Engineering Tech

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Room - Tech 5

Course Goals

Engineering Tech is a introductory course for students to gain an understanding of the problem solving skills Engineers need to have to be successful. This course will allow students to develop an understanding of Engineering and the different Engineering disciplines. This course is a hands-on class that students will use problem solving skills to complete projects in a competitive manner.

Students will begin with a research project on the type of engineering they are interested in so that they can develop an understanding of not only what those engineers do but also the salaries and 10-year job outlook of that discipline. Students will then complete various problem solving projects (Mastan Structure, Rube Goldberg, Mouse Trap Cars, Solar Cars, Balloon Popping, Roller Coaster Challenge and other various projects.

Timeline

Week 1-2	Introducton to Engineering and the Types of Engineering
Week 3	Introduction to Mastan computer program
Weeks 4-5	Mastan Construction Completion
Weeks 6-7	Introduction to Simple Machines and the Mechanical Advantages
Weeks 8-9	Rube Goldberg Project (Using Simple Machines together to crack an egg)
Week 10	Introduction to Solar Cars gears/wheels and how they function
Weeks 11-12	Solar Car Competition
Week 13	Mouse Trap Car design
Weeks 14-15	Mouse Trap Car Competition
Week 16-17	Balloon Popping Challenge
Week 18	Roller Coaster Challenge

Materials

- Machines-Drill Press, Miter Saw
- Hand Tools-, Palm Sanders, Hand Drills, Hand Drivers, Clamps. Squares, Level, Rulers, Tape Measures
- Hot Glue, Construction Glue
- Balsa Wood, Mouse Traps, Balloons, Pipe Foam, Solar Panels, Gears, Motors, KNex, Foam

Grading and Evaluation Procedures

Grades will be composed of work sheets, study guides, quizzes, drawings and projects. Grades will be assigned for completion, correctness, and effort. Grading is based on a point system. Your final grade will be the points you have earned divided by the total points possible for the course. The number of points depends on difficulty and length of assignment. Generally, the projects Carry the most weight, so treat them with importance.

Assignments

Homework/Classwork will be assigned on a regular basis. Some assignments will be graded on correctness and completeness and others on just completeness. I prefer to give you time in class to begin your assignments so that I can check your understanding before you leave. If you are diligent, it is often possible to finish assignments in class. Any assignment given will be due the next day unless you are told differently.

Projects will be completed in class only. If you are absent due to illness or vacation, you will need to utilize your E/I period to complete your projects.

Standards

S7.A.2.1.2
S7.A.2.2.1
3.4.10.C1
3.4.10.C2
3.4.7.D2
3.4.10.A1
3.4.10.D1
A1.2.1.2.1
S8.A.2.1

Academic Integrity

All students are expected to abide by the school's Academic Integrity Policy. This means no copying, cheating, or plagiarizing. Anyone violating this will receive a zero on the assignment and detention. During an exam, even looking at another person's test is considered cheating. Do not let other students copy your work, as you will both receive a zero. Collaboration on homework or lab reports will occur, but all work should be your own. During testing, your phones will be placed under your desks and cannot be touched until you turn in the test.

Laboratory and Safety

Students are expected to behave with proper decorum in laboratory. Anytime we are utilizing the wood shop we will follow the PA Shop Safety Guidelines. Students who do not follow the safety procedures will be asked to sit out of lab and complete it on their own time. Rules that should always be followed:

- Wear closed toed shoes. We work with tools and projects that can break toes or injure feet.
- Tie long hair back. Hair can be caught in machinery
- Remove all necklaces, face/ear piercings, rings, watches and bracelets. These objects can get caught in or on a machine causing injury.
- Long Sleeved Shirts must be pulled above the elbows, remove sweat shirts with hoods and/or drawl strings.
- No Horse Play.

Procedures and Expectations

- Tardiness is not accepted. Class will start on time every day. Students are expected to be **in their seats** so attendance can be taken.
- Students are expected to be prepared for class. This includes bringing your **laptop, notebook, and pencil** to class.
- Be respectful and courteous to everyone in class. This classroom will be a friendly environment and harassment-free. Think before you speak or act.
- Restroom passes will only be issued using student agendas. Students must sign out and back in on the sign-out sheet next to the door.
- Do not ask for a restroom pass in the middle of instruction.
- Remember, all school rules in your agenda apply in this classroom as well.
- Missed class due to illness will be handled on a case-by-case basis.

NOTE: Projects are of high importance… Make sure your name is easy to Identify so that Projects do not get stolen or mixed up with other classmates.

- Ask questions, answer questions, and most importantly, realize that you are who makes this class important!
- Safety First!

Please make sure if you are unsure or nervous about using any machine that you ask me for help. I am available during an E/I time to help you better understand machines and become more comfortable. Your Safety is the # 1 Priority.