



# Product Design

## Grand Haven High School



**Course Number:** 117

**Grade Level:** 9-12

**Credits:** 1

**Prerequisite Courses:** None

### Course Description

Students use 3D solid modeling CAD software to generate: 3D models, assemblies, and 2D layout drawings. Students study design concepts and use Additive Manufacturing to translate conceptual design into reproducible products. This course is supported in partnership with SME PRIME.

### Course Objectives

Learn the fundamentals of the engineering design process and how to use the powerful 3D modeling capabilities of Parametric Modeling software and FDM 3D printing technology. Design projects utilize the engineering design process to create design solutions that are designed for manufacturability and assembly.

### Student Expectations

Be an attentive listener and active learner. Ask questions when something doesn't make sense, chances are you are not the only one with questions. This is a project-based class and you may need to spend extra time outside of class to complete assignments and projects. Come in during Academy, open lab hours after school, and/or by appointment. Students are responsible for technology and equipment used in class; abide by technology code of ethics.

### Communication

casej@ghaps.org

616-850-6165

Using Google Classroom, announcements, lessons, and assignments are posted and updated daily. Considerable emphasis is placed on student-centered activity, project, problem-based learning.

### Grading Policy

Assignments 100%

### Building Behavioral Expectations

***TEAM GH ... One Team, One Family, One Grand Haven. Be Kind. Always.***

It is our expectation that ALL GHHS students, staff and parents will ... always give their best **EFFORT** in everything that they do, work hard to be **INCLUSIVE** of each other, show **RESPONSIBILITY** in class, the hallways, cafeteria and at events, and **WORK TOGETHER** at all times!

**Together, Excellence, Accountability, Mindfulness... GO BUCS**

## Scope and Sequence

Welcome  
Onshape CAD Software  
User Interface  
Onshape Learning Center  
Sketching in Onshape  
Part Design using Part Studios  
Introduction to FDM 3D Printing  
Orthographic Projection  
Part Drawings using Onshape  
Primary Auxiliary Views  
Sections  
Multi-Part Part Studios  
Dimensioning Terminology and Application  
Onshape Assemblies  
Branching and Merging in Onshape  
Engineering Working Drawings  
Engineering Design Process  
Parametric Solid Modeling Projects  
Design Challenges

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