

## Master Syllabus

### AVT 2247 - Aerodynamics & Flight Mechanics

**Division:** Science, Mathematics and Engineering

**Department:** Aviation Technology

**Credit Hour Total:** 3.0

**Lecture Hrs:** 3.0

**Prerequisite(s):** PHY 1141

**Date Revised:** October 2013

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#### Course Description:

Properties of the Standard Atmosphere. Applies basic physics conservation concepts to incompressible, low-speed aerodynamics to develop analytical equations for lift and drag. Develops methods for basic aircraft performance analysis to include maximum angle and rate of climb, cruise and gliding flight. Discusses basic static and dynamic stability requirements.

#### General Education Outcomes:

- ▣ Critical Thinking/Problem Solving Competency
- ▣ Information Literacy Competency

#### Course Outcomes:

##### Aerodynamics

Comprehend and apply the basic principles of aerodynamics.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 60% or more correct on written test.

##### Performance Prediction

Apply analysis methods developed in class to predicting aircraft performance during cruise, climb, and glide flight conditions.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 60% or more correct on written test.

##### Stability & Control

Comprehend basic static and dynamic stability requirements for an aircraft.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 60% correct on written test.

#### Outline:

Properties of the Standard Atmosphere

Basic laws of physics (conservation of mass, energy, and momentum) applied to incompressible flow over an airfoil

Extend these concepts to compressible flow over an airfoil and to three dimensional wings with viscous effects

Basic aircraft performance using thrust required and available curves

Static stability of an aircraft

Dynamic stability modes of an aircraft