



in cooperation with



EL310 UNMANNED AIRCRAFT SYSTEMS

Course Description

The course provides an overview of UASs structure and functionality. It includes a description of the different designs of UAS and the purposes of each of them. Students will be able to understand the difference between a toy UAS (drone) and a commercialized one, and to analyze the main functions of a UAS: detecting water masses, disease detection, soil management, irrigation and drainage management, rhino protection, land surveying and many more. The students also get to know the limitations of UAS, its legislation framework (nationally and internationally), the technical capabilities of the UAS and the type of equipment it can carry.

Prerequisites: PH100, MATH150

Credits: 3 term hours

Hellenic American University fully complies with federal requirements relating to Title IV program participation vis-a-vis the award of academic credit. The basic unit of credit at Hellenic American University is the semester hour. In a typical 15-week semester, each credit awarded corresponds to one contact hour of classroom instruction per week, which is supplemented by a minimum of two hours of appropriate out-of-class activities of appropriate academic rigor. At least an equivalent amount of work is required for other academic activities established by the institution, including E-learning courses, laboratory work, internships, practica, studio work, directed studies, independent studies and other academic work leading to the award of credit hours.

Course Objectives

This course will enable students:

- Understand basic concepts of UAS operation
- Identify challenges and critical issues in the legislation frameworks related to UAS
- Understand and apply technologies related to the design and the construction of UAS
- Exploit and analyze UAS data

Course Information

Class Times

16:00-19:00

Class

Room 501, Massalias 22

Credits

3

Instructor

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Office Hours

Learning Outcomes

After successfully completing this course, students will be able to:

- Recognize different UASs and discuss their functionalities
- Understand national and international legislation related to UAS
- Discuss technologies related to the construction and operation of UAS
- Download data from UAS to the computer and perform basic data analysis

Course Requirements

In order to successfully complete the course, the student must:

- Attend class regularly (see attendance policy)
- Read the assigned material
- Complete written assignments that demonstrate basic critical and research skills
- Satisfactorily complete the quizzes, midterm and final exams

Course Textbook

Required:

“Unmanned Aircraft Systems UAVs Design, Development And Deployment” Reg Austin, Wiley, 2010.

Additional supplemental materials will also be available electronically through **Blackboard Learning System** at <http://e-learning.hau.gr> OR handed out in class.

Additional Resources:

Blackboard Learning System <http://e-learning.hau.gr>

Hellenic American University uses Blackboard Learning System e-learning platform for all its Undergraduate (and Graduate Program) courses. The Blackboard e-learning platform is a virtual course environment with a complete set of efficient tools for communication, collaboration and supervision. Students can use the Blackboard system to access course materials and resources organized by their instructors using any Internet enabled computer.

Course Schedule

Week	Lecture Content	Coursework
1	Introduction to UASs	Introduction – Exercises
2	UASs designs	Discussion – Exercises

3	UASs functionalities (1/3) - detecting water masses, disease detection	Discussion – Exercises
4	UASs functionalities (2/3) - soil management, irrigation and drainage management	Discussion – Exercises
5	UASs functionalities (3/3) - land surveying	Hands on / Project Assessment
6	Introduction to UAS legislations	Midterm Exam
7	Midterm exam	Discussion - Exercises
8	National and International legislation issues	Discussion – Exercises
9	Constructing a UAS: basic design principles	Discussion – Exercises
10	Constructing a UAS: electronics and circuits	Discussion – Exercises
11	Constructing a UAS: mechanical and hydraulic parts	Discussion – Exercises
12	Operational functionalities of UAS: data downloading and storing	Discussion – Exercises
13	Operational functionalities of UAS: data analytics	Discussion – Exercises
14	Revision and demonstration	Discussion – Exercises
15	Final exam	Hands on / Project Assessment – Final Exam

Policies and Procedures

Attendance Policy:

Class participation and attendance are an integral part of the University's education policy: "Our mission requires of us that we pursue excellence in education...We are therefore committed to following the best practices of American higher education that encourage and require punctuality as well as attendance."

Plagiarism Policy:

Students are responsible for performing academic tasks in such a way that honesty is not in question. Academic Honesty Policy in the University Catalog states: "plagiarism is defined as copying another student's work, lending work to another student or representing extracts or whole articles and texts from books or handouts as one's own work". More details on this policy can be found in your *Student Handbook*.

Add-Drop Policy:

Students should follow the university Add-Drop policies as defined in the *Catalog* and *Student Handbook*.

Writing Into Disciplines (WID)

The Hellenic American University fosters the idea that writing as a process is fundamental to learning. In this framework all undergraduate courses incorporate writing as an essential means to promoting communication and the exchange of information across the disciplines.

Assignments

The assignments for this class will be in the form of individual homework. Each student will submit assignments at a predetermined date and time. More information about these assignments will be given at a later time.

Make-up and Late Assignments

Students are expected to manage their time appropriately so as to submit their assignments on time. Late assignments will receive no credit. Exceptions to this rule will be considered on an individual basis.

Method of Evaluation

Grading for assignments and exams will be on a scale of 0% to 100%. Final grade will be computed by weighting all scores as follows:

Assessment Area	Percentage
Class Attendance and Participation	25%
Coursework Assignments	25%
Mid-Term Exam	25%
Final Exam	25%

NOTE: Whereas this course outline is accurate at the beginning of the term, due to unforeseen circumstances that may arise during the course of the term, it may be altered preserving its structure and outcomes.