Design and Manufacturing 1
Grand Haven High School

Course Number: I20
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. Tutorial based, hands-on, exercise-intensive approach to create and read engineering drawings and become proficient using common features of Onshape. 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 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.

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

Grading Policy
Assignments 100%

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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