MODULE DESCRIPTOR

Module Title

Advanced Control Systems

Reference	EN5504	Version	1
Created	May 2023	SCQF Level	SCQF 11
Approved	March 2004	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To provide students with the ability to select, apply and evaluate principles and techniques to solve complex problems in advanced control systems and advanced signal processing systems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Apply advanced linear control principles to the solution of complex problems with awareness of wider context of engineering.
2	Employ advanced linear control techniques to model complex problems.
3	Analyse complex problem to reach substantiated conclusions, involving evaluating advanced linear control principles, techniques, and systems.

Indicative Module Content

Digital Control: Z-Transform, Discrete transfer function, Sampled-data systems, Discrete Equivalents, State-space models, Transient and steady-state responses, Stability and Jury?s test, Compensator design, Controllability and observability, Pole placement, Observer design, Digital controller implementation.

Module Delivery

This is a lecture-based module supplemented with tutorial sessions.

Indicative Student Workload	Full Time	Part Time
Contact Hours	40	40
Non-Contact Hours	110	110
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3

Description: CW description: A coursework of applying principle, evaluating literature, analysing and modelling complex problems, and designing and evaluating control techniques and systems through computer simulation.

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 1 assessment component and to gain a pass a minimum D grade must be achieved.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Control and Instrumentation (EN4501) or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1 FRANKLIN, G.F., POWELL, J.D. and WORKMAN, M., 1998. Digital Control of Dynamic Systems. 3rd ed. Ellis-Kagle Press.

2 OGATA, K. 2015. Discrete-time Control Systems. 2nd ed. Prentice Hall.

3 ASTROM, K.J. and WITTENMARK, B., 2011. Computer-Controlled Systems: Theory and Design. 3rd ed. Prentice Hall.