Liverpool John Moores University

Title:	Modern Control
Status:	Definitive
Code:	**6111ENG** (116968)
Version Start Date:	01-08-2018
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Electronics and Electrical Engineering

Team	Leader
Ronan McMahon	Y
Barry Gomm	

Academic Level:	FHEQ6	**Credit Value:**	10	**Total Delivered Hours:**	48
Total Learning Hours:	100	**Private Study:**	52		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	28
Practical	12
Tutorial	8

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam		50	
Technology	Cwork		50	

Aims

To extend the basic concepts and techniques of control in level 2 to further design and analysis techniques and also to basic digital control systems.

Learning Outcomes

After completing the module the student should be able to:

1 Analyse and design control systems with frequency analysis method
2 Analyse and design control systems with root locus method
3 Understand digital (computer) control system concepts and design digital PID controllers

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Examination	1	2	3
Coursework	1	2	

Outline Syllabus

Root locus: root locus concepts and construction, analysis and design with root locus.
Frequency analysis: bode plots, design criteria in frequency domain, controller design.
Stability analysis with bode plots.
Digital systems: sampled-data systems, pulse transfer function, closed-loop transfer function, stability analysis, digital PID controller design and implementation
Control system analysis, design and simulation with CACSD software (e.g. Matlab/Simulink, Scilab)

Learning Activities

Combination of lectures, tutorials, and computer based laboratory work.

Notes

This level 6 module extends level 5 concepts into continuous control design using frequency response and root locus methods, and discrete control systems with mainly digital PID controller design.