

DEPARTMENT: SCIENCE

NAME OF COURSE: COMPUTER INTEGRATED MANUFACTURING

GENERAL DESCRIPTION OF COURSE

Manufactured items are part of everyday life, yet most students have not been introduced to the high-tech, innovative nature of modern manufacturing. This course illuminates the opportunities related to understanding manufacturing. At the same time, it teaches students about manufacturing processes, product design, robotics, and automation. Students can earn a virtual manufacturing badge recognized by the National Manufacturing Badge system.

Computer Integrated Manufacturing is a specialized course within the PLTW Engineering Program. This course teaches the fundamentals of computerized manufacturing technology. It builds on the solid-modeling skills developed in the Drawing and Design for Production: Introduction to Engineering Design Course. Students use 3-D computer software to solve design problems. They assess their solutions through the relationship of design, function and materials, modify their designs, and use prototyping equipment to produce 3-D models.

Course Expectations:

Students will demonstrate:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- an ability to function on multi-disciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- an ability to read at least 100 pages of technical reading

TEXTBOOKS

- None

REQUIREMENTS

Lessons will require both independent and group work, using the latest in drafting technology. Students will be required to use CAD software extensively during the course of this program. Work is submitted both electronically and hard-copy.

Students will also learn how to document their work, and communicate their solutions to their peers and members of the professional community.

GRADING PROCEDURES

Grades are determined by a combination of projects, reports, drawings, performance of students' designs, etc., in addition to traditional exams, quizzes and homework.