University of Lincoln Assessment Framework
Assessment Briefing Template 2023-2024

NOTE: All Assessment Briefings should be made available prior to the commencement of the module, clearly signposted on the module Blackboard site as well as included in any module handbook or briefing document.

Module Code & Title: EGR2006 Control Systems

Contribution to Final Module Mark: 50%

Coursework Title: Modelling and Control of a DC Motor

Submission Deadline: Friday 8th December 2023

Description of Assessment Task and Purpose:

Objectives: to develop understanding of modelling and controller design using a DC Motor Control Trainer (DCMCT). In particular you will:

- Practice first principles of modelling.
- Determine system parameters by experimental tests.
- Design a controller and test it using simulation.
- Test control performance experimentally.

Methods: These will be presented in class. In particular, Simulink and Matlab will be required to perform simulations and tune the PID controller. Full details will be presented in class and detailed information will be presented during week 3 of class (Monday October 9th).

Equipment: The equipment will be demonstrated in class, and later you will have a chance to test your controller in the lab. Full details will be given during class. See

http://eelabs.faculty.unlv.edu/docs/guides/QNET_DCMCT_User_Manual.pdf

for further information (exact details may differ but this gives a general idea of the equipment to be used)

Learning Outcomes Assessed:

LO2 Test electrical machines and devices then compare practical and theoretical results and explain the differences .

LO3 Perform control experiments, select appropriate data for analysis and propose a solution to an industrial control problem.

LO4 Plan and manage their time and resources, and make sound judgements based on technical evidence

Knowledge & Skills Assessed:

Evaluation of scientific evidence of subject area.

Production of scientific documents to professional standards (e.g. references, information synthesis in concise manner).

Time management, self-directed learning.

Analytical and critical thinking.

Assessment Submission Instructions:

This submission is: ☒ individual work.

☐ group work.

All work should be submitted by the deadline stated. You are required to submit your assessment before **11.59 pm on Friday 8th December** using the online assessment submission facility on the Module Blackboard site. Pay careful attention to instructions provided at the time of submission. Any late submissions will be subject to a lateness penalty in line with the University policy.

The method of submission described above should be used in the first instance however, in cases of technical issues please email your assessment to: soesubmissions@lincoln.ac.uk by the above deadline. Please include the module code and coursework title in the email subject.

All work will be subject to plagiarism and academic integrity checks. In submitting your assessment, you are claiming that it is your own original work; if standard checks suggest otherwise, Academic Misconduct Regulations will be applied.

Date for Return of Feedback: Feedback will be provided by Monday 15th January.

Format for Assessment:

Your assessment should be in a submitted report of around 10-15 pages. The report should be submitted in PDF format. It is recommended that the report is divided into sections according to the marking scheme shown below.

Aim to present clear and concise explanations together with clearly labelled figures. Plots should be created in Matlab (or other plotting software) – avoid using screen capture as the quality of the plots will be poor.

Include a final section for Summary and Conclusions. Conclusions might focus on the control methods and system performance and include suggestions for improvement if the exercise was repeated.

Marking Criteria for Assessment:

Each element of the assessment is scored according to the marking scheme below. For a 20% element the scoring system is as follows

Remarks	***Scoring Scale***	***Score***
All the aspects were excellently covered and presented	*Excellent*	*15-20*
Moderate discussion of all the above aspects described	*Good*	*10-15*
A few of the aspects were clearly explained	*Fair*	*5-10*
None or one of the topics were discussed sufficiently	*Poor*	*0-5*

Assessment is based on five components, equally weighted:

PART 1. INTRODUCTION, BACKGROUND, ENGINEERING PRINCIPLES:	**20%**
PART 2. MODELLING AND SIMULATION:	**20%**
PART 3. PID CONTROLLER DESIGN AND SIMULATION TESTS:	**20%**
PART 4. PID CONTROL EXPERIMENT (LAB TESTING)	**20%**
OVERALL REPORT QUALITY, INCLUDING INTRODUCTION AND CONCLUSIONS	**20%**

Please note that all work is assessed according to the University of Lincoln Management of Assessment Policy and that marks awarded are provisional on Examination Board decisions (which take place at the end of the Academic Year.

Feedback Format:

General feedback will be given verbally in class, Monday January 8th, 2024. Detailed feedback on each report will be annotated on the submitted PDF and uploaded to Blackboard.

Additional Information for Completion of Assessment:

Academic subject Librarians https://guides.library.lincoln.ac.uk/asl

Information about writing at https://guides.library.lincoln.ac.uk/aws

Reference system example at https://guides.library.lincoln.ac.uk/learn/referencing

Assessment Support Information:

Please email any questions to tgordon@lincoln.ac.uk

Important Information on Dishonesty & Plagiarism:

University of Lincoln Regulations define plagiarism as 'the passing off of another person's thoughts, ideas, writings or images as one's own...Examples of plagiarism include the unacknowledged use of another person's material whether in original or summary form. Plagiarism also includes the copying of another student's work'.

Plagiarism is a serious offence and is treated by the University as a form of academic dishonesty. Students are directed to the University Regulations for details of the procedures and penalties involved.

For further information, see plagiarism.org.