STEM INNOVATION ACADEMY OF THE ORANGES
9TH GRADE MECHANICAL ENGINEERING NEWSLETTER

JANUARY GOALS

Objective:

- Build a physical representation of an object based on graphical representations .
- Generate an annotated multi view drawing using Computer-aided design (CAD) software.

CAD Skills:

- Create and constrain a 3D model to represent the physical characteristics of a physical object.

Goals Moving Forward for February

- Present information, findings, and supporting evidence clearly, concisely, and logically, appropriate to the purpose and task.
- Identify joints that allow movement between parts in an assembly and the resulting degrees of freedom.
- Describe the processes and purposes of reverse engineering.

2024 STEM Panel Presentations
February 6th- February 8th
All scholars should be in their STEM DRESS UNIFORM

WHAT IS IED?

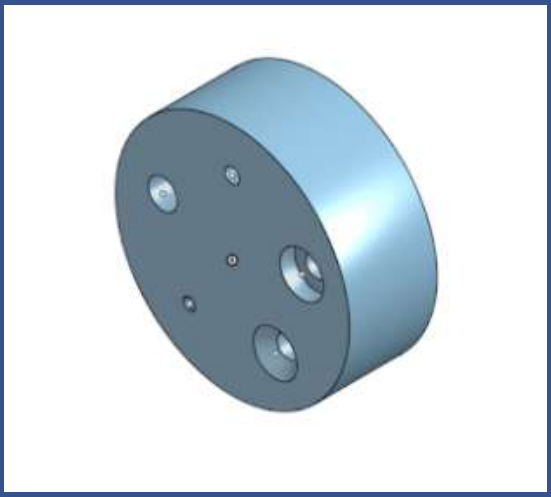
Introduction to Engineering Design (IED) is a PLTW high school level course that digs deep into the engineering design process, applying math, science and engineering standards to hands-on projects. Students adopt a problem-solving mindset, are engaged in compelling, real-world challenges that help them become better collaborators and thinkers. Students are prepared with the skills to step into any career path they take.

VISIT THE NEXT PAGE TO SEE STUDENT DESIGNS AND APPLIED SKILLS

STUDENT DESIGNS AND APPLIED KNOWLEDGE

Computer-Aided Design (CAD) skills

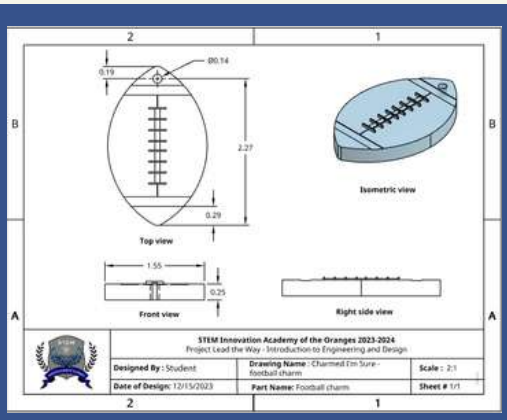
Learning about, and identifying holes is a major piece in the field of engineering since holes are often used to make a product function properly. During class, we learned about the three basic types of holes, simple, counter bore and countersink.
It was essential to learn this as we will implement holes in projects such as the “Charmed I’m Sure” project which requires us to design a 3D model and use specific holes to ensure that the product functions accordingly.

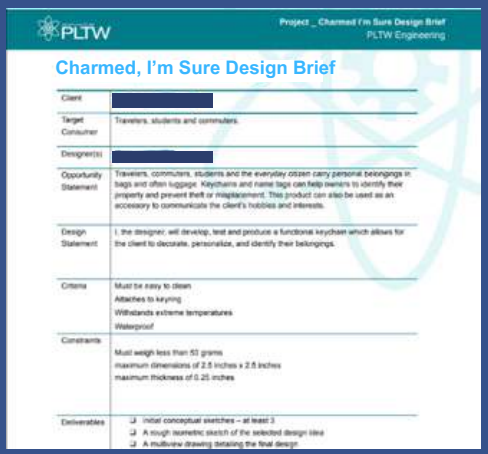


This is an assignment that was completed by a student, using the Onshape software, to design holes based on their functions and measurement. Onshape is a computer aided design platform that we use in the engineering classroom.

Charmed, I’m sure project

For this project, students took the position of both customers and designers to create a customized 3D charm. Students interviewed each other and created design briefs to suit the personalized requests of their clients. To create a 3D charm, STEM scholars were instructed to create a digital sketch using the computer aided design platform *Onshape*, while following design criteria and constraints. After the digital design, students were taught how to print their charms using a 3D printer.





Design brief and student annotated design

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