Liverpool John Moores University

Title:	CONTROL SYSTEMS
Status:	Definitive
Code:	**6500TECCBT** (118464)
Version Start Date:	01-08-2016
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Partner College

Team	Leader
Dingli Yu	Y

Academic Level:	FHEQ6	**Credit Value:**	12	**Total Delivered Hours:**	37
Total Learning Hours:	120	**Private Study:**	83		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	20
Practical	5
Tutorial	10

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	70	2
Report	AS2	Coursework	30	

Aims

To extend the basic concepts of control in level 2 in the design and analysis of control systems.

Learning Outcomes

After completing the module the student should be able to:

1 analyse and design dynamic compensation employing frequency analysis
2 construct root locus of closed-loop system response and design systems using root locus technique
3 examine and evaluate system stability
4 understand the state space concept and characteristics of linear systems
5 apply state feedback control with pole-placement method
6 design and simulate control systems using computer software, e.g. Matlab/Simulink

Learning Outcomes of Assessments

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

EXAM	1	2	3	4	5
CW	1	2	6		

Outline Syllabus

Root locus: root locus concepts and construction. Analysis and design with root locus. Frequency analysis: Nyquist criterion, Bode plots, design criteria in frequency domain. Compensation of systems with frequency analysis method.
State space: state variables and state space models, stability, controllability and observability, state feedback control by pole placement

Learning Activities

Combination of lectures,tutorials and laboratory work

Notes

This level 3 module extends level 2 concepts into continuous control design using frequency response, root locus and state space methods.