PETERS TOWNSHIP HIGH SCHOOL
COURSE SYLLABUS: APPLIED ENGINEERING & INNOVATION

Course Information	Teacher Information
Course Length: Semester Class Location: G04/G08 Teacher Website: Google Classroom	Name: Christopher Allen Phone: 724.941.6250 ext. 5309 Email: allenc@pt-sd.org

Course Overview and Essential Skills

This course is focused on collaborative problem-solving in conjunction with neighboring school districts and industry partners. Students will be involved in experiences that take them out of the traditional classroom paradigm to allow for project-based learning mimicking a real world engineering challenge. Course work is student driven and directed by the challenges presented the industry partners.

Course Textbook and Required Materials

- Innovating for People: Handbook of Human-Centered Design Methods
- PTSD Web Apps Account

Course Outline of Material Covered:

Unit or Topic	Concepts/Skills/Resources	Timeframe
Introduction to Applied Engineering and Innovation Course	- Name the requirements for successful competition of this course - Explain the expectations of this course - Name the two major projects of this course - Design a solution to an engineering challenge in teams - Build the solution that was designed by the team - Evaluate the solution that was built by the team to complete the engineering challenge - Analyze and evaluate other solutions developed by other teams	1-Week
Methods of Problem-Solving	- Define the problem through fact finding - Establish possible solutions to solve a specific problem - Develop a solution based on research of original problem - Implement a solution to solve the original problem - Evaluate the solution after implementation - Name the three phases of Human-Centered Design - Explain the purpose of the Looking Phase - Evaluate 3 if the 12 methods in the Looking Phase - Explain the purpose of the Understanding Phase - Evaluate 3 if the 12 methods in the Understanding Phase - Explain the purpose of the Making Phase - Evaluate 2 if the 12 methods in the Making Phase	1-Week

Engineering Concepts	• List 6-10 fields of engineering • Demonstrate how engineers solve problems • Explain how other work with engineers (Mathematicians, Scientists, Technologists, etc...) • Explain the role of an engineer in the product development lifecycle • Explain how engineers communicate the their plan to a team and client • List the steps in the development of a solution • Demonstrate the transition from design to production • Compare and contrast measures of success in engineering a solution • Explain why product designs evolve over time • Utilize Human-Centered Design to evaluate a current real-world product • Develop a problem statement based on the evaluation of a real-world product • Design a solution to a problem discovered during the evaluation phase • Present solution to the class based on the problem found from the real-world product • Evaluate solutions from other teams and provide feedback	• 1-Week
Applied Community Project	• Understand through analyzing a problem that is affecting a community partner client • Design and develop a solution to a problem in teams • Produce a working prototype of a solution to a problem • Evaluate a working prototype through peer and client testing • Re-Design a prototype based on feedback from a peer and client	• 5-Weeks
Applied Industry Partner Project	• Understand through analyzing a problem that is affecting a community partner client • Design and develop a solution to a problem in teams • Produce a working prototype of a solution to a problem • Evaluate a working prototype through peer and client testing • Re-Design a prototype based on feedback from a peer and client	• 8-Weeks

Depending on the needs of the class or changes in the school year, the course outline is subject to change.

Teacher Grading Policy:

A point system is utilized via PowerSchool to determine a student's quarterly grade. Homework, classroom activities, assignments, projects, quizzes, and tests are assigned appropriate point values. The total points earned by a student in a report period are divided by the total possible points and a percentage is computed. Total points per report period may vary depending upon the content and activities assigned throughout. The Applied Community Project will be

approximately 40% of you final grade and the Applied Industry Partner Project will also be worth 40%. The remaining 20% includes homework, classroom activities, and in-class assignments.

Grading Scale:

90-100% = A   60-69% = D

80-89% = B   59%-below = F

70-79% = C

Classroom Procedures and Expectations:

- Attendance
    - If you miss class, you are entitled to make-up work
    - You can get your make-up work via GOOGLE CLASSROOM at any time
        - Students will be granted access to GOOGLE CLASSROOM at the beginning of the semester
        - GOOLE CLASSROOM is accessed via any computer or smart phone at any time whether in school or out of school
        - Student login for GOOGLE CLASSROOM is the same as students assigned PTSD WEB APPS account which is assigned to every student
        - Parents may reach out to me at any time to discuss access to GOOGLE CLASSROOM or more information on make-up work
    - It is the student's responsibility to complete and submit make-up work in a timely manner
- Late-Assignment Submission
    - Assignments that are not submitted on the due date will still be accepted but will be penalized 5% per-day everyday past the due date.
- BYOD Policy
    - Many assignments will require students to access the internet and or word processing applications. We are fortunate to have computer access on a regular basis, but some assignments may warrant the use of personal devices being used. Therefore, students are permitted to utilize their own devices for note-taking and organization.
- Classwork
    - Class work will primarily focus on project-based learning activities used to reinforce the class content
    - Classwork is a structured time where students have the opportunity to work on their projects under the supervision of the instructor
    - Classwork will be student directed with the instructor acting as a facilitator
- Homework
    - Applied Engineering and Innovation relies heavily on a project-based learning model both inside and outside the classroom.
    - This may require course work to be completed outside of class as homework but only if the time inside the classroom is not spent wisely on the part of the student.
    - All work that requires completion will be clearly outlined via the instructor with addition information found on GOOGLE CLASSROOM
- Academic Integrity and the Student Honor Code.
    - All academic work in this course follows the Academic Integrity policy of the Peters Township School District. Students are expected to maintain the Peters Township Honor Code: As a student of Peters Township School District, I recognize the value of my own learning and pledge to maintain honesty and academic integrity in all that I do. All work that I submit is my own. Any student that is unsure of the expectations of an assignment should seek clarification from the teacher.

- Any student caught in violation of the PT Honor Code as it relates to course assignments, assessments, and projects will receive an automatic zero for that grade.