Name: _____ **ENG ME403**

Atmospheric Flight Mechanics, Class Project

Introduction (10)	☐ Brief description of the aircraft, including its purpose (fighter, passenger, etc.) its history, and its manufacturer ☐ Clearly state whether you will focus on longitudinal or lateral dynamics
Correct First Report (25)	☐ Dynamic Characteristics – tables eigenvalues, eigenvectors/mode shapes. ☐ Comparison to acceptable ranges in Nelson's text. Flying Performance level assessment. ☐ Compare eigenvalues to approximate formulae ☐ Plot transient responses (all 4) to more than one set of initial conditions. ☐ All tables of contents use section and subsection headings. ☐ Describe in words, with as few equations as possible, what was done ☐ Proposed control system (for firs report)
Define control objective (15)	☐ May include simulation results of stick-fixed flying to demonstrate dynamic behavior of system, goal of control system. ☐ If relevant, give a quantitative description of the control objective in terms of flying qualities and modal properties, such as damping factors and periods.
Feedback Controller Design (25)	☐ Design a control system to achieve the performance objective ☐ Show by analysis and simulation that you have (or have not) achieved the objective. ☐ Try using the same feedback for a different flight condition, and see if the performance is still improved. ☐ Identify your transfer function G(s) o Why did you choose it? o Document its calculation o Compute step response ☐ Describe the goal of your control effort ☐ Create and describe a root locus plot of your G(s) for proportional control ☐ Choose at least two control strategies (e.g. phase lead, PID). ☐ Implement your control strategy o Compute step response o Compute performance metrics o Compute steady-state errors
Appendix (15)	☐ Table of plane parameters & stability derivatives, source citied ☐ Include calculation for remaining coefficient needed for equations fo motion. Justify any neglected quantities. ☐ Matlab scripts
Overall Clarity and Presentation	☐
Bonus	☐ Nelson's Appendix ☐ Lateral dynamics

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