Module Definition Form (MDF)

Module code: MOD009723	**Version:** 1 **Date Amended:** 27/Feb/2024

1. Module Title
Electronic Design Project

2a. Module Leader
Alireza Sanaei

2b. School
School of Engineering and the Built Environment

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module is designed to give you advanced understanding of electronics and electronic design from the perspective of related practical project development. You will learn about transistors/MOSFETs, Transducers/Sensors, as well as Data Acquisition Fundamentals/measurements and some signal processing. These skills will prepare you to be able to design and develop a practical electronics project. Thus, the module has a multidisciplinary nature. You will also develop insights into the functionality of different elements of the project by analysing their performance and their overall impact on the successful completion of the project while meeting the relevant performance targets.

6b. Outline Content

- Transistors/MOSFETs, Logic Gates, Shift Registers, Operational Amplifiers
- Transducers and Sensors
- Data Acquisition fundamentals
- Analog to Digital Converters
- Sampling and Aliasing
- Time and Frequency Analysis

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources
icrocontrollers, MATLAB, Electronic Measurement and Monitoring, Electronic Design

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Apply knowledge of mathematics and engineering principles to solve complex problems in electronic circuits, measurements, and systems.
2	Knowledge and Understanding	Select and apply appropriate programming, numerical, and analytical methods for applications in electronics, measurements, and signal processing.
3	Intellectual, practical, affective and transferrable skills	Select an integrated engineering approach to an engineering project; Identify, evaluate, and recognize the scope and limitations of the methods used.
4	Intellectual, practical, affective and transferrable skills	Elaborate the role of quality management in an electronics project and continuous improvement plans.
5	Intellectual, practical, affective and transferrable skills	Select and apply appropriate materials, equipment, technologies, and processes for an electronics project, recognizing their limitations; Use practical laboratory and workshop skills in a complex electronics project.
6	Intellectual, practical, affective and transferrable skills	Function effectively both as an individual as well as a member or leader of a team; Present effectively on complex electronics engineering matters with technical and non-technical audiences.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	36	1-6	Introduction to the project lectures/tutorial 3 hours per week
Other teacher managed learning	36	1-6	Introduction to the project lectures/tutorial 3 hours per week
Student managed learning	228	1-6	Self-directed Learning
TOTAL:	300		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	2 3 5 6	50 (%)	Fine Grade	30 (%)
2000-word individual project report (maps to C3, C6, C12 and C13)					

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	1 2 3 5	40 (%)	Fine Grade	30 (%)
2 hours in-class test (maps to C1, C2)					

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
012	Practical	3 4 5 6	10 (%)	Fine Grade	30 (%)
10 minutes individual presentation (maps to C14, C16, C17)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]