Liverpool John Moores University

Title: Process Control
Status: Definitive
Code: **6009ELE** (120111)
Version Start Date: 01-08-2019

Owning School/Faculty: Electronics and Electrical Engineering
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
Barry Gomm	Y
Dingli Yu	

Academic Level:	FHEQ6	**Credit Value:**	10	**Total Delivered Hours:**	38
Total Learning Hours:	100	**Private Study:**	62		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Exam	70	2
Technology	AS1	PC Based Assignment	30	

Aims

To appreciate the problems associated with the design of closed-loop control of process systems. To understand the principles of cascade, feedforward and ratio control. To analyse non-linear process systems, systems containing large dead-time and coupled multi-loop systems.

Learning Outcomes

After completing the module the student should be able to:

1   Identify the principles of cascade, feed-forward and ratio control of process plants, with typical applications
2   Appraise typical components in process systems and develop process models for analysis and controller design
3   Characterise strategies for controlling systems possessing dead-time, inverse response and interaction properties
4   Use computer based software packages for analysis, design and simulation of process control systems

Learning Outcomes of Assessments

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

Examination   1   2   3

PC based assignment   1   4

Outline Syllabus

Actuator and sensor dynamics for processes, dynamics of time delay, stability of systems involving time delays, frequency response stability criteria, fitting first and second order models using step tests.

Transfer function modelling using linearisation and deviation variables, digital PID control, cascade, ratio, feed-forward + feedback control, internal model control, Smith predictor, multivariable control systems.

Learning Activities

This Level 6 module describes the analysis and design principles of closed-loop control of process systems.

Notes

This Level 6 module describes the analysis and design principles of closed-loop control of process systems.