



TWELFTH GRADE CURRICULUM: UAS

A WORLD OF UAS

SEMESTER ONE

After having prepared for the Part 107 Remote Pilot Test in the previous year, students will examine the myriad of career options that exist within a wide range of industries for those with a UAS background. At the beginning of the semester, students will take the controls of a drone, reviewing their knowledge about UAS operations and growing as a team in the process. Following this, students will have an opportunity to do a deep dive into a segment of the UAS industry that interests them, and to share their findings with the class. For students who wish to act as innovators or entrepreneurs in the world of drones, this semester will provide them with the foundational business knowledge necessary to get their venture off the ground. They will also have an opportunity to review their community's drone rules, analyze them based on the needs of various stakeholders and groups, and make recommendations for changes or improvements. Finally, students will spend the latter part of the semester focusing on an area of personal interest within aviation while simultaneously developing skills in academic research—skills that will prepare them for their capstone project in semester two.

Unit 1: Technology and Teambuilding

In the first unit of the semester, students will take the controls of a classroom drone, and work as a team to complete challenges that will test their skills—challenges that include a scavenger hunt and a drone race. Safety and professionalism will be stressed during these exercises, and students will conduct a safety stand-down as a class prior to attempting the tasks they are presented with, using risk management models to mitigate potential hazards. Students will also receive an introduction to drone programming, and learn about how programming principles can be used to solve problems and automate missions.

		No. of Sessions Per Lesson	Day of Semester
<u>Section A – Preflight</u>			
Lesson 1	You and Your Path	2	2
Lesson 2	Mission Briefing	5	7
<u>Section B – Team Challenge</u>			
Lesson 1	Scavenger Hunt	1	8
Lesson 2	Drone Race	4	12
<u>Section C – UAS Programming</u>			
Lesson 1	An Introduction to Programming	2	14



There is no exam for Unit 1.

Total Sessions Unit 1 14
Semester Total 14

Unit 2: UAS Segments

The sky's the limit for students seeking to pursue a career in a UAS-related field, as drones are being used in a wider range of roles than ever before. Since virtually any professional field likely has some overlap or interaction with the UAS industry today, students who are interested in UAS operations will have a myriad of paths they could take. The second unit will examine some of these diverse paths, as students learn how drones can be used in roles as diverse as package delivery, photography, search and rescue, engineering, and much more. Following an overview of the current UAS landscape, students will have the opportunity to choose a career field that interests them, and conduct research on it as a group—effectively becoming experts on an industry. Students will then share their findings with the class, teaching their peers about unique and exciting opportunities in the world of drones.

		No. of Sessions Per Lesson	Day of Semester
<u>Section A – A World of Possibilities</u>			
Lesson 1	Surveying the Landscape	1	15
Lesson 2	Careers in Focus	13	28

There is no exam for Unit 2.

Total Sessions Unit 2 14
Semester Total 28



Unit 3: The Business of UAS

In Unit 3, students will learn about the intersection between UAS and business, and how entrepreneurs—after perceiving a new opportunity—go about making their ideas a reality. Within this practical and highly differentiated unit, students will have the opportunity to come up with a UAS-related start-up idea either on their own or with a partner, and to then create a business plan that will allow them to develop it. Whether deciding to open a drone repair service, a photography business, or a UAS training school, students will craft a plan that describes their business’s mission, as well as an analysis of its customers and the competitive environment in which it will exist. Other elements typically found in business plans, such as a risk analysis and start-up budget, will also be prepared. Finally, students will use their business plans as a launching point to prepare convincing pitches for potential investors. During this project, students are encouraged to make contacts with local business owners, both to seek advice and to gain unique insights into real-world entrepreneurship.

		No. of Sessions Per Lesson	Day of Semester
<u>Section A – A Plan for Success</u>			
Lesson 1	UAS Business Entrepreneurs	2	30
Lesson 2	Elements of a Business Plan	4	34
Lesson 3	Pitching for Success	8	42

There is no exam for Unit 3.

Total Sessions Unit 3 14
Semester Total 42



Unit 4: Perspectives on Drones

As drones become ubiquitous in numerous industries, communities will need to address how to integrate drones flying a diverse range of missions into their airspace. They will also need to balance the opinions of different stakeholders; while some businesses or agencies will push for fewer UAS restrictions, others might be skeptical of the new technology and want to limit its use. In this unit, students will use their accumulated knowledge of regulations and drone technology to take on the role of a committee of advisors who will review local drone policies, weigh the needs of stakeholders with potentially competing interests, and provide recommendations to their local governing bodies about how drones can best be adopted. This practical unit will enhance students’ abilities to solve real-world problems while taking different perspectives into account.

	No. of Sessions Per Lesson	Day of Semester
<u>Section A – Drones and Your Community</u>		
Lesson 1 Charting the Future	11	53

There is no exam for Unit 4.

Total Sessions Unit 4 11
Semester Total 53



Unit 5: Aviation Research Projects

The fifth and final unit of Semester One is intended to prepare students for Semester Two—in which they will be developing their capstone projects. Within this unit, students will be choosing an aviation-related topic that interests them and crafting a research proposal outlining a potential line of study they could pursue in Semester Two. In doing this, students will become familiar with important elements commonly found within research proposals, such as a literature review and a methodology section. They will also learn about important distinctions between qualitative and quantitative research, and appropriate contexts for both. Other research-related skills, including effective note taking and time management techniques, will be looked at as well. Going through the process of creating a research proposal and presenting it to their classmates will help students explore research methods while also becoming more familiar with a topic that interests them.

	No. of Sessions Per Lesson	Day of Semester	
<u>Section A – Crafting a Proposal</u>			
Lesson 1	Choosing a Research Topic	2	55
Lesson 2	Creating an Annotated Bibliography	3	58
Lesson 3	Qualitative versus Quantitative Research	3	61
Lesson 4	Literature Review	3	64
Lesson 5	Methods of Investigation	3	67
Lesson 6	Pulling It All Together	3	70
<i>There is no exam for Unit 5.</i>			
Post-Course Exam		1	70
Total Sessions Unit 4	18		
Semester Total	70		