GEOG 2550
FUNDAMENTALS OF DRONES

Course Description

The course will prepare students for the FAA Part 107 Aeronautical Knowledge Test to become commercially licensed drone pilots. It will focus on drone laws and FAA regulations, weather and micrometeorology, National Airspace Systems (NAS), drone flight operations, and flight training. Students will pilot drones provided by SLCC to learn drone flying techniques and imagery acquisition. Students may be required to travel within the Salt Lake Valley for flight training.

- OER Textbook: Fundamentals of Drones
- FAA Handbook: FAA's Pilot's Handbook for Aeronautical Knowledge.
- No Prerequisites
- Semester: Fall

Course Student Learning Outcomes

- Compare the public perceptions, privacy concerns, public safety, and defense regarding drones.
- Describe the legal aspects of drone operations, FAA regulations, and National Air Space.
- Apply payloads, mission planning, and drone control and recovery systems.
- Identify the anatomy of a drone, how it operates, safety concerns, and methodology for safe operations.
- Discuss communication methods with air traffic control and the information necessary for flight operations.
- Identify weather patterns and hazards that affect flight operations.
- Implement pre-, in-, and post-flight safety procedures and risk assessments.
- Operate various drone maneuvers expected by various drone industries.
- Discover the various career pathways with drones.

Communication Plan

I will respond to your emails within 48 hours and offer feedback on major assignments within one week of the due date. The best way to contact me is via the Canvas inbox, as I will prioritize this email over other modes of communication.

Additionally, I will participate in the discussion forums with you to share my perspective within the discipline and offer some nuances of interpretation that may not be present in your textbook.

Lastly, we'll hold small group Q&A sessions to learn from our peers (and faculty) on some of the more difficult units within the course.

Keys for Success

This syllabus represents an "agreement" between you and the instructor. It is designed to ensure course integrity and fairness and provides students with a clear understanding of course expectations. The instructor and students are expected to use the syllabus and schedule as a guide for the semester. Any deviation from the syllabus or schedule will be discussed and agreed upon by the instructor and students.

The course will take the entire Fall semester. Each week, you will have several assignments. These will include reading and answering quizzes on the readings, earning several ESRI Virtual Campus Certificates, learning map interpretation skills, creating or critiquing maps, participating in online discussions, and doing some professional career development.

It is designed to teach the information and skills required by discipline and to develop vital workplace skills, strategies, and lifelong learning skills. Education is more than acquiring facts; it uses information meaningfully to enrich one's life.

While each course's subject is essential and valuable, we become genuinely educated by connecting such varied information with the different methods of organizing human experience practiced by different disciplines. Therefore, combined with other courses, this course will enable you to develop broader perspectives and deeper understandings of your community, and the world and challenge previously held assumptions about the world and its inhabitants.

Course Procedure

Active participation in activities is expected. You will be expected to interact with others during class and participate in group discussions. Most of the assignments you complete for the course will be submitted online using Canvas LMS. There are also Canvas apps available.

All the mapping assignments will be done electronically using Esri's ArcGIS platform or Google Earth. The classroom has a computer lab if you want to use it, or students are encouraged to bring their laptops. All students will gain access to ArcGIS to download on a personal computer.

It is HIGHLY recommended you set up Canvas so it can send you messages to your email, cell phone, Facebook, or Twitter accounts. When your instructor sends out announcements, messages, and information on Canvas, you will be notified in the media you designate

Assignment Description

FAA Part 107 Assignments

Each assignment is designed to analyze physical and cultural environments' spatial and temporal patterns. Some of the activities will use the new Google Earth, while others will require you to use a web-based geographic information system called ArcGIS Online. The assignments need to be timed and in quiz form so that you can easily submit your answers.

Drone Flight-Time

Students will learn specific skill sets and be assessed using two types of drones. First, students will learn how to fly drones using a drone simulator created by the Drone Racing League.

The second set of drones will be outdoor DJI quadcopter drones. In teams, students will learn specific skill sets expected by the drone industries and will be assessed on those skill sets at the end of the course.

Module Quizzes

Each module will include a 10-question quiz assessing the student's knowledge of the information the FAA expects to successfully pass the Part 107 Exam.

Exams

The final exam will simulate what students should expect on an FAA Part 107 exam. It will consist of 50 questions; students will have 60 minutes to complete it.

Grading Scale

GRADE	SCORE RANGE
A	100-94 percent
A-	93-90 percent66
B+	89-87 percent
B	86-84 percent
B-	83-80 percent
C+	79-77 percent
C	76-74 percent
C-	73-70 percent
D+	69-67 percent
D	66-64 percent
D-	63-60 percent
E	Less than 60 percent

Incomplete Grade Policy

If circumstances make you unable to complete the course in the regular time frame, you may work with the instructor to take an incomplete. Students must pass and have completed 75% of the coursework to be granted an incomplete. Students are responsible for planning for successful course completion.

Assignment Schedule

Module 1 | Fundamentals of Drones

- 1.1 Assignment | Understanding
- 1.2 Assignment | Drone Simulator

- 1.4 Quiz | Module 1

Module 2 | Understanding Weather

- 2.1 Assignment | Interpreting Weather Map
- 2.2 Assignment | Determining Cloud Base
- 2.3 Assignment | Drone Simulator
- 2.4 Quiz | Module 2

Module 3 | Drone Flight Operations

- 3.1 Assignment | Drone Simulator
- 3.2 Assignment | Quadcopter Drone Practice
- 3.3 Quiz | Module 3

Module 4 | Drone Laws and FAA Regulations

- 4.1 Assignment | Drone Laws and Regulations
- 4.2 Assignment | Drone Simulator
- 4.3 Assignment | Quadcopter Drone Practice
- 4.4 Quiz | Module 4

Module 5 | National Airspace Systems (NAS)

- 5.1 Assignment | Analyzing Map Airspace Classification
- 5.2 Assignment | Advanced Sectional Chart Interpretation
- 5.3 Assignment | Drone Simulator
- 5.4 Assignment | Quadcopter Drone Practice
- 5.4 Quiz | Module 5

Module 6 | Drone Flight Training

- 6.1 Assignment | Pre-, In-, Post-flight Safety Checks
- 6.2 Assignment | Drone Simulator
- 6.3 Assignment | Quadcopter Drone Practice
- 6.3 Exam | Demonstrate drone skill sets using quadcopter drones

Module 7 | Drone Ethics and Career Pathways

- 7.1 Assignment | Drone Ethics Case Studies
- 7.2 Assignment | Interview a Part 107 Drone Pilot
- 7.3 Quiz | Module 7
- 7.4 Exam | Part 107 Exam

Transfer/Certification/Licensure/Employment Information

This course is required for those interested in the Earth and Environmental Science AS degree. The AS degree directly transfers to most four-year higher education institutions within Utah.

The Earth and Environmental Science Department also offers the following programs of study: GIS and Drones AAS, a GIS Certificate of Proficiency, and a Drones Certificate of Proficiency.

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus, which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, grading policies, Title IX, and other important acknowledgments. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

You can access the document by clicking on the following link: Institutional Syllabus

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, please visit the Institutional Syllabus under the Tutoring and Learning Support tab: Institutional Syllabus

We encourage you to use these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to contact us. We are here to support you in any way we can.

Advising and Counseling Support Services

Our institution is committed to supporting your academic and personal growth. That's why we offer a range of advice and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, please visit the Institutional Syllabus under the Advising and Counseling Support Services tab: Institutional Syllabus

Our advising team and the support centers across campus are here to help you achieve your goals and overcome any obstacles you may face.

Student Academic Calendar

As students, you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar: SLCC Student Academic Calendar