

ENG 470 - SYSTEMS ENGINEERING PROJECT #1

INTRODUCTION TO SYSTEM DESIGN SIMULATION WITH MATLAB

In this project, the students will become familiar with the operation of the Matlab software for system design and simulation; specifically, Stateflow, which is a facility part of Matlab's Simulink.

1. Start by reading and exploring the following page:

a. http://www.mathworks.com/help/stateflow/getting-started.html?s_tid=doc_12b

2. Go to the page <http://www.mathworks.com/system-design-simulation/> and read and explore this page.

3. From the page in (2), go to “Using Models to Design Complex Systems”, and read and explore this page.

4. From the page in (2), go to “Simulating and Analyzing System Models”, and read and explore this page.

5. Go to “Designing an Aircraft Elevator Control System – Overview” and after reading this page, reproduce each of the four parts of this case study using Stateflow. This case study can be found in the following page:

a. http://www.mathworks.com/products/simulink/examples.html?file=/products/demos/stateflow/fdir/FDIR_overview.html

6. Write a report, which will be due by the date announced in class, commenting and discussing:

a. The purpose and use of the software package in system design.

b. The ease of use of the Matlab system design tools for system design and evaluation.

c. The information that can be obtained about a system design using Matlab.

d. What part of the system design process can be accomplished with Matlab and which part(s) cannot?

e. Possibility of using Matlab to design a system, such as the redbox. Describe your scheme.

Research in the Internet or go to a place where there is a redbox, and research it from a

system perspective.

7. GRADING RUBRIC: The total grade will be 10 points normalized to 100% for your report. Points a, b, and d in (6) will be worth 2 point each, point c will be worth 1 point, and point e will be worth 3 points.
8. REPORT FORMAT: Free form, but it must be:
 - a. One report per student
 - b. Have a cover sheet with identification: Title, Class, Your Names, etc.
 - c. COMPLETELY word-processed
 - d. Double spaced
 - e. 12 pt Times New Roman font
 - f. 1 inch margins on all sides
 - g. Fully justified (optional)