Engineering 102 (600. 102)

6 points / offered in both Semester 1 and 2

Outcomes

This unit encourages an appreciation of the multi-disciplinary nature of E & E engineering in a sufficient depth to allow students to make an informed decision on future studies;

• understand basic principles and design techniques associated with simple circuits using techniques that they have learnt in the lectures and the laboratories;

• confidently use the internet while studying the Web-based Mallard teaching system

• work successfully in teams and appreciate the design and operational performance issues required when theoretical material is applied in a problem-solving approach in order to develop an autonomous electric vehicle;

• communicate effectively with others in both written and spoken work.

• undertake further technical and professional courses particularly in the area of electronic design

Unit Description

The content of this course includes the following:
Introduction to electric circuits: Current, voltage, power, voltage and current sources
- Kirchhoff's current law and voltage law, solving simple resistive circuits
- Nodal analysis, superposition, source transformations, Thevenin and Norton theorems, maximum power transfer
- Magnetics, dc motors.
- Electronic devices: Diodes and circuits, Bipolar Junction Transistors and analogue circuits
- Digital circuits – introduction to logic circuits
- Operational amplifiers
- AC circuits: inductance, capacitance
- Phasors, sinusoidal steady state analysis, types of power

Recommended Textbook
Giorgio Rizzoni, "*Principles and applications of electrical engineering*"

Recommended Reading
S. E. Schwarz and W. G. Oldham "*Electrical Engineering: An Introduction*"
J. R. Cogdell "*Foundations of Electric Circuits*"
R. J. Smith and R. C. Dorf " *Circuits, devices and systems*"

Contact: 63 hrs: *Lectures* 36 hrs; *Tutorials* 12 hours; *Laboratories* 15 hours
Prerequisites: TEE calculus or equivalent, TEE applicable mathematics or equivalent and TEE physics

• Lecturers

Lecturer: Dr. G. Parish
Room: E&E building Rm 1.76
Telephone: 3390
Email: giapa@ee.uwa.edu.au

Lecturer: Professor L. Faraone
Room: E&E building Rm 1.78
Telephone: 3104
Email: faraone@ee.uwa.edu.au

Lecturer: Dr. Martin Masek
Room: E&E building Rm 2.82
Telephone: 1245
Email: masek-m@ee.uwa.edu.au

• Contact Hours

Lectures	Tuesday	11:00am	Murdoch Lecture Theatre
	Wednesday	01:00pm	Murdoch Lecture Theatre
	Thursday	01:00pm	Murdoch Lecture Theatre

• Unit Co-ordinators:

i) For **general** questions about this course please see **Professor L. Faraone.**
Please email me for an appointment.

ii) For questions about Mallard, tutorials, and laboratories and/or schedules please see **Dr. Martin Masek**

The laboratory is based on a project in which concepts and principles covered in lectures are applied to the analysis, design and construction of a model autonomous moving vehicle. Please see Martin Masek if you have any queries about your laboratory timetable.

Assessment

Mallard /Tutorials	Participation compulsory	5%/5%=10%
Class Tests	2 tests during the semester	20%
Laboratory Component	Throughout Semester	10%
Examination	End of Semester	60%

Attendance at tutorials will be recorded and participation is expected. Part of your assessment (5%) will be based upon your attendance and participation at tutorials.

All work submitted must be the individual student's own work.

Penalties
The penalty for late submission of Mallard homework problems will be 10% per calendar day. Students MUST attend their scheduled laboratory sessions. Failure to attend laboratory sessions will result in a failing grade for the whole unit.

Faculty Policies

For a statement regarding the Faculty's Scaling Policy see
http://www.ecm.uwa.edu.au/for/staff/pol/assess

For a referral to the Faculty Policy on Plagiarism see
http://www.ecm.uwa.edu.au/for/staff/pol/plagiarism

For a referral to the Faculty Policy for Appeals see
http://www.ecm.uwa.edu.au/for/staff/pol/exam_appeals