

ES2G4-15 Applied Electronics

23/24

Department

School of Engineering

Level

Undergraduate Level 2

Module leader

Mark Dooner

Credit value

15

Module duration

24 weeks

Assessment

40% coursework, 60% exam

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Electronics find many applications in electromechanical engineering, such as in sensor interfacing and signal conditioning.

Module aims

The aim of this module is to provide learning in electronics, including the function of analogue electronic devices and common digital components. It will also provide the opportunity for students to design and develop electronic system through electronic circuit simulation, PCB layout and measurement tests.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Diodes, BJT's and FET's transistors and applications

Operational amplifiers. These will include instrumentation amplifiers and comparators

Basic digital electronics

Timers and oscillators

Sources of electrical noise, passive and active filters

CAD tools for electronic circuits

Voltage regulators

Learning outcomes

By the end of the module, students should be able to:

- Understand a range of different analogue electronic components and systems and basic digital components
- Combine different electronic components to create a system
- Appreciate specifications and design limitations and be able to design electronic systems to fulfil these
- Use CAD software to simulate electronic circuits and layout printed circuit board circuits

Indicative reading list

Neil Storey, Electronics : a systems approach, Pearson, 2017, Sixth edition.

G. Rizzoni – Fundamentals of Electrical Engineering, McGraw-Hill, 2008. Microelectronics Circuit Analysis and

Design, Donald Neaman, 4e 2009.

Subject specific skills

Communicate technical information with others at all levels, including technical reports and the use of digital tools.

Follow a methodical approach to engineering problem-solving.

Produce electrical drawings using Computer-Aided Design(CAD).

Design functional electronic systems and circuits from the component level.

Plan, manage and lead engineering projects.

Perform risk management for engineering activities.

Comply with statutory and organisational safety requirements.

Communicate effectively with technical and non-technical audiences.

Transferable skills

Hold paramount the health and safety of themselves and others, and model health and safety-conscious behaviour.

Self-motivated, work independently and take responsibility for their actions. Set themselves challenging personal targets and make their own decisions.

Communicate confidently to create and maintain working relationships. Be respectful.

Prioritise quality. Follow rules, procedures and principles in ensuring work completed is fit for purpose, and pay attention to detail/error checks throughout activities.

Adjust to different conditions, technologies, situations and environments and to new and emerging technologies.

Exercise responsibilities in an ethical manner, with openness, fairness and honesty.

Commit to personal learning and professional development.

Study

Study time

Type	Required
Lectures	19 sessions of 1 hour (13%)
Seminars	5 sessions of 1 hour (3%)
Practical classes	8 sessions of 1 hour (5%)
Supervised practical classes	5 sessions of 3 hours (10%)
Work-based learning	50 sessions of 1 hour (33%)
Online learning (independent)	8 sessions of 1 hour (5%)
Private study	45 hours (30%)
Total	150 hours

Private study description

Guided independent private study (including VLE)

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group D1

	Weighting	Study time
Electronic Design Assignment	40%	
Specify, design, develop and test an electronic circuit		
Online Examination	60%	
QMP		
~Platforms - AEP,QMP		

- Online examination: No Answerbook required

Feedback on assessment

- Support through advice and feedback hours.
- Written feedback on marked assignment.
- Cohort-level feedback on final exam.

[Past exam papers for ES2G4](#)

Availability

Courses

This module is Core for:

- Year 2 of DESA-H360 Undergraduate Electromechanical Engineering (Degree Apprenticeship)