ENGINEERING DESIGN - TEC 151/152

COURSE DESCRIPTION

TEACHER INFORMATION

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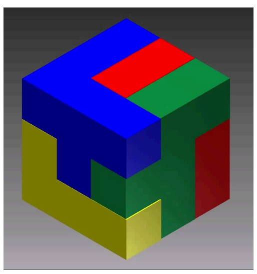
RESOURCES

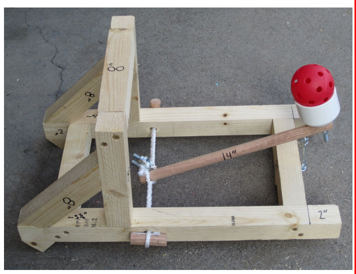
Course Website	www.shsteched.com/courses/IED	**Google Classroom**	Classroom Link (code will be given in class)	**Check Grades**	Interactive Report Card (irc.d125.org)

COURSE DESCRIPTION

Introduction to Engineering Design is a full-year course available to all students. In this course, students use 3D solid modeling design software to help them design solutions to solve proposed problems. Students will then use high tech equipment including 3D printers, a laser engraver, and CNC router to produce their solutions. Students will learn how to document their work and communicate solutions to peers and members of the professional community. The major focus of the IED course is to expose students to the design process, research and analysis, collaboration skills, communication methods, global and human impacts, engineering standards, and technical documentation. Students may receive college credit and/ or advanced standing for successful completion of this course and a cumulative exam.



3D Modeling



Catapult

Reverse Engineering

Prosthetic Hand

EVIDENCE-BASED REPORTING (EBR)

This course uses Evidence-Based Reporting to communicate student progress. The purpose of Evidence-Based Reporting is to ensure that a student's grade truly reflects his or her mastery of course standards. Evidence-Based Reporting gives a student the opportunity to grow their knowledge and skills throughout the semester. To learn more about Evidence-Based Reporting, please visit: myebrexperience.com

PROFICIENCY SCALES

This scale will be used to communicate student progress in each learning target. The codes 1, 2, 3, 4, and M will be used to report student performance through the Interactive Report Card (IRC). The Interactive Report Card (IRC) will be used to communicate student progress in each learning target. It will also be used to communicate missing assignments, teacher comments, Social and Emotional Learning (SEL) concerns, and predicted grades.

4	**3**	**2**	**1**	**M**
Exceeds Mastery	Demonstrates Mastery	Approaching Mastery	Developing Foundational Skills	Missing Evidence *Can Be Turned In Until Final Deadline*

LEARNING STANDARDS AND TARGETS

SKILL 1 - ENGINEERING NOTEBOOKS

1.1 Engineering Notebook Documentation [Success Criteria]
I use all essential components and best practices to clearly and accurately document coursework.

EXCEEDS EXPECTATIONS	MEETS EXPECTATIONS	APPROACHING EXPECTATIONS	STILL DEVELOPING
Implements supplementary components that add deeper insights into the design effectiveness or design preparations in addition to meeting all criteria	Engineering notebook establishes the design challenge through its background components and communicates the design's effectiveness in the supporting components while demonstrating the best technical practices	Engineering notebook begins to establish the design challenge through its background components and communicates the some of the design's effectiveness in the supporting components while demonstrating some technical practices	Engineering notebook does not establish the design challenge through its background components and does not communicate the design's effectiveness in the supporting components without demonstrating the proper technical practices

SKILL 2 - TECHNOLOGY

2.1 Computer-Aided Design (CAD) [Success Criteria]
I operate 3D CAD Modeling software (Inventor) to accurately design and document products while adhering to all engineering CAD modeling standards.

EXCEEDS EXPECTATIONS	MEETS EXPECTATIONS	APPROACHING EXPECTATIONS	STILL DEVELOPING
The Computer Aided Design file effectively represents a design's form, fit, and/or function without any errors in modeling and presentation of design while using advanced tools that streamline the design process	The Computer Aided Design file effectively represents a design's form, fit, and/or function without any errors in modeling and presentation of design	The Computer Aided Design file to mostly represents a design's form, fit, and/or function with some errors in modeling and presentation of design	The Computer Aided Design file misrepresents a design's form, fit, and/or function with errors in modeling and presentation of the design

SKILL 3 - Supplementary Design Skills

3.1 Supplementary Design Skills [Success Criteria]
I apply all essential success criteria for a given Supplementary Design Skill

EXCEEDS EXPECTATIONS	MEETS EXPECTATIONS	APPROACHING EXPECTATIONS	STILL DEVELOPING
NOT APPLICABLE FOR THIS SKILL	All of the applicable success criteria for a given design skill are demonstrated.	Most of the applicable success criteria for a given design skill are demonstrated, with minimal errors.	Some of the applicable success criteria for a given design skill are demonstrated, with multiple/major errors.

GRADE DETERMINATION

In this course, there are three academic standards: Math/Science, Technical Documentation, and Engineering. Each standard score will be determined by using the double majority (mode) for the learning targets. The scale below is used to determine the final letter grade at the end of the semester based on the three academic standard scores:

A:	Score of "3" or "4" in all of the academic standards
B:	Score of a "2" in any one of the academic standards
C:	Score of a "2" in more than one academic standards
D:	Score of a "1" in any one of the academic standards
F:	Score of a "1" in more than one academic standards

**** Important Note: If a student has Ms in any amount the student runs the risk of failing the course.***

LATE WORK POLICY

Classes have course essential assessments/assignments/projects that students must complete to demonstrate proficiency in the class. These essential assessments will be indicated on each class' Course Description and communicated regularly in class.

All essential course work which is not submitted by the initial deadline will be given a **5 school day** grace period. The missing work will be reflected as an M during this period of time.

After this grace period, if the assignment is still not submitted, a score of "1" (Still Developing Foundational Skills) will be recorded. Any student that submits evidence after this grace period and deadline, will receive feedback, but the score of 1 will remain in the gradebook.

When special circumstances apply to the missing evidence (illness, extended excused absence, etc.), the use of X + 5 may be applied (students will have the number of days missed plus five additional school days to complete the missing work).

For any in-class assessment that is not submitted, a score of "1" (Still Developing Foundational Skills) will be entered into the IRC. Since students were given the opportunity and time in class to produce evidence, the student will no longer be able to submit the assessment/assignment as evidence.

COURSE ASSESSMENTS

Tech Ed embraces a balanced approach to assessment for all courses, integrating both formative and summative assessments. Through this balanced approach, assessment is an ongoing activity that provides students with a variety of opportunities to demonstrate their knowledge and skills, which allows teachers to monitor student progress and modify instruction accordingly. Tech Ed students show what they've learned by completing classroom activities, projects, and design challenges that undergo assessment and by evaluating work through a range of tools, such as performance Success Criterias and reflective questioning to deepen and expand their knowledge and skills.

End of Course Assessment (EoC)

EoC assessments are online exams given at the end of PLTW high school courses. EoCs serve as an indicator of a student's overall achievement in the course. PLTW's assessment and curriculum experts collaborate with PLTW pilot teachers and use industry best practices to develop and test EoC assessments. We validate new EoCs through a multi-year process to ensure the accuracy of the assessments, and we continuously update them to ensure validity and reliability.

PLTW students have exclusive access to a variety of recognition opportunities including scholarships, preferred admission at colleges and universities, internships, industry connections, and other avenues to highlight their achievements.

- College/university opportunities: Colleges and universities across the U.S. recognize and reward PLTW students for their great work. These postsecondary institutions recognize PLTW students with scholarships, admissions preference, course credit, and more.
- STEM Premier: PLTW students receive complimentary access to this online social platform, which empowers them to build out their personal STEM profile, showcase their knowledge and skills, and seek out opportunities.
- AP + PLTW: AP + PLTW gives students the opportunity to earn a credential that showcases their readiness for college and career, and demonstrates their STEM skills and interests to colleges and employers. The program will also provide students with special access to career-oriented opportunities like internships and scholarships.

More information can be found here.

INCLUSIVITY STATEMENT

At SHS, we strive to make our classrooms a place where you will be treated with respect, and we welcome individuals of all backgrounds, beliefs, ethnicities, social classes, genders, gender identities, gender expressions, ages, national origins, documentation statuses, religious affiliations, sexual orientations, abilities – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful and inclusive environment for every other member of the class. Whenever at all possible, we will approach differing or new perspectives, backgrounds, and ideas with civility and thoughtfulness. If you experience disrespect or discrimination in this class, please report your experiences to me.

If you'd like to learn how to advocate for yourself and others when faced with prejudices, I recommend this resource here.

LAB EXPECTATIONS

1. There is additional lab time:
    a. Communicate with your instructor for after school hours
    b. Monday, Tuesday, and Thursday from 7:45 am - 8:30 am

2. At the end of each class, you must:
    a. put all supplies back where they belong
    b. make sure your table is clean
    c. log off, restart, or shutdown your computer

3. No food in class.