Course Number and Title	IT137 System Components, Sensors, and Mission Planning

Credit Hours	3

Course Description	This course lays the foundation for understanding the makeup of a small unmanned aerial system and how the different components interact. Additionally, it teaches students how to use the tools and sensors available so that they will be able to collect the utmost best data required for a variety of fields. Mission planning is a key component to successful completion of this course. Students will be able to plot a variety of different flight paths with trigger modes through different ground control software and flight controllers.

Prerequisite(s) and/or Corequisite(s)	IT134

Required Textbooks/References/Course Materials:
None.

	General Education Outcomes
1	Utilize written and verbal language to discuss and comprehend information, incorporating a variety of technologies, such as text, data, and images (written language, verbal language, and information technology).
2	Identify and interpret relevant information in order to formulate an opinion or conclusion (critical thinking).
3	Demonstrate and communicate computational methods and mathematical reasoning in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate) (quantitative literacy and fluency).
4	Communicate in appropriate ways with those who are culturally diverse (intercultural competence).

	Program/Department Outcomes
1	Discuss and evaluate potential technology related ethical dilemmas and apply decision-making techniques to resolve them.
2	Demonstrate proficiency in selecting, implementing, and operating information technology solutions to meet project requirements.
3	Apply essential IT support skills in order to install, configure, secure, and troubleshoot operating systems, programs, networks, and pc hardware.
4	Prepared to take and pass industry standard certification exams.
5	Develop the ability to use oral and written communication effectively with clients and other industry professionals.
6	Engage in teams to develop and/or implement IT-based project solutions.
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	Course Outcomes (CO)	Bloom's Domain for CO (C, A, P), Category, and Level	Program/ Department Outcome(s)	Written Language	Verbal Language	Information Technology	Critical Thinking	Quantitative Literacy and Fluency	Intercultural Competence
1	Recognize and describe each component used on a small unmanned aerial system used for videography	Cognitive Understanding (2)	1,2,5	2	2	2	2	1	0
2	Create and implement mission plans based on various applications	Cognitive Creating (6)	1,2,5,6	2	2	2	2	2	0
3	Determine airframe performance based on material and other physical traits	Cognitive Analyzing (3)	1,2,3	2	1	2	2	2	0
4	Create a preflight document outlining all equipment needed for a successful volumetric mission	Cognitive Creating (6)	1,2,5	2	2	2	2	1	0
5	Provide examples of missions that would be flown manually and autonomously	Cognitive Remembering (1)	1,2,5	2	2	2	2	1	0
6	Describe the different sensors available for sUAS and the applications they are associated with	Cognitive Understanding (2)	1,2,5	2	2	2	2	1	0
7	Create a list of equipment that would be needed for videography	Cognitive Understanding (2)	1,2,5	2	2	2	2	1	0
8	Prepare and execute a grid style flight pattern with proper overlap and speed	Psychomotor Perfect (3)	1,2,3,5	2	1	2	2	2	0
9	Mount and successfully balance different sensors on a brushless gimbal	Cognitive Applying (4)	1,2,3,6	1	1	2	2	2	0
10	Create waypoints and have the aircraft carry out the pattern	Cognitive Applying (3)	1,2,3	2	1	2	2	2	0
11	Describe and explain the effects weather can have on an autonomous mission	Cognitive Understanding (2)	1,2,5	2	2	2	2	1	0

Bloom's Domain Legend
C = Cognitive
A = Affective
P = Psychomotor

General Education Outcome Legend
2 = Included and Measurable
1 = Introduced and/or Minimally Addressed and Not Measurable
0 = Not included

Approved: May 2021
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