

Engineering Design Syllabus

Mr. Horwat – Room 135

Welcome to Engineering Design! This course focuses on the process of bringing a design concept to reality. Students design and create projects within the five areas of technology. Through actual construction and testing of prototypes, students gain an understanding of the entire design cycle.

Mr. Horwat's Contact Information

E-mail

jhorwat@cbsd.org

Telephone

267-893-2800 ext. 1208

*Virtual Learning Course of Study



Unit 1 – “How Stuff Works”: A series of virtual learning mini-lessons devoted to demystifying how select modern technologies work. Facial Recognition, drones, “Smart Homes”, and vertical farming will be covered. Students will build a ‘wicking hydroponic system’ from a 2-liter soda bottle.



Unit 2 – Technical Drawing: ‘What do technical drawings need to provide?’ Lessons will stress the importance of accurate measurement, the ‘alphabet of drafting lines’ and setting up a basic blue print, as students progress from reading a blueprint to designing 3-dimensional models using Onshape, a web-based CAD program used in modern engineering. * A computer mouse is highly recommended for computer aided manipulation and drawing.



Unit 3 – The Engineering Design Process: Students will review and follow the 7 steps of the engineering design process to conceptualize and design a 3-D model of their own pet toy or accessory.



Unit 4 – An Introduction to Electronics: Students will be introduced to the basic elements of electronics, including microchips, power sources, components and simple circuits.

Our Three Rules

1. **Effort:** Commit to classwork, follow assignment directions and **try your best**
2. **Honesty:** Communicate truthfully with teacher and peers; **academic honesty** i.e. ‘**doing our own work**’
3. **Presence:** Minimize outside distractions, **participate fully** in class lessons, activities, and projects

Class will use the following web-based software programs: InkScape, TinkerCad and OnShape. Please make sure your laptop is functional, charged, and ready to work every day. **A computer mouse is highly recommended for computer aided manipulation and drawing.**

For virtual learning hands-on projects throughout the semester, students will need access to the following **Supplies for Middle School Technology Education Classes**: a Hot glue Gun with hot glue sticks, Scissors, Masking tape, Colored Pencils, Markers, a Straight edge for sketching (ideally a ruler to the 16th of an inch), a 30-60-90 plastic drafting triangle, 11 by 17 inch graph paper, Recyclables such as cardboard, plastic containers, cans etc. (It is recommended that you save some of these throughout the course for use)

Grading Policies

Grades will be split into two different categories, **Formative (10%)**, and **Summative (90%)**. Formative activities will include shorter, in-class assignments that will typically be completed in one or two days for a range of 5-20 grade points, depending on nature of activity. Summative assignments include larger assignments such as presentations, models, and designs. For all summative assignments, you will be provided with a rubric when the assignment is distributed so you can see exactly how your grade will be calculated. Summative assignments are each worth 100 grade points.

Formative and Summative work is eligible for Second Chance Learning. It is the student's responsibility to communicate with teacher and turn in second chance assignments promptly within 2 weeks of due date. **Second Chance Learning will not be accepted during final week of marking period.**

Infinite Campus

Your Engineering Design assignment grades will be posted on Infinite Campus for you and your parents to view throughout the semester. Please check Infinite Campus at least once a week to monitor your progress in the class. Missing assignments will be marked as a zero until the assignment is submitted. **Be sure that any late work is completed promptly**, for this is your responsibility.

Attendance

Attendance is required. Pay close attention to start times and 'A Day' / 'B Day' schedules. Message teacher the word "here" using Teams Chat. Attendance is posted / saved to Infinite Campus: Present (P), Tardy (T), Absent (A) **Web camera must be "on" to receive attendance credit.**

Absences

You will need to make up any work that is missed due to an absence. **Check our class Canvas page.** You may email teacher with specific questions. Please do not ask at start of class what you missed.

Grade Point Deductions

Work that is **late, sloppy** or **does not follow directions** will have points deducted accordingly. Any work submitted that is **inauthentic** or deemed to be **plagiarized** (i.e. not your own work) **will not be accepted**, resulting in a score of a **zero** for the assignment in question.

Conduct

Students are not to use obscene, profane, threatening, or disrespectful language or images in any communications with CBSD students or staff. These actions are prohibited as indicated in Policy 815 and may result in temporary removal from the virtual learning environment.