Scott Wilson NSF RET Annual Report -Drone Unit

Activity	Objective	Teaching Strategy	Resources	Assessment
Lesson 1 - Introduction to drones	Identify the qualities and characteristics of UAVs Describe different types of UAVs	Lecture with interactive note taking, powerpoint and visual aides	Classroom computers and drones	Daily essay and ticket out
Lesson 2 - Introduction to principles of flight with fixed wing craft	Identify properties of basic fixed wing flight Apply vocabulary terms lift, roll, pitch, yaw, drag and thrust	Lecture with visual aides Practice using flight simulator program on computer	Classroom drones Classroom flight simulator	Successful take off, sustained flight and landing on sim
Lesson 3 - Introduction to basic quadcopter Flight 3rd person	Students will apply flight characteristics with take off, hover, landing	Lecture with visual aides Practice flight on sim	Classroom drones Classroom flight simulator	Successful take off, sustained flight and landing on sim
Lesson 4 - Flight safety, UAV law ethics	Familiarize students with basic understanding of proper safe flight techniques and application of FAA guidelines	Lecture with powerpoint Open discussion	FAA website	Reflection/ review ticket out Journal entry
Lesson 5-Advanced quadcopter flight (FPV)	Present advanced drone features including camera settings and	Powerpoint lecture with discussion and note taking	FAA website, class computers	FPV flight and take off which is documented with a "dronie"

			(Cell-phy)
	first person view(FPV-flight)		
Lesson 6 Basic UAV Flight planning/part 1	Students will use brand specific apps to create a flight plan that incorporates basic flight and camera features	Visual aides/note taking and discussion	Brand specific drone app/Ipad/smart phones (IOS/android)	Creation of a teacher approved flight plan using local landmarks
Lesson 7 Basic UAV Flight planning/part 2	Students will execute a flight plan that incorporates basic flight and camera features	Students will present their plans and evaluate each other's plans.	Students will use Google Earth in order to select and compare their plans	Successful flight with all flight components incorporated. Takeoff/landing/ photos of landmarks
Lesson 8- Flight planning with mapping app and software/part 1	Students will use a 3rd party flight platform to create 2D and 3D local landmark maps	Each team will choose an area quadrant and create a detailed map.	Students will use 3rd party mapping app using smartphones and Chromebooks	Creation of a teacher approved flight plan which incorporates local landmarks
Lesson 9- Flight planning with mapping app and software/part 2	Students will use a 3rd party flight platform to create 2D and 3D local landmark maps	Each team will choose an area quadrant and create a detailed map.	Students will use 3rd party mapping application using smartphones and Chromebooks	Execution of a teacher approved flight plan which incorporates local landmarks
Lesson 10- Open source code for drones	Use developer's website/software to	Lecture with visual aides	Brand specific developer	Ticket out essay and 3 questions for the expert

Note: the header row shows "(Cell-phy)" in the last column, with "first person view(FPV-flight)" in the second column of the following row.

	observe, understand and manipulate drone programming language	Guest speaker will inform students about practical applications and job prospects.	software/website and guest speaker	
Lesson 11- Trip to NAS Fallon to fly US Navy flight simulator	Introduce students to current flight and IT specialist careers	Field trip and guest speakers	NAS Fallon flight simulator and IT specialists	Reflection essay and thank you letters

Lesson 12 - End of project video	Students will plan, produce, film and edit an informational video about drones and their experience with the UAV programs	Use a teacher created rubric intended to steer student work.	Classroom computers, video equipment and class drone	Completed video that details the major aspects of drone flight, FAA, safety, programming

There was one section of IT Essentials taught using this curriculum throughout Semester II. Although the class was taught to 22 students, we hope that many more students of Churchill County High School will be impacted by the use of our class-created CCHS app.