

Grading Rubric: Control Systems using Simulink - Assignment

Criteria (Weight)	60%	60-70%	70-80%	80-90%	90-100%
Model creation (30%) [Aligned to LO1]	Model does NOT run or has major structural errors, missing connections, blocks and scopes.	Model does NOT run or has major structural errors, wrong connections, blocks and scopes. A script file is done to increase modelling efficiency.	Model runs but contains several errors or inconsistencies. Validation plots are inaccurate. Higher score if a script file is done to increase modelling efficiency.	Model runs correctly; structure is sound. Validation plots align reasonably with expectations. Higher score if a script file is done to increase modelling efficiency.	Model runs correctly and efficiently (may use scripts or modular subsystems). Validation plots match expected results.
Implementation of PID and MRAS controllers (20%) [Aligned to LO2]	Attempted implementation of one controller but incomplete or non-functional. Major structural errors, missing connections, blocks and scopes.	Attempted implementation of both controllers but incomplete or non-functional. Major structural errors, missing connections, blocks and scopes. There is no attempt of comparing both controllers.	The PID controller is implemented and functioning as evident with the pitch angle achieving the set point. Attempted implementation of comparing both controllers but non-functional. Limited comparison or discussion of performance.	Both controllers implemented and functioning. Attempted implementation of comparing both controllers but non-functional. Quantitative or qualitative comparison of performance is provided but lacks depth.	Both controllers fully functional and tuned. The results of both controllers are compared to the reference signal on a single plot. Results compared using performance metrics (overshoot, settling time, etc.). Analytical discussion justifies tuning approach and explains performance differences.
Evaluation of the aircraft model and control system (15%) [Aligned to LO3]	There is no evidence of experimentation with the Simulink model. With no deductions were made from any result.	Experimentation is limited to adjusting the reference pitch angle or another single parameter. There is a remedial level of critical thinking with regards to interpretation, evaluation and presentation of these results.	Several model parameters, including controller gains, have been altered. There is an average level of critical thinking with regards to interpretation, evaluation and presentation of these results.	Systematic experimentation with multiple parameters. Results interpreted and compared against expected trends.	Extensive experimentation with clear rationale. Results critically evaluated against theoretical expectations. Insightful conclusions drawn about system behavior and controller performance.
Manipulating system equations (15%) [Aligned to LO4]	Erroneous attempt to include a disturbance term. No discussion of physical significance.	A disturbance term is accurately included for a single equation but does not represent a realistic disturbance or no ties to a real-world scenario is made. Weak physical justification and a remedial level of critical thinking with regards to interpretation, evaluation and presentation of these results.	Attempted implementation of multiple disturbance terms but only one is functioning. Not all represents realistic disturbances or only one was accurately tied to a real-world scenario. Average physical justification and level of critical thinking with regards to interpretation, evaluation and presentation of these results.	Attempted implementation of multiple disturbance terms but only two is functioning. Not all represents realistic disturbances or only one was accurately tied to a real-world scenario. The disturbance is well justified with a high level of critical thinking with regards to interpretation, evaluation and presentation of these results.	Attempted implementation of multiple disturbance terms with all functioning. All represents realistic disturbances and are tied to real-world scenarios. Clear physical justification provided. Student analyzes and discusses implications for system performance and controller robustness.
Report (20%) [Aligned to LO5]	Report lacks structure and clarity. Plots missing or poorly formatted. Numerous grammatical issues. No evidence of reflection on learning or connection to theoretical context.	Report partially structured. Some plots provided but not well-discussed. Minimal evidence of reflection on learning or connection to theoretical context. Formatting is incomplete with numerous grammatical issues.	Report logically structured with sufficient plots. Most figures referenced and discussed. Reflection is minimal and lacks connection to broader control system principles. Writing is mostly clear with numerous grammatical issues.	Report logically structured with sufficient plots. Most figures referenced and discussed. Reflection discusses key lessons learned and partially connects computational work to theoretical understanding Writing is mostly clear with minor errors.	Report is well-structured, analytical, and reflective. All plots are clearly labeled and interpreted. Reflection demonstrates synthesis between computational work, control theory, and real-world system behavior.