

Unit 1 Design Process Lesson Plan

COURSE:

Introduction to Engineering Design (Honors)

TEACHER:

Jason D. Redd

DURATION:

9 Days

STANDARDS:

This course connects to standards in the following:

- Common Core State Standards for English Language Arts Anchor Standards
- Common Core State Standards for English Language Arts
- Common Core State Standards for Mathematics
- Next Generation Science Standards
- Standards for Technological and Engineering Literacy

PLTW FRAMEWORK:

Provided by Project Lead the Way (PLTW), the PLTW Framework provides an overview of the levels of understanding that each student will build upon throughout the lesson/unit. It includes: Established Goals, Transfer, Understandings, Knowledge and Skills, and Essential Questions. The most fundamental level of learning is defined by course Knowledge and Skills statements. Each Knowledge and Skills statement reflects specifically what students will know and be able to do after they've had the opportunity to learn the course content. Students apply Knowledge and Skills to achieve Learning Objectives, which are skills that directly relate to the workplace or applied academic settings.

Established Goals

It is expected that students will:

- Demonstrate an ability to identify, formulate, and solve engineering problems.
- Demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- Demonstrate an ability to design and conduct experiments, as well as to analyze and interpret data.
- Demonstrate an ability to apply knowledge of mathematics, science, and engineering.
- Demonstrate an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- Pursue the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- Demonstrate an understanding of professional and ethical responsibility.
- Demonstrate an ability to function on multidisciplinary teams.
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Understandings

Students will understand that:

- An engineering design process involves a characteristic set of practices and steps used to develop innovative solutions to problems.
- Brainstorming may take many forms and is used to generate a large number of innovative, creative ideas in a short time.
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EQUIPMENT / MATERIALS / RESOURCES:

Students will need or utilize:

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| ☒ Assignment Handouts / Instructions | ☒ Online Resources |
| ☐ CAD Software | ☐ Other Software |
| ☒ Classroom Materials / Equipment | ☒ Schoology |
| ☒ Computer / Device | ☒ Teacher Handouts |
| ☒ Internet Access | ☐ Other: |
| ☒ Microsoft Office Software | |

AGENDA / ACTIVITIES / INSTRUCTIONAL PROCEDURES:

- Review resources and equipment needed to problem-solve student assignments.
- Share safety instructions to students. *Safety Instructions: Students should only utilize equipment they have been fully trained to use.*
- Provide review material / resources for students to prepare for summative assessments.

Transition

- ☒ Classroom Expectations / Routines
- ☒ Review Questioning
- ☒ Stimulus or Signal (Example: "Pencil Drop", "Eyes on Me", etc.)
- ☒ Student Reflection
- ☒ Timer

Independent Practice (Varied Learning)

The students will:

- Participate in teacher-led discussions / presentations.
- Complete assigned assignment(s) in class.
- Complete assigned homework assignment(s) outside of class.
- Provide feedback by demonstrating skills.

Closure

The following techniques may be utilized:

- The teacher will lead a classroom discussion to check for understanding

- Review the lesson/unit concepts, content, and skills as needed to prepare for lesson/unit assessments.