



## MASTER COURSE OUTLINE

Prepared By: Patrick Ford

Date: Feb 2017

### COURSE TITLE

Beyond Line of Sight (BLOS) Operations

### GENERAL COURSE INFORMATION

Dept.: UMS

Course Num: 220

(Formerly:)

CIP Code: 15.0405

Intent Code: 21

Program Code: 640

Credits: 3

Total Contact Hrs Per Qtr.: 33

Lecture Hrs: 33

Lab Hrs:

Other Hrs:

Distribution Designation: General Elective (GE)

### COURSE DESCRIPTION (as it will appear in the catalog)

This course addresses the challenges of command and control, communications, autopilot, navigation, and aviation safety in successfully performing beyond line of sight (BLOS) unmanned aerial systems (UAS) operations.

### PREREQUISITES

UMS 101 or Instructor Permission

### TEXTBOOK GUIDELINES

BLOS/UAS navigation and communications related textbooks, as determined by the unmanned systems faculty (Example: Unmanned Air Systems: UAV Design, Development and Deployment, Austin (2010))

### COURSE LEARNING OUTCOMES

*Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills.*

1. Calculate maximum communications line of sight (LOS) for various UAS operations
2. Compare and contrast BLOS support capabilities of Low-Earth Orbit (LEO), Medium-Earth Orbit (MEO), and Geostationary-Earth Orbit (GEO) communications satellites
3. State the capabilities and limitations of modern autopilot technologies
4. Given a series of simulated BLOS operations, assess the risks to safety of flight/recommend alternatives
5. Plan a BLOS UAS operation
6. Outline the FAA approval process for BLOS UAS operations

### INSTITUTIONAL OUTCOMES

IO3 **Human Relations/Workplace Skills:** Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills

### COURSE CONTENT OUTLINE

1. Beyond line of sight (BLOS) UAS navigation
2. Line of sight (LOS) and BLOS communications technologies
3. Autopilot technologies
4. BLOS emergencies/safety of flight

5. BLOS preflight mission planning
6. The BLOS operations approval process

**DEPARTMENTAL GUIDELINES** *(optional)*

The syllabus must contain evaluation/grading guidelines, class environment/expectations/rules, course learning outcomes, and a disability services statement. A schedule must be provided to students that contains content covered (text chapters, topics, etc.), tentative test dates (to include final date/time).

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**DIVISION CHAIR APPROVAL**

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**DATE**