



Bridges Career Academy

PLTW Engineering

Brainerd High School

Explore the variety of careers in engineering, design, manufacturing and digital electronics. Use design software, investigate engineering concepts, learn civil engineering design specifications and explore biotech engineering. Participate in hands-on projects and experiences.

Academic Courses

- CIS Intro to Engineering Design
- CIS Principles of Engineering
- CIS Civil Engineering/ Architecture
- CIS Computer Science
- CIS Chemical Engineering
- CIS Biological Engineering

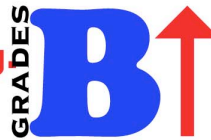
Career Experiences

- 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

- CIS Intro to Eng. Design AND CIS Principals of Eng**
- + one course**



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



Job Skills

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

- Listening skills
- Manage tools and equipment
- Use critical thinking skills
- Effectively communicate
- Time management

Explore types of careers

www.careerwise.minnstate.edu/careers

Review the local job outlook

www.careerwise.minnstate.edu/jobs

Find postsecondary programs

www.careerwise.minnstate.edu/education



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

ACADEMY COURSES

CIS Introduction to Engineering Design — 1 High School Credit and/or 3 College Credits

Students learn the 12-step engineering design process, basic use of Autodesk Inventor, basics of structural, visual and functional analysis. The course is project based, and students learn through presentations and projects.

CIS Principles of Engineering — 1 High School Credit and/or 3 College Credits

This course helps students understand the field of engineering through project-based activities. Students are required to explore various technology systems and engage in design processes. Students will understand how and why math, science technology and engineering fit together.

CIS Civil Engineering and Architecture — 1 High School Credit and/or 3 College Credits

Students will study of the design and construction of residential and commercial building projects. The course is an introduction to the varied factors involved in building design and construction including building components and systems, structural design, storm water management, site design, utilities and services, cost estimation, energy efficiency, and careers in the design and construction industry.

CIS Computer Science — 1 High School Credit and/or 3 College Credits

Using Python as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration.

CIS Chemical Engineering — 1 High School Credit and/or 3 College Credits

Students will explore how chemical engineering techniques will improve global access to clean water and renewable fuel sources. Students will design and build a water filter and test water for various contaminants. Students will make various biofuels including biodiesel and analyze how biofuels from renewable sources like algae and yeast can reduce the amount of greenhouse gases in the atmosphere. This course is PLTW Environmental Sustainability.

CIS Biological Engineering ---1 High School Credit and/or 3 College Credits

Students will explore how biological engineering contributes to feeding a growing human population by increasing nutritional content in staple food crops, eliminating the need for pesticides and herbicides, and creating drought and frost resistant crops. Students will test foods for the presence of GMO's, manipulate DNA, conduct PCR and gel electrophoresis, engineer their own plasmid, transform bacteria, clone a gene, and more. This course is PLTW Environmental Sustainability.

COMPLETION STANDARD

Students wishing to receive a certification must complete CIS Introduction to Engineering Design and CIS Principals of Engineering courses and complete one additional class in the Academy. Students must pass classes with an average of at least 85% and, if offered, pass the nationally normed PLTW test with a score of 70% or better. Students will also participate in the ACT National Career Readiness Certificate (NCRC).

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.

-OVER-

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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
- Time management

CAREER OPTIONS: www.careerwise.minnstate.edu/careers

JOB OUTLOOK: www.careerwise.minnstate.edu/jobs

POSTSECONDARY PROGRAMS: www.careerwise.minnstate.edu/education