**AVMT 254**
**Unmanned Aircraft Systems Sensor Operations**
3 Credits

# Community College of Baltimore County
# Common Course Outline

## Description

**AVMT 254 – Unmanned Aircraft Systems Sensor Operations:** provides a detailed overview of sensors and how they enhance the role of Unmanned Aircraft Systems (UAS). Topics include Light Detection and Ranging (LIDAR), thermal, Infrared (IR) and near-IR sensors, photogrammetry, advanced Global Positioning System (GPS) systems, mission planning, mission execution, data extraction, and processing. This course has additional lab fees.

**Pre-requisites:** AVMT 161 and AVMT 162 or approval of the Aviation Program Director
**Co-requisites:** AVMT 253 or approval of the Aviation Program Director

## Overall Course Objectives

Upon completion of this course, students will be able to:

1. differentiate among various sensor packages available for commercial UAS;
2. determine which sensor(s) to use based on UAS mission requirements;
3. contrast the limitations of each sensor type;
4. demonstrate the ability to program and troubleshoot sensor packages for a wide range of UAS;
5. process collected UAS sensor data into a usable format;
6. install sensor packages on a wide variety of UAS;
7. perform photogrammetry missions to model buildings and map the surface of the earth;
8. perform sensor missions for various agricultural applications;
9. conduct thermal sensor missions for search and rescue and law enforcement applications; and
10. set up a base station with ground control points and a Real-Time Kinematic (RTK) network.

## Major Topics

I. Sensor types
II. Sensor capabilities and limitations
III. Selecting a sensor for a particular application
IV. Troubleshooting and common problems
V. Data extraction and processing
VI. Sensor installation, programming, and set-up on UAS
VII. Photogrammetry sensors
VIII. Near IR edge and Normalized Difference Vegetation Index (NDVI)
IX. Infrared and thermal applications
X. Global Positioning System (GPS) and RTK setup

**Course Requirements**

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- 2 examinations
- comprehensive final exam
- 2 writing assignments such as flight plans, special topic papers, current events reports, article or textbook summaries, research or case study analysis papers, and personal journals

Written assignments and research projects: Students are required to use appropriate academic resources in their research and cite sources according to the style selected by their professor.

**Other Course Information**

This course is a required course in the Associate of Applied Science Professional Pilot Unmanned Aircraft Systems Aviation Technology degree program.

Date Revised: 10/29/2019