



# Panther Career Bridges

## PLTW Engineering

Cass Lake - Bena High School

Explore a variety of careers in Engineering, design and manufacturing and digital electronics. Use design software, investigative engineering concepts, learn design specifications and explore bio- technologies.

### Academic Courses

- Introduction to Engineering Design
- Engineering Design and Development
- Principles of Engineering
- Environmental Sustainability

### Career Experiences

- Learn from industry speakers
- Work with real life industry projects
- Tour local businesses
- Attend the Bridges Career Exploration Day or other regional career fairs

### Completion Standards

#### COMPLETE

- Intro to Eng
- Design & Eng
- Design/Develop
- + one course

GRADES

**B** ↑

ATTENDANCE

**80%**

Earn a **certificate** and **green cord** at graduation



**Explore types of careers**  
[www.careerwise.minnstate.edu/careers](http://www.careerwise.minnstate.edu/careers)

**Review the local job outlook**  
[www.careerwise.minnstate.edu/jobs](http://www.careerwise.minnstate.edu/jobs)

**Find postsecondary programs**  
[www.careerwise.minnstate.edu/education](http://www.careerwise.minnstate.edu/education)

### Job Skills

In addition to having technical skills, employers expect workers in this industry to have these skills:

- Listening skills
- Be an active member of a team
- Use critical thinking and critiquing skills
- Effectively communicate
- Time management



[www.BridgesConnection.org/CassLakeBena](http://www.BridgesConnection.org/CassLakeBena)

# PLTW Engineering Career Bridge

Cass Lake - Bena High School

Project Lead the Way Engineering Career Bridge allows students to explore the variety of careers in engineering, design, manufacturing and digital electronics. Students will use design software, investigate engineering concepts, learn design specifications and explore biotech engineering. Hands-on projects and experiences are an integral part of these courses.

## ACADEMY COURSES

### **Introduction to Engineering Design IED** — 1 High School Credit and/or 3 College Credits

The major focus of this course is the design process and its application. Through hands-on projects, students apply engineering standards and document their work. Students use industry standard 3D modeling software to help them design solutions to solve proposed problems, document their work using an engineer's notebooks and communicate solutions to peers and members of the professional community.

### **Engineering Design and Development EDD** — 1 High School Credit and/or 3 College Credits

In this capstone course, students work in teams to design and develop an original solution to a valid open-end technical problem by applying the engineering design process. Students perform research to choose, validate and justify a technical problem. After carefully defining the problem, teams design, build and test their solutions while working closely with industry professionals who provide mentoring opportunities. Finally, student teams present and defend their original solutions to an outside panel. This course is appropriate for 12<sup>th</sup> grade student.

### **Principles of Engineering POE** — 1 High School Credit and/or 3 College Credits

This survey course exposes students to major concepts they'll encounter in a post-secondary engineering course of study. Topics include mechanisms, energy, statistics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

### **Environmental Sustainability ES** — 1 High School Credit and/or 3 College Credits

Students will study the application of the engineering process while finding solutions to the world's environmental challenges: clean water, abundant food and sustainable energy. Students will complete projects and labs that explore water treatment processes, genetic modification of crops and alternative energy. Students who complete the course with a B or better and pass the PLT end exam will earn college credit.

**COMPLETION STANDARD:** Students wishing to receive a certification must complete Introduction to Engineering Design and Engineering Design and Development courses and complete one additional class with a 'B' average or better. Students must have an 80% or higher attendance. Student must take the PLTW test and complete the Design and Development final presentation to a community partner audience.

**CAREER EXPERIENCES:** Students will explore and research careers with industry speakers, attend Bridges Career Exploration Day, and other career fairs, tour local businesses, and work with real life industry projects.

### **JOB SKILLS:**

In addition to having technical skills, employers expect their workers to have other skills such as: Listening skills, manage tools and equipment, use critical thinking skills, effectively communicate, and time management

**CAREER OPTIONS:** [www.careerwise.minnstate.edu/careers](http://www.careerwise.minnstate.edu/careers)

**JOB OUTLOOK:** [www.careerwise.minnstate.edu/jobs](http://www.careerwise.minnstate.edu/jobs)

**POSTSECONDARY PROGRAMS:** [www.careerwise.minnstate.edu/education](http://www.careerwise.minnstate.edu/education)

