



Columbia Gorge Community College UAS Management

Course Number: UAS 210
Title: UAS Management
Created: January 16, 2020
Updated:
Total Credits: 4
Lecture Hours: 30
Lecture/Lab Hours: 20
Grading Option: A-F (default), audit
Delivery Method: Online

Course Description:

This course provides an introduction to managing an enterprise UAS Operation from the Business perspective which includes but is not limited to: Operational Requirements of the UAS, Concept of operation, data processing software, current rules and regulations governing owning and operating a UAS program in the United States and concerns surrounding UAS safety, security and privacy issues. The course is specifically designed for the adult professional. Those who successfully complete the course will be able to define the UAS program specifications that include but not limited to UAS selection, project and data planning and specifications such as accuracy requirements and mission planning, software selection and data processing.

Prerequisite: UAS-101 or a Remote Pilot License

Intended Outcomes:

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

1. Understand the fundamental concepts surrounding a UAS Business Operations
2. Understand the UAS enterprise Data and Project Management Workflow.
3. Demonstrate a sUAS Mission and Data Acquisition
4. Apply knowledge and Demonstrate understanding of a flight mission
5. Understand rules and regulations of an enterprise UAS operation
6. Design a UAS based business operation
7. Effectively develop and execute a Risk Management procedure
8. Develop a UAS business strategy

OUTCOME ASSESSMENT STRATIGIES: The student will demonstrate competencies related to the following (via Written Test, verbal presentations, etc.): Best Practices, Safety Practices, Flight Planning, Resource Management, Organizational Management, Flight Assessment and Execution, Payload Data management, Maintenance and Credential Management, Operational Manual and Project Management.

Text and Materials

Aero Drone Academy Workbook, Davis, first edition, 2017
The Five Functions of Effective Management, Baack, 2nd Edition 2014
sUAS Business Operations, Davis, First Edition, 2020
Essentials of Project Management, Billows, 2nd Edition 2018

Course Activities and Design

Lectures, discussion, Project demonstrations and Lab Assignments

Course Content

Understanding the Requirements to Manage UAS Operations

- Development of Concept of Operations
- Safety and Emergency Management Best Practices
- Visual Risk Assessment Map and Factors
- Engagement and Communication Tools
- Case Studies

Managing an Effective Program

- Program Management
- Pilots & Pilot Training
- Air Operations
- Drones and Sensors
- Data Collection

Management Considerations

- SWOT Analysis
- Human Element of UAS
- Risk Assessment Analysis for UAS
- UAS and Ethics

Regulatory Systems

- Federal
- State
- Local
- Waivers and COA's
- Privileges and Certifications
- Actions, Rules and Inspections

Flight Operations and Management

- Airspace Research
- Maintenance and Battery logs
- Pilot Profiles
- Insurance
- Certifications and Registration
- Management Tools

Execution and Post Flight Procedures

- Field Documents
- Data Integrity
- Crew Resource Management

Data Management

- GIS Systems
- Post Processing Software
- Data Organization

Project Management Fundamentals

- Project Structure
- Resource Management
- Project Personnel
- Project Communication

Operational Management

- Administrative Processes
- Human Resource Management
- Organizational Psychology
- Calendar Integration
- Multi Drone Operations

Assignment Schedule

(There will be two 1-1/2 hour classes; Tuesday & Thursday)

Week 1: Understanding the Requirements to Manage UAS Operations

- Read Chapter 1 & 2: *Five Functions of Managers & The Planning Function*
 - Introduction discussion
 - Lecture
- Complete
 - Discussion Questions (Each Chapter)
 - Take exam on each chapter
- Week 1 Lab: Practice Learning Activities

Week 2: Managing an Effective Program

- Read Chapter 3 & 4: *The Organizing Function & The Staffing Function*
 - Lecture
- Complete
 - Discussion Questions (Each Chapter)
 - Take exam on each Chapter
- Week 2 Lab: Practice Learning Activities

Week 3: Regulatory Systems

- Read Chapter 5: *Aviation Regulatory System (Aero Drone Academy Workbook)*
- Read Handout from Instructor: *Aero Drone Academy; FAA Regulations Part 107*
 - Lecture
- Complete
 - Discussion Questions
 - Take exam
- Week 3 Lab: Lab Assignment

Week 4: Management Considerations

- Read Chapter 5 & 6: *The Leading Function & Groups, Team and Communication*
 - Lecture
- Complete
 - Discussion Questions
 - Weekly exam
- Week 4 Lab: Lab Assignment

Week 5: Flight Operations and Management

- Read Chapter 7 & 8: The Controlling Function & The Coordinated System
 - Lecture
- Compete
 - Discussion Questions
 - Weekly Quiz
- Week 5 Lab: Continue of Lab 4

Week 6: Execution and Post Flight Procedures

- Read Chapter 1 and 2: (*Aero Drone UAS Operations*)
 - Lecture
- Complete
 - Discussion Questions
 - Weekly Quiz
- Week 6 Lab:
 - Lab Assignment

Week 7: Data Management

- Read Chapter 3 and Chapter 4: (*Aero Drone UAS Operations*)
 - Lecture
- Complete
 - Discussion Questions
 - Weekly Quiz
- Week 7 Lab:
 - Lab Assignment

Week 8: Project Management Fundamentals

- Read: Essentials of Project Management
 - Lecture
- Complete:
 - Discussion Questions
 - Weekly Quiz
- Week 8 Lab: Lab Assignment

Week 9: Operational Management

- Read Chapter 5 and 6; (*Aero Drone UAS Operations*)
 - Lecture
- Complete
 - Discussion Questions
 - Weekly Quiz
- Week 9 Lab:
 - Lab Assignment

Week 10: Creating a UAS Operation Business Plan

- Read Material handouts from Instructor
 - Lecture
- Complete
 - Discussion Questions
 - Weekly Quiz
- Week 10 Lab: Assignment

Week 11: Final

Learning Outcomes:

1. The student will demonstrate an understanding of the basic requirement to manage an effective UAS Operation Program
 - a. Understand what makes up an effective Program.
 - b. Demonstrate the function and purpose of each element of a UAS Operations.
 - c. Demonstrate an understanding of Risk Assessment
 - d. Understand the design process of an effective Training Program
 - e. Identify the basic components of a sUAS Data Collection program
2. Recognize the capabilities and considerations when developing a Management Program.
 - a. Understand a SWOT Analysis
 - b. Discuss the relative strengths and weaknesses Human factors
 - c. Student will demonstrate their understanding of Remote Sensors and describe their advantages and disadvantages.
 - d. Understand the regulatory systems, Waivers and COA's
3. Prepare and execute a mission plan and demonstrate best management practices.
 - a. Understand the command and control subsystem/functionality and describe what role they play in a successful operation.
 - b. Student will demonstrate their understanding of Crew Resource Management.
 - c. Demonstrate the understanding or preflight planning and mission design using Area Maps, Sensor Characteristics, Designing flight routes, sensor calibration and related preparation tasks.
 - d. Understand the two main classifications for UAS Missions and describe the various applications.
 - e. Demonstrate the ability to list and describe those items which must be considered prior to conducting any UAS mission.
4. Understand the fundamentals of Project Management
 - a. The student will describe the basic principles behind Project Management
 - b. The student will be able to create and management a project.
 - c. Identify methods to that are the basis of good Project Management
 - d. Understand the effects of Personnel, Communication and Structure of a Project.
5. Apply the requirements and processes necessary for effective operation.
 - a. Students will research and discuss the need for Human Resource Management.
 - b. Understand basis of multi drone operations
 - c. Students will be able to list the Administrative Processes necessary for an operation.
 - d. Students will be able to list the elements of an effective operations.
6. Identify hazards associated with UAS operations and prescribe risk controls
 - a. Describe the Human Factors related to safe UAS operations
 - b. Students will demonstrate the understanding of a sUAS Risk Assessment.
 - c. Understand Crew Resource Management (CRM) and how it can identify and resolve problems in real-time operations.
 - d. Understand all four aspects of situation awareness and demonstrate the implementation within a group.

Grading

Homework/Quizzes	15%
Assignments	25%
Mid Term Exam	25%
Final Exam	35%

Grade Criteria

The course is divided into 10 weeks containing a variety of assignments.

A-90%, B-80%, C-70%, F-<70%

Unless otherwise stated, you can expect your assignments to be graded within one week.

Discussion

Students are expected to use the class discussions, presentations and homework to stay up to date on class news, seek assistance with lecture topics or ask subject matter questions to the instructor or classmates. Additionally, the instructor can be reached directly via e-mail or during scheduled online meetings. Be professional and courteous when posting topics to this forum.

Quizzes

There is a total of 8-10 pre-lab quizzes worth 15% of the final grade. These quizzes are based on that week's subject matter and are designed to gauge your assimilation of that material prior to lab.

Lab Assignments

There are 8-10 scheduled UAS labs and workshops. Do not miss an assigned lab period as attendance is required. Lab reports must be submitted upon request of the instructor. Lab reports should be legible, stapled and written in pencil. Lab cleanliness is the responsibility of the individual student, infractions will result in disciplinary action. Final Lab reports are to be submitted during the last day of the scheduled Lab.

Late Work Policy:

No late work will be accepted for credit, so plan accordingly.

Assignment Descriptions:

Quizzes: The quizzes will be comprised of multiple choice, matching, ordering, multiple select and true/false questions. You are given 30 minutes to complete the quizzes and all the questions are derived from the assigned reading. Each quiz must be completed in one sitting. Once you begin the quiz you will not be able to stop and start again later. After the quiz closes, you will not be able to access it.

Discussion Questions: Discussion questions are at the end of each chapter. Participation in the classroom discussion is the best way to ensure your understanding and comprehension. You will be prompted from the instructor to answer these questions at various times and it is expected for you to demonstrate your understanding.

Lab Journals: Lab assignments and keeping a comprehensive journal will assess your grasp of the concepts. Even though there is no minimum word count it is very important to keep an accurate and thorough record of your assignment.

Mid Term and Final Exam: Both the midterm and the final exam will be comprised of multiple choice, matching, ordering, multiple select and true/false questions. You will be given one hour for the mid-term exam and 1-1/2 hour for the final exam. Each exam must be completed in one sitting. Once you begin the exam you will not be able to stop and start again later.

Email

Students can get ahold of me via email at any time. My turnaround time is typically 24 hours but you will rarely have to wait that long.

Academic Honesty Statement:

Students are expected to be honest and ethical in their academic work. Academic dishonesty includes cheating and plagiarism. All work submitted in this course is to be your own new, original work written in response to the assignments. Consciously or unknowingly presenting the ideas or writings of others as your own will result in academic sanctions that may include a grade of F for the assignment or for the class and possible institutional sanctions including suspension or expulsion. See the Code of Student Conduct and the Students Rights and Responsibilities policy for further information.

ADA Statement:

CGCC is committed to providing support for students with disabilities. If you are a student with physical, leaning, emotional, or psychological disabilities you are encouraged to stop by Student Services and make an appointment with Shayna Dahl, the Disabilities Coordinator at 506-6046 or by email at sdahl@cgcc.cc.or.us. If you have an accommodation plan, please see me as soon as possible so we can make any arrangements necessary for your learning. No accommodations can be provided until a Reasonable Accommodation Plan is in place. Please remember plans are not retroactive and cannot be used for assignments prior to the date of my signature.

Flexibility Statement:

Assignment, lab, and exam schedule may be changed in response to institutional, weather, or class changes or problems.

CGCC Mission Statement

To provide quality instructional programs and services which are community-based, responsive, and accessible, offering individuals the opportunity to achieve their educational goals.

CGCC Drop/Withdrawal Statement:

Formal withdrawal from CCC must be made through the Student Services Office. Students, who merely stop attending classes without formally withdrawing will receive the grades assigned by their instructors. Students receiving financial aid or veterans' benefits must notify the appropriate office of their intentions to withdraw.

A "W" will be granted if the student processes a formal withdrawal by the date listed in the appropriate Schedule of Classes. Students are eligible for 100% tuition refund when a course is dropped during the first two weeks of the term. Lab fees may not be refunded. Refunds are not given after the second week of the term regardless of when a student registered or whether a student attended class. Refunds are first applied to the other charges outstanding on your account, even if payment is not yet due.

EOE Statement:

Columbia Gorge Community College is an equal opportunity educator and employer.