

Course Outline

COURSE: AMT 225 DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2018 CURRICULUM APPROVAL DATE: 03/12/2018

SHORT TITLE: INTRO DRONES

LONG TITLE: Introduction to Drones

Units	Number of Weeks		Contact Hours/Week		Total Contact Hours
3	18	Lecture:	3	Lecture:	54
		Lab:	0	Lab:	0
		Other:	0	Other:	0
		Total:	3	Total:	54

COURSE DESCRIPTION:

This course introduces students to the foundations of drones including the history, systems, maintenance, payloads, data links, ground support equipment, classes of systems, categories, applications, mission planning and control and recovery systems.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

- L - Standard Letter Grade
- P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

- 02 - Lecture and/or discussion
- 05 - Hybrid
- 72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

1. Identify and describe Drone Systems, including both fixed wing and rotor wing aircraft types. (SLO's: 7,2,1)

Measure of assessment: homework, exam, discussion, report

Year assessed, or planned year of assessment: 2018

Semester: Spring

2. Discuss the legal aspects of Drone Operations, including FAA regulations. (SLO's: 2,7,1)

Measure of assessment: exam, discussion

Year assessed, or planned year of assessment: 2018

Semester: Spring

3. Discuss mission planning, as well as control and recovery systems. (SLO's: 7,2,1)

Measure of assessment: discussion, homework, exam

Year assessed, or planned year of assessment: 2018

Semester: Spring

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 03/12/2018

20 Hours:

1) Introduction to Drones - History and Overview

2) Classes of Drones - Very Small (Nano, Micro), Small (Mini), Medium (MALE - Medium Altitude Long Endurance), Large (HALE - High Altitude Long Endurance)

3) Types of Systems - Fixed Wings, Multi-Rotor Wing Systems, GMAV - Gasoline Micro Air Vehicle

Student Performance Objectives: Identify Drones and discuss their history. Identify and describe the different classes of Drones. Discuss the inter-relationship and interactions of the subsystems of the Drones and the implications of system performance requirements at a total-system level. Discuss the various schemes that are used to classify Drone systems according to their size, endurance and/or mission

18 Hours:

4) Legal Aspects of Drone Operations - FAA Regulations, State Regulations, Privacy Issues, Commercial vs. Private Operations

5) National Air Space - Classes of Airspace

6) Basics of Payloads, Data Links and Ground Support Equipment

7) Mission Planning Basics - Control and Recovery Systems

8) Flight Operations and Safety

Student Performance Objectives: Describe the use of Drones within the National Air Space. Describe the payloads, data links and ground support equipment. Identify safety concerns and methodology for safe operations of Drones. Discuss mission planning, including the various control and recovery systems. Summarize the applications for which Drones have been or are being considered.

14 Hours:

9) Applications for Drone Use - Precision Agriculture, Natural and Cultural Resource Management, Emergency Response: Law Enforcement, Search and Rescue, Mining, Building, Inspections

10) Types of Sensors Based on Applications - Cameras, Videography, Processing Software

Student Performance Objectives: Describe the type of sensors and applications that can be used with Drones. Discuss how the human operators exercise control over the Drone and its payloads.

2 Hours:

METHODS OF INSTRUCTION:

lecture, discussion, AV presentation

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 40

Assignment Description: Read related chapters in the textbook. Answer study guide questions. Report: Select a specific Drone System, research its capabilities and report back to the class.

Required Outside Hours: 36

Assignment Description: Read related chapters in the textbook. Answer study guide questions. Homework: Read the FAA Regulations regarding Drone operations and write a 1 - 2 page paper explaining how these rules pertain to your Drone situation. Come prepared to discuss this information with the class.

Required Outside Hours: 28

Assignment Description: Read related chapters in the textbook. Answer study guide questions.

Presentation: Analyze the following situation and report your findings to the class - You were asked if you could fly your Drone over San Jose, CA to shoot videography. Where could you fly and what type of authorization would you need from the FAA?

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 10.00 %

Homework

Problem-solving assignments

Percent of total grade: 40.00 %

Report, Presentation

Objective examinations

Percent of total grade: 30.00 %

Written exams

Other methods of evaluation

Percent of total grade: 20.00 %

REPRESENTATIVE TEXTBOOKS:

Required Representative Textbooks

Fahlstrom, Paul and Gleason, Thomas. Introduction to UAV Systems, Fourth Edition. Chichester, UK: John Wiley & Sons, Ltd.,2016.

ISBN: 978-81-265-6014-1

Reading Level of Text, Grade: 12th Verified by: MS Word

Required Other Texts and Materials

Hardware such as: Portable Hard Drive and Mini Scan Disks.

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:
CSU Crosswalk Course Department:
CSU Crosswalk Course Number:
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: C
Maximum Hours: 3
Minimum Hours: 3
Course Control Number: CCC000576441
Sports/Physical Education Course: N
Taxonomy of Program: 095000