

Engineering 11 Course Outline

Objectives



The main objective of this course is to apply the theoretical knowledge gained in Physics 11 when designing and building mechanical, electrical and structural projects. The use of CAD (Computer Aided Drafting) software, machines (wood, metal, laser engraver, etc) and computer programming will all be used to successfully complete the objectives of the course.

Student Responsibility

- Always work safely in the shop. **SAFETY FIRST!**
- If an accident occurs report it to the teacher immediately.
- If a laptop, tool or piece of equipment is broken, report it to the teacher immediately.
- NO GAMES, SOCIAL MEDIA, TEXTING, etc. This class is for learning, NOT zoning out or social media.
- Listening to personal music is accepted as long as NO teacher instruction is taking place.
- NO FOOD or DRINKS are allowed near the laptops or any electronics.
- Arrive to class and on time, lates are PBP or SCD.
- If you are absent, it is your responsibility to make-up missed work.
- ALL notes, labs, assignments, etc will be posted on the Website.
- A drawer for your labs and project materials will be supplied.
- A NOTEBOOK AND A PENCIL/PENCIL ARE NEEDED FOR THIS CLASS.

Labs

- These will be completed throughout the course. They will be given at specific points in the course to help students become familiar with components, computer programming, reinforce principles taught in physics and usage of equipment in the lab.
- All lab work will be marked.
- Labs will be assessed individually or in a group

Theory

- This will be given throughout the course. The lessons will be both formal and informal. All lessons will be directly related to the hands on approach that this course is based on. **A NOTEBOOK WILL BE REQUIRED.**
- Quizzes will be given on the theory.

Areas of Concentration**Mechanical Engineering (VexIQ Robotics)**

- Students will use the VexIQ robotics system to reinforce concepts that are taught in the physics class and build several robots that will compete in classroom challenges or complete labs.
- Students will be in groups of 2 during this portion of the course
- Computer programming will be used to control the robot

2D and 3D Modelling

- Students will complete a unit on 3D modelling and CAD (Computer Aided Drafting). The skills learned during this unit will be utilized on different projects in the course. You will learn to use a laser engraver and 3d printer as well
- This is individual work.

Electrical Engineering

- Students will take the knowledge gained from physics and apply it during a series of breadboarding labs. These labs will involve an Arduino microprocessor and the programming of it.
- This will be individual work.

ROV – Major project Term 2

Students in groups of 3 will design, build and test an underwater ROV (Remotely Operated Vehicle). We will then take it for sea trials at the pool or Comox Marina.

Marking

Assignments/Labs & Project work	80%
Quizzes & Theory	20%

**A term is usually 10 weeks long. If a unit/project takes around 3 weeks to complete, it means the unit/project is approx. 30% of your term mark in my world ☺*

Cleanup

Cleanup is called about 5 minutes prior to the end of the class. It is important that all students put away their own equipment and clean up their work area. No student is permitted to leave until all the tools are accounted for. When the teacher is satisfied with the cleanup, you will be dismissed.