

**Avionics
SYE 3803
Spring 2015**

Group Project

Project Presentations and Due Date: April 23rd, In-class

Via email: tfallon@spsu.edu

Total Points: 100

Project Weight = 15%

For your project you will have a choice of two different topics: i) Design an air traffic management system, ii) Research and report on an avionics-related aircraft accident. Depending upon your choice follow one of the following Instruction sets:

Design an air traffic management system

You will be designing an ATM system using generic components (e.g. GPS subsystem, air-to-ground communications module, etc.) that you deem necessary and that you can justify in your design. Conduct research to determine the necessary components that you will include in your ATM system. Note: Your system should not be an exact duplicate of an existing or emerging ATM system. It should consist of your own insights, questions, and visualizations of what such a system should entail. You are to write a report and develop a PowerPoint presentation that includes the following events/tasks; Additional events/tasks also may be included:

- i) Aircraft taxi management
- ii) Aircraft departure and take off management
- iii) Aircraft routing and navigation
- iv) Airspace congestion
- v) Dynamic response to weather
- vi) Aircraft and human communications
- vii) Aircraft approach and landing

Suggest URLs:

http://www.faa.gov/air_traffic/

<http://www.eurocontrol.int/articles/what-air-traffic-management>

<http://www.airtrafficmanagement.net/>

<http://www.gps.gov/>

Research and report on an avionics-related aircraft accident

Conduct research on an aircraft accident wherein a major contributor to the accident was avionics related. You are to write a report and develop a PowerPoint presentation about a specific aircraft accident that includes the following details:

- i) Synopsis of the accident
- ii) Pertinent diagrams, graphics, etc.
- iii) Date and time of the accident
- iv) Geographical location and features related to the accident
- v) Meteorological conditions at the time of the accident
- vi) Avionics equipment contributing to the accident
- vii) Role of avionics in the accident
- viii) Role of pilot(s), air traffic controller, other personnel in the accident
- ix) Role of the aircraft response and/or failure in the accident
- x) Other contributing roles
- xi) Pertinent instrument settings
- xii) Other related report analysis
- xiii) Post-accident recommendations
- xiv) Conclusions

Suggested URLs:

<http://www.nts.gov/investigations/AccidentReports/Pages/AccidentReports.aspx>

<http://library.erau.edu/find/online-full-text/ntsb/aircraft-accident-reports.html>

Notes:

- Copyright must always be respected and adhered to: <http://www.copyright.gov/help/faq/>
 - Always research the rules, restrictions, attributions, etc. of any potential source of information (text, graphics, photographs, etc.) *before* you consider using the information in your project. If there is every any doubt, then *do not include* the material in question. If necessary, you can always write your own (unique) words or create your own (unique) graphics.
- Students can work together in groups of two or three.
- You may give each other assistance on general methodologies, but each team must do their own work.
- Student submissions will be in a PDF file format. The presentation can be done using PowerPoint, but the hand-in version of the presentation will be in a PDF format.
- This is a group project. Everyone in the class needs to participate to be able to get credit. Each student is required to do the following:
 - Keep a log of all the work they have performed individually.
 - All sources must be clearly identified and documented. You may use the internet, library or other resources.

Deliverable:

- **A written report.**
- **A PowerPoint presentation**

Suggested Framework for Report

Remember the goal is to design or develop something that could be used for demonstration. Include the following items in the report.

•Executive Summary

–Briefly describe the problem. State your synopsis/recommendation and discuss relevant factors, assumptions, etc...

•Main Body

–Do not write this report as if you were reporting to a professor. You are presenting your analysis and recommendation to a decision maker.

–Briefly describe what you did and present the results of your research/calculations.

•Annexes

–This is where you should include more technical / academic details.

–You should use this section to delve into the details of your computations.

Your paper is expected to generally meet the following **requirements**:

1. Your paper should have *about* 5 pages of narrative (not including drawings, pictures, the first page and references). Pages are to be numbered-bottom left, 12pt, double-spaced times New Roman font.
2. An executive summary should appear on page 1.
3. The paper shall also include a cover page with the student's name, instructor's name, the course (SyE3803) and title of the report.
4. Papers should be understandable in a single rapid reading and be substantially free of errors in grammar, spelling, punctuation, mechanics and usage.
5. Papers should be concise but should adequately address all relevant aerodynamics and design principles covered in the course. (Stating only the obvious is not adequate.)
6. All sources used to support concepts in each paper should be properly cited whether or not there is a direct quote.
7. A 'Reference' section should be included at the end of the paper that lists all sources used/cited in your paper.
8. Papers are to adhere generally to MLA standards.

Grade:

Your grade will reflect the professional quality of your paper, both relative to your peers and in an absolute measure. Your grade will be based on the following components: your level of participation in the project, content of the report, organization, clarity and reflective analysis with respect to relevant aerospace engineering design principles. Although this is not an essay for English class, I do expect you be familiar with how to properly use the grammar and spell check features in your word processing program.

Last Update: January 5, 2015