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Electrical, Electronic and Computer Systems

School of Mechanical Engineering

College of Engineering and Physical Sciences

Details

Code 21839

Level of study First Year

Credit value 10

Semester 2

Module description

The aim of the module is to introduce aspects of electronics and electrical engineering to students of other engineering disciplines in the context of applications in their discipline. This should develop your confidence when interacting with electrical engineers in industry.

SYLLABUS
A review of the areas where electronic and electrical engineering principles are applied in Civil, Chemical, Mechanical and Manufacturing Engineering and Materials Science.

An introduction to basic concepts of electronics.
DC circuits and circuit analysis, power and energy.
An appreciation of linear and non-linear components through the diode and LED.
The concept of electrical transducers as a means of interfacing to, and monitoring, the real world.
The simple application of operational amplifiers.
Examples of uses of transducers in engineering industry to emphasise the importance of proper calibration.

Digital logic & microprocessors:
Boolean algebra and number representation within electronic devices to study
Analogue to digital conversion in the context of monitoring equipment and to appreciate the benefits of digital transmission.
AC circuits: Impedance, AC properties of inductors and capacitors, phasors, power factor.

Complex numbers will be briefly introduced in support of this material.

Power supply systems:
Transformers, three-phase, simple rectifiers.
The issues affecting power transmission across country and into buildings.

Basic motor types:
AC and DC motors. Choosing and specifying motors for engineering applications.

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