

STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK



MASTER SYLLABUS

FLHT 106 – UAS Missions: Introduction to Drone Cargo Missions

For available course numbers, contact the Registrar's Office at registrar@canton.edu

CIP Code:

For assistance determining CIP Code, please refer to this webpage

<https://nces.ed.gov/ipeds/cipcode/browse.aspx?y=55>

or reach out to Sarah Todd at todds@canton.edu

Created by: Michelle Burke

Updated by:

School: Canino School of Engineering Technology
Department: Mechanical Engineering
Implementation Semester/Year: Fall 2026

A. TITLE: UAS Missions: Introduction to Drone Cargo Missions

B. COURSE NUMBER: FLHT 106

C. CREDIT HOURS (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity):

# Credit Hours per Week	3
# Lecture Hours per Week	
# Lab Hours per Week	
Other per Week	

D. WRITING INTENSIVE COURSE:

Yes	
No	x

E. GER CATEGORY: No

Does course satisfy a GER category(ies)? If so, please select all that apply.

[1-2] Communication	
[3] Diversity: Equity, Inclusion & Social Justice	
[4] Mathematics & Quantitative Reasoning	
[5] Natural Science & Scientific Reasoning	
[6] Humanities	
[7] Social Sciences	
[8] Arts	
[9] US History & Civic Engagement	
[10] World History & Global Awareness	
[11] World Languages	

F. SEMESTER(S) OFFERED:

Fall	x
Spring	
Fall and Spring	

G. COURSE DESCRIPTION:

This course introduces students to the technology, regulations, and logistics required for drone-based cargo operations. Students will explore the use of uncrewed aircraft systems (UAS) for package delivery, medical supply transport, first responder support, and law enforcement operations. Emphasis will be placed on Federal Aviation Administration (FAA) regulations, cargo drone technologies, safety protocols, and real-world logistics strategies. Students will gain practical skills in mission planning, payload integration, and risk assessment, preparing them for emerging roles in the drone delivery industry.

H. PRE-REQUISITES: FLHT 101 & FLHT 102 OR FAA Part 107 Certificate holder
CO-REQUISITES:

I. STUDENT LEARNING OUTCOMES: Courses will be assessed based on SUNY Canton's ISLO Assessment Cycle. Assessment will be overseen by Mechanical Engineering chair/director/coordinator."

Course Student Learning Outcome [SLO]	Program Student Learning Outcome [PSLO]	GER	ISLO & Subsets
a. Describe the current state and future outlook for drone cargo and delivery systems.			ISLO 2 [CA]
b. Explain FAA regulations, waivers, and exemptions related to cargo operations (Part 107, BVLOS, and beyond).			ISLO 1 [W]
c. Identify and evaluate drone platforms and payload technologies used in cargo transport.			ISLO 2 [CA],
d. Demonstrate mission planning for medical, package, and law enforcement deliveries.			ISLO 2 [PS], ISLO 5
e. Analyze safety and security considerations, including risk assessment and emergency protocols.			ISLO 2 [PS], ISLO 5
f. Apply knowledge of logistics and airspace management for real-world cargo operations.			ISLO 1 [O], ISLO 4 [T], ISLO 5

KEY	<u>Institutional Student Learning Outcomes</u> [ISLO 1 – 5]
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>

J. APPLIED LEARNING COMPONENT:

Yes	X
No	

If yes, select [X] one or more of the following categories:

Non-Clinical Practicum	X	Community Service	
Internship		Civic Engagement	
Clinical Practicum		Creative Works/Senior Project	
Practicum		Research	
Service Learning		Entrepreneurship [program, class, project]	

K. TEXTS: None

L. REFERENCES: None

M. EQUIPMENT: Access to UAS mapping software (Pix4D, DroneDeploy, or equivalent), UAS hardware with mapping capability (provided in class), OSHA 10 online module access (provided)

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Midterm Exam (20%)

Final Exam (25%)

Capstone Mission Project (30%)

Labs & Practical Exercises (15%)

Class Participation (10%)

P. DETAILED COURSE OUTLINE:

I. Introduction to Drone Cargo Operations

A. History and emerging trends

B. Industry overview and key players

II. FAA Regulations & Part 107 Review

A. Relevant waivers & exemptions for cargo

III. Types of Cargo Missions

A. Medical, package, law enforcement, and first responder operations

IV. Drone Platform Selection & Payload Basics

A. VTOL, multirotor, fixed-wing comparison

V. Payload Integration & Weight Calculations

A. Balance, lift, and aerodynamic considerations

VI. Logistics & Route Planning

- A. Delivery accuracy, cold chain, UTM systems
- VII. Safety & Risk Management
 - A. Hazard analysis, emergency procedures
- VIII. Midterm Exam & Case Study Review
 - A. Industry case studies (Zipline, Wing, UPS Flight Forward)
- IX. Autonomous & BVLOS Operations
 - A. Future trends, regulatory landscape
- X. Cargo Drone Technologies
 - A. Docking stations, AI-assisted routing, redundant systems
- XI. Public Safety & Law Enforcement Cargo Missions
 - A. First responder applications, legal constraints
- XII. Community Impact & Ethical Considerations
 - A. Privacy, environmental factors
- XIII. Capstone Mission Planning Workshop
 - A. Group project: planning a cargo delivery mission
- XIV. Capstone Project Finalization
 - A. Mission simulation & presentation

Q. LABORATORY OUTLINE: