

Basic details

UID		Cohorts covered		Earliest cohort	
Long title	AML devices				
New code	ELEC70114	New short title			
Brief description of module (approx. 600 chars.)	This hands-on, interdisciplinary course delves into the process of designing and developing smart devices equipped with advanced sensors, emphasizing the seamless integration of machine learning for intelligent data processing. Participants will master the entire lifecycle—from conceptualization to deployment—of smart devices capable of data collection, analysis, and decision-making. You will collaborate in a group of 4 students to design and implement a smart sensing device, use it to collect the data, train a machine learning model and evaluate it.				
Available as a standalone module/ short course?	0				

Statutory details

	ECTS	CATS	Non-credit	HECOS codes
Credit value	5	10	N	
FHEQ level	7			

Allocation of study hours

	Hours	
Lectures	20	
Group teaching	0	<i>Incl. seminars, tutorials, problem classes.</i>
Lab/ practical	0	
Other scheduled	10	<i>Incl. project supervision, fieldwork, external visits.</i>
Independent study	95	<i>Incl. wider reading/ practice, follow-up work, completion of assess</i>
Placement	0	<i>Incl. work-based learning and study that occurs overseas.</i>
Total hours	125	
ECTS ratio	25.00	

Project/placement activity

Is placement activity allowed?	0
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Module delivery

Delivery mode	Taught/ Campus	Other	
Delivery term	2	Other	

Ownership

Primary department	Department of Electrical and Electronic Engineering
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Additional teaching departments	

Delivery campus	South Kensington
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Collaborative delivery

Collaborative delivery?	No
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External institution	
External department	
External campus	

Associated staff

Role	CID	Given name	Surname
Lecturer		Abd Al Rahman	Abu Ebayyeh
Lecturer		Yassir	Jedra
Module leader		Krystian	Mikolajczyk
Lecturer		Wenkun	He

Learning and teaching

Module description

Learning outcomes	Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to create a sensing device with machine learning. Choose and critically evaluate existing smart hardware solutions and various sources of information. Change and combine appropriate computational and analytical techniques to model ML problems. Create solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. Choose appropriate materials, equipment, engineering technologies, and employ practical laboratory and workshop skills to build a smart sensing device. Evaluate and mitigate risks by applying a risk management process to identify the risks (the effects of uncertainty) associated with a particular project or activity
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Module content	The module consists of tutorial and consultation sessions for group projects which include: Research and design of a smart sensing device (SSD) Implementation of assembly of a prototype of the designed hardware. Planning and data collection using the SSD Design and implementation of a machine learning model for processing the collected data. Training and evaluation of the SSD. Design and implementation of the presentation material in the form of a video and a web page with project resources. Presentation and demonstration of the SSD.
Learning and Teaching Approach	The module is based on tutorial sessions and practical work in groups supervised by lecturers and GTAs. It is designed so that students can support their learning with self-study and group project work. Tutorials and project progress presentation with lectures will be timetabled and followed by individual works between sessions.
Assessment Strategy	It includes assessment of project progress, milestones, collaboration and report produced by each group of 4 students. There is also an assessment of an oral presentation (20%), Q&A session with each student as well as peer assessment for the contribution to the group project
Feedback	Formative feedback will be provided by the lecturers and teaching assistants based on students progress and results. -Summative feedback will be provided for the report produced by students' groups. -An oral assessment will also be done for each student and oral feedback will be provided.
Reading list	Sensors technical specifications

Quality assurance

Date of first approval	March 2024
Date of last revision	July 2026
Date of this approval	

Office use only

QA Lead	
Department staff	
Date of collection	

Module leader	Abd Al Rahman Ebayyeh	Date exported	
		Date imported	

Notes/ comments

Assessment details

Grading method

Numerical

Pass mark

50%

Assessments

Assessment type	Assessment description	Weighting	Pass mark	Must pass?
Coursework	report & milestones	60%	50%	N
Practical	Presentation	20%	50%	N
Practical	Peer assessment	20%	50%	N

100%