

Course Outline

COURSE: AMT 230 DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Spring 2019 CURRICULUM APPROVAL DATE: 05/14/2018

SHORT TITLE: DATA ACQ, MAP, SUR WITH DRONES

LONG TITLE: Data Acquisition, Mapping, and Surveys With Drones

Units	Number of Weeks		Contact Hours/Week		Total Contact Hours
3	18	Lecture:	2	Lecture:	36
		Lab:	3	Lab:	54
		Other:	0	Other:	0
		Total:	5	Total:	90

COURSE DESCRIPTION:

This class covers drone technology data acquisition and analysis. Several different sensors and data analysis programs will be explored. This course has the option of a letter grade or pass/no pass.
 PREREQUISITE: AMT 225 and AMT 227.

PREREQUISITES:

- Completion of AMT 225, as UG, with a grade of C or better.
- AND Completion of AMT 227, as UG, with a grade of C or better.

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
- 03 - Lecture/Laboratory
- 04 - Laboratory/Studio/Activity
- 04A - Laboratory - LEH 0.65
- 05 - Hybrid

72 - Dist. Ed Internet Delayed

73A - Dist. Ed Internet LAB-LEH 0.65

STUDENT LEARNING OUTCOMES:

1. Use programming to solve problems relating to drone technology.

Measure: Homework, Presentation

Year assessed, or planned year of assessment: 2018, Fall

2. Utilize drone technology and at least 1 sensor in the acquisition of data, the analysis of this data, and the presentation of intelligent conclusions based on this data.

Measure: Presentation

Year assessed, or planned year of assessment: 2018, Fall

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

Curriculum Approval Date: 05/14/2018

LECTURE CONTENT:

9 Hours

Content: Sensors - 9 Degrees of Freedom Sensors, Cameras and Photography, Multi-spectrum Camera and Sensors, Thermal, Other Sensors

Student Performance Objectives: Identify different sensors used to acquire different types of data. Discuss the function of each sensor.

9 Hours

Content: Data Acquisition - Flying the Drone, Planning Maps, Programming the Drone, Hardware and Software Used to Acquire Data, Efficiency and Use

Student Performance Objectives: Name all of the parts of the drone and state what they are used for. Analyze the data and make some intelligent conclusions. Explain how to use an IDE and programming to process the data.

9 Hours

Content: Graphically Representing Data - Software Tools Used (Sketchfab, Dronedeploy, Pix4d, Excel), Other Programming to Gather Intelligence

Student Performance Objectives: Discuss the software tools used to graphically represent data. Describe how to graphically show the data.

7 Hours

Content: Exploring New Applications - Drone Usage, Safety, Limitations, Marketing, Different Applications, Future Uses

Student Performance Objectives: Formulate intelligent insights using the data and graphics produced from the data. Discuss the FAA drone safety guidelines.

2 Hours:

Final

LAB CONTENT:

13.5 Hours

Content: Sensors

Student Performance Objectives: Utilize different sensors to acquire different types of data. Demonstrate how to gather sensory data utilizing a drone.

13.5 Hours

Content: Data Acquisition

Student Performance Objectives: Identify all of the parts of the drone and state what they are used for. Demonstrate how to fly the drone to gather different types of data. Demonstrate how to use an IDE and programming to process the data.

13.5 Hours

Content: Graphically Representing Data

Student Performance Objectives: Utilize the software tools used to graphically represent data. Demonstrate how to graphically show the data.

10.5 Hours

Content: Exploring New Applications

Student Performance Objectives: Demonstrate proper techniques for basic mapping, 3D models, and surveying. Create maps of different areas.

2 Hours

Final

METHODS OF INSTRUCTION:

lecture, discussion, audio-visual, guided practice, demonstration, guest speaker

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 24

Assignment Description: Read related material, including FFA Rules and Regulations, Manuals on Drones, and Electronics Manuals. Study for exams/tests.

Required Outside Hours: 24

Assignment Description: Homework/Problem Solving Assignments: Use programming to solve problems related to drone technology. Gathering sensor data utilizing a drone.

Required Outside Hours: 24

Assignment Description: Presentation/Project: Utilize drone technology and at least 1 sensor in the acquisition of data, the analysis of data, and the presentation of intelligent conclusions based on this data.

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 20.00 %

Homework

Problem-solving assignments

Percent of total grade: 20.00 %

Presentation, Demonstration

Skill demonstrations

Percent of total grade: 40.00 %

Performance Exams

Objective examinations

Percent of total grade: 20.00 %

Exams/Tests

REPRESENTATIVE TEXTBOOKS:

Recommended Representative Textbooks

Eric Cheng. Aerial Photography and Videography Using Drones. Peachpit Press/Pearson Education, 2016.

ISBN: 13: 978-0-134-12277-9

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

Required Other Texts and Materials

FFA Rules, Regulations and News concerning small unmanned aircraft. Manuals on unmanned aircraft systems. Electronics manuals. Different drone and sensor models. Programming code.

Software such as: Portable Hard Drive and Mini Scan Disks as well as software to be utilized for data analysis.

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:
Minimum Hours:
Course Control Number: CCC000592760
Sports/Physical Education Course: N
Taxonomy of Program: 095000