MODULE DESCRIPTOR

Module Title

Linear Control Systems

Reference	EN2104	Version	4
Created	April 2023	SCQF Level	SCQF 8
Approved	July 2018	SCQF Points	30
Amended	August 2023	ECTS Points	15

Aims of Module

To provide the student with the knowledge and skills to design and analyse basic traditional linear control systems.

Learning Outcomes for Module

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

1	Infer the fundamental elements of linear feedback control systems.
2	Compute overall transfer function and system responses for both open and closed loops using block diagram algebra.
3	Compare the multivariable nature of many systems and the nature of interactions in MIMO systems.
4	Undertake the performance criteria of PID controller and practical issues of discrete PID controllers in SISO application.

Indicative Module Content

Open and closed loop control, system modelling, PID control, SISO & MIMO control systems, Classical control methods. Tuning of controllers. Development of performance criteria for control systems. Digital control techniques and stability criteria. State-space control systems. Relative Gain Arrays. Manipulated and Controlled Variables.

Module Delivery

The module is delivered in Blended Learning mode using structured online learning materials/activities and directed study, facilitated by regular online tutor support. Workplace Mentor support and work-based learning activities will allow students to contextualise this learning to their own workplace. Face-to-face engagement occurs through annual induction sessions, employer work-site visits, and modular on-campus workshops.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	30	N/A
Placement/Work-Based Learning Experience [Notional] Hours	240	N/A
TOTAL	300	N/A
Actual Placement hours for professional, statutory or regulatory body	240	

ASSESSMENT PLAN

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

Component 1

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	1, 2, 3
Description:	Logbook of solved tutorials.				

Component 2

Type:	Coursework	Weighting:	50%	Outcomes Assessed:	4
Description:	Report based on lab activities				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 2 components and to gain an overall pass a minimum D grade must be achieved in each component. The component weighting is as follows: C1 is worth 50% and C2 is worth 50%.

Coursework:

	Coursework: A	B	C	D	E	F	NS
A	A	A	B	B	E	E	
B	A	B	B	C	E	E	
C	B	B	C	C	E	E	
D	B	C	C	D	E	E	
E	E	E	E	E	E	F	
F	E	E	E	E	F	F	
NS	Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	Completion of Stage 1, SCQF Level 7, or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1 DORF, R.C., 2017. Modern Control Systems. 13th ed.

2 HAUGHEN, F., 2004. PID Control, Tapir Academic.