Students will learn foundational concepts of engineering practice. The course provides student opportunities to explore the breadth of engineering career paths and to solve engaging and challenging real-world problems through engineering essentials.

Introduction to Engineering Design (IED) - Students complete hands-on projects through the design process while using 3D modeling software to study engineering concepts and document their work. Offered every other year opposite POE. (Prerequisite: EE)

Principles of Engineering (POE) - Students explore a broad range of engineering topics including mechanisms, the strength of structures and materials, and automation, while developing skills in problem solving, collaboration, research, and design. Offered every other year opposite IED. (Prerequisite: EE)

Introduction to Computer Science (ICS) - Students are introduced to the basics of computer science and programming (e.g., data types, logic, algorithms, searching). Societal impacts of computing and technology are also discussed.

Computer Science Principles (CSP) - Students dive more deeply into the concepts covered in ICS, while also covering more advanced topics. The impact of computing on society continues to be discussed. (Prerequisite: ICS)

Dual Credit Computer Science (DCCS) - Students continue to deepen their knowledge and understanding of programming principles through one semester of Python and one semester of Java. Additional costs (through the partner college) apply. Offered every other year opposite Cybersecurity. (Prerequisite: CSP)

Cybersecurity - Students learn how to identify cybersecurity threats and protect against them, detecting intrusions and responding to attacks. Personal digital footprints are examined and defense of personal data is also discussed. Offered every other year opposite DCCS. (Prerequisite: CSP)

