



Grandview High School – Course Syllabus

Course Name: Principles of Engineering

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2 trimester course, 2021-2022

Course Description

Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

Course Goals

1. To allow students the opportunity to be creative in design and also to encourage the perseverance that it takes to complete a design as a team.
2. To create, design, invent and innovate ways that machines can be transitioned into real world situations and be more effective than humans can for those tasks.
3. To compete in competition and make modifications that will increase the effectiveness of a machine's design.
4. To reflect on the machine's performance and show multiple designs that lead to the chosen one.
5. To be able to work in a team and perform tasks that represent the team role acquired, and to make a meaningful contribution to a team trying to meet deadlines for design

Text and Reading Materials

1. All materials will be provided by the instructor

State Standards: This course is designed to meet the national and state standards for Science, Technology, Engineering and Math. It will also align with the ELA common core state standards.

Required Supplies

- Engineering notebook (Composition notebook with graph paper acceptable)
- Metal Ruler for sketching
- Colored pencils
- Pens and regular pencils

Course Outline

- Students will learn the difference between manual and autonomous movement with the machine
- Learn how to write code that can determine a machine's movement, and to be able to explain why the code worked or didn't work
- Follow the design process to make modifications that will increase the machine's efficiency to make your robot most task ready.

Course Schedule

This is a STEM course and will follow certain engineering requirements. Students will be assessed on design and proficiency of their robot and will also be required to meet deadlines and produce an engineering notebook that supports their team goals.

Major Assignments

This is a project based course that will contain many small projects that will tie directly into some major projects. All projects will be assessed using a design process rubric. Students will be required to perform tasks such as presentations and demonstrations.

Assessment Format

Assessment will be both formative and summative and based on, quizzes, tests, presentations, and assignments amongst other methods.

Classroom Expectations

- Students will be expected to adhere to all policies, procedures, and rules as outlined in their Grandview High School student handbook.
- Students will also be expected to follow the following classroom rules and regulations:
 1. Be on time and in your seat when the bell rings ready to learn.
 2. Be prepared—bring proper materials, and study for tests, quizzes, etc.
 3. Students are encouraged to ask questions, but be courteous to others around you. Raise your hand to ask and answer questions, and be ready to be called upon.
 4. If you are absent it is up to you to find out what you missed. This includes all homework assignments and lecture notes.
 5. Cheating, plagiarism, and other types of academic dishonesty will not be tolerated and will be dealt with as outlined in the student handbook.
 6. Treat all staff, students, guest speakers, etc. with a great deal of respect. These individuals are vital to your success and are here to see all of you succeed.

Absence and Tardy Policy

Attendance is mandatory. **If you are not in your seat when the bell rings you are considered tardy.**

Grading Scale

Point Value	Letter Grade	High Percentage	Low Percentage
4.00	A	100.00	93.00
3.70	A-	92.99	90.00
3.30	B+	89.99	87.00
3.00	B	86.99	83.00
2.70	B-	82.99	80.00
2.30	C+	79.99	77.00
2.00	C	76.99	73.00
1.70	C-	72.99	70.00
1.30	D+	69.99	67.00
1.00	D	66.99	60.00
0.70	F	59.99	57.00
0.30	F	56.99	53.00
0.00	F	52.99	

Grading Policy

- Student attendance, effort, attitude and other behaviors will be reported separately from achievement.
- Late work will not be marked down.
- Students will have a minimum of five (5) school days beyond the assignment or assessments posted due date or the date it was returned, to complete it, unless there are extenuating circumstances. A zero will be placed in the grade book until the work is complete or until the end of the five days. When the work is complete the grade will be changed to the earned grade permitting it is within the timeframe specified above.

- In the case of academic dishonesty students will be referred to the office to receive their consequence. Students will also be given the opportunity to take the test over or receive a zero.
- Students have a right to make up work missed due to absences.
- Grades will be based on the achievement toward district course/grade level standards. Therefore, the grades will be organized and recorded by unit of study.
- Students will be able to track their progress through Skyward.

Caveat

This is a general syllabus and cannot possibly detail the entire scope of the curriculum. Due to the changeable nature of daily school activities and the dynamics of specific classes, the order and scope of the class may vary.

Affidavit

Our signatures below indicate that we have read and understand this Engineering syllabus. By signing, the student agrees to put forth the effort and commitment necessary to be successful in this class. Please return **this page only** to Mr. Urquhart with signatures and date.

Parent Signature

Date

Student Signature

Date

Student Name Printed