

# St. Croix Lutheran 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 SCL can prepare students for careers beyond high school.

## HOW IS IT TAUGHT?

Project Lead The Way (PLTW) - the curriculum SCL 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 SCL 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 SCL?

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.

## IS COLLEGE CREDIT AVAILABLE?

High school students can receive transcribed credit for some of the PLTW courses from participating universities (including schools like St. Cloud State University and Minnesota State University-Mankato). There is an additional fee, and certain course requirements may need to be met.

## WHAT STEM CLASSES ARE CURRENTLY OFFERED AT SCL?

### Middle School (on a 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 focus on the design process and mathematical concepts fundamental to engineering, which allow them to sketch and design 3D models to solve proposed problems. (Prerequisite: EE)

Introduction to Computer Science (ICS) - Students are introduced to the basics of computer science and programming, e.g., data types, logic, algorithms, and 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)

STEM Capstone - In this independent-study-style course, students use what they have learned in previous STEM courses (including math, science, and technology courses outside of the pre-engineering curriculum) to creatively solve problems.

## WILL ADDITIONAL COURSES BE OFFERED IN THE FUTURE?

As interest (and enrollment) increases, SCL may offer additional STEM courses.



**Educating the Total Student. Spiritually, Intellectually, Physically.**