

ABET Course Syllabus**ENAE 482 Aeronautical Systems Design**

**Credits & Contact Hours:** 3 credits (2 hours of lecture, 3 hours of laboratory)

**Course Status:** Required

**Schedule:** Offered every Spring semester

**Course Description:** Senior capstone design course in the aeronautics track. Introduction of computerized methods for sizing and performance analysis. More comprehensive methods to predict weight, aerodynamics and propulsion system characteristics. Consideration in design disciplines such as vulnerability, maintainability, produceability, etc. Groups of students will complete, brief and report on a major design study to specific requirements.

**Pre-Requisites:** ENAE 403, ENAE 455, ENAE 481

**Co-Requisites:** None

**Textbooks:** None

**Other Required Material:** Course lecture notes and handouts

**Course Oversight:** Design/Lab Committee

**Syllabus Prepared By/Date:** Dr. Palumbo on June, 2011

**Course Objectives/Student Learning Outcomes:**

1. Utilize computerized methods to perform aircraft sizing and analysis
2. Work effectively as part of a team to design an aeronautical system based on a given set of requirements
3. Ability to take a conceptual aircraft design from feasible concept to credible preliminary configuration

**Topics Covered:**

1. Aircraft Specifications
  - a. The Mission Profiles
  - b. Field Performance
  - c. Special Performance
  - d. Type of aircraft and payloads to be carried
  - e. Physical Constraints
  - f. The Operational Scenario
  - g. Vehicle Observables (Signatures) Requirements
2. Aircraft configuration development
  - a. Fuselage
  - b. Wing
  - c. Empennage
  - d. Propulsion system
  - e. Landing Gear

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**Relationship of Course Objectives to Program Outcomes**

This course addresses program outcomes: 1, 3, 4, 5, 7, 8, 9, 10, 12, 13, 16