Engineering 11/12 Lesson #1 Introduction to Engineering



1. The word engineer comes from the latin word "ingenerare", meaning to invent, create, or regulate.



2. Engineering is simply the application of scientific knowledge to design and build devices, structures and systems to help solve problems.

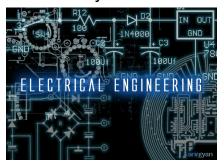


3. There are many different disciplines under the engineering umbrella: civil, mechanical, aeronautical, electrical, chemical, and computer science engineering are a few of the major disciplines practiced in engineering.



4. This course will focus on the cyclical process of engineering which consists of inception (coming up with an idea), design, modelling/prototyping, testing and

production. This process is modelled within the scientific method to produce devices that are shown to definitively function as designed.



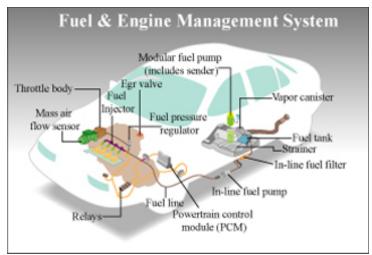
5. There is a systematic way of knowing things to be true and that way is called the Scientific Method. The scientific method consists of asking questions, doing background research, constructing hypotheses, testing hypotheses through experimentation, analysis of data (results) and communicating results and revision.



- 6. The scientific method is the only reliable way of knowing things to be true. It minimizes personal bias and belief. It reduces things and systems of things to their empirical (numbers) root in order to uncover the truth.
- 7. Science and the scientific method allows us to continually verify our observations of the natural world using facts, hypotheses, laws and theories.



8. In addition to scientific knowledge, engineers need to develop social skills necessary to work effectively and collaboratively in a systems approach to solving problems.



- 9. A systems approach breaks down the engineering challenge into smaller manageable parts. For example, an aircraft has a(an) flight control system, navigation system, electrical system, hydraulic system, pressurization system, engine system, fuel system, oil system and so on. It would be far too difficult for any one individual to keep track of and design all the systems for a complex machine such as an aircraft, car, or building.
- 10. This course will help develop intellectual and well as social skills in students as they progress through the course.