

FE1073 An Introduction to Engineering and Practices

[Seminars: 9 hours (3 hours/week); Labs: 18 hours (3 hours/week); Pre-requisites: NIL; Academic Unit: 1.0]

Learning Objective

1. To reinforce students' understanding of physics by experiments;
2. To equip students with basic experimental skills related to physics; and
3. To equip students with basic knowledge of engineering and practices.

Content

Lab C1: Resultants and equilibrium of forces

Lab C2: Deformation of elastic body

Lab M1: Work and energy

Lab M2: Conservation of momentum

Lab E1: Electric field

Lab E2: Magnetic field

Seminar C1: Introduction to Civil and Environmental Engineering

Seminar M1: Introduction to Mechanical and Aerospace Engineering

Seminar E1: Introduction to Electrical and Electronic Engineering

Course Outline

1. Lab C1: Resultants and equilibrium of forces

Experiment on the concepts of vector forces and equilibrium of particle/rigid body.
2. Lab C2: Deformation of elastic body

Experiment on the stress, strain, elastic moduli and their relationships.
3. Lab M1: Work and energy

In this experiment, the concept of work as a process of transferring energy from one system to another will be investigated. It will re-inforce understanding of the work and energy principle.
4. Lab M2: Conservation of momentum

By experimenting with bodies in collision, students will investigate the concept of linear momentum and the principle of conservation of momentum.
5. Lab E1: Electric field

In this experiment, the relationship between the equal potential surfaces and electric field lines in the region around several different electrode configurations will be investigated.
6. Lab E2: Magnetic field

In this experiment, the relationship between current and magnetic field for both steady state and time-varying conditions are investigated.

7. Seminar C1: Introduction to Civil and Environmental Engineering

What CEE engineers do and contribute to the society; big civil engineering projects.

8. Seminar M1: The Exciting World of Mechanical and Aerospace Engineering.

This seminar will talk about mechanical and aerospace engineering in the 21st century. Modern applications and state-of-the-art technology will be discussed.

9. Seminar E1: Introduction to Electrical and Electronic Engineering

What EEE engineers do and contribute to the society, including electronic revolution of 1960s and how that has changed the lives of people.

Learning Outcome

Students should be able to understand the concepts and procedure of conducting some basic experiments in physics. They will gain the basic knowledge of engineering and practice and appreciate the contributions of engineers to society.

Textbooks/References

NIL