ABET Course Syllabus

ENAE 380 Flight Software Systems

Credits & Contact Hours: 3 credits (2 hours of lecture per week and 1 two hour lab per week)

Course Status: Required

Schedule: Offered every Fall semester

Course Description: Avionics using advanced sensor and computing technologies are at the heart of every modern Aerospace vehicle. Advanced software systems to improve cockpit safety and enable unmanned and deep-space missions. Object-oriented programming and software engineering concepts required to design and build complex flight software systems. Software validation, verification and real-time performance analysis to assess flight software system reliability and robustness. Human-machine interface design for piloted systems. Automatic onboard data acquisition and decision-making for unmanned air and space vehicles.

Pre-Requisites: ENAE 202, ENAE 283

Co-Requisites: None

Textbooks: None

Other Required Material: Course lecture notes and handouts

Course Oversight: Undergraduate Committee

Syllabus Prepared By/Date: Mr. Vincent Banes on August 2010

Course Objectives/Student Learning Outcomes:
1. Produce object-oriented design code for complex flight systems

Topics Covered:
1. Advanced software systems improve cockpit safety and enable unmanned and deep-space missions.
2. Object-oriented programming and embedded software engineering concepts required to design and build complex flight software systems.
3. Sensors and controllers
4. Cross platform communications
5. Software validation and verification
6. Real-time embedded software
7. Flight software system reliability and robustness.
8. Basic navigation concepts

9. GPS system design
10. Automatic onboard data acquisition and decision-making for unmanned air and space vehicles.

Relationship of Course Objectives to Program Outcomes

This course addresses program outcomes: 3, 4, 6, 7, 8, 9, 13, 14, 16