Liverpool John Moores University

Title:	CONTROL SYSTEMS
Status:	Definitive
Code:	**6500TECSBC** (113913)
Version Start Date:	01-08-2016

Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	The Sino-British College

Team	Leader
Russell English	Y

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

Delivery Options

Course typically offered: Semester 1

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
Essay	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 |

| Essay | 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.