

## MECH - 4395 – UNMANNED AERIAL SYSTEMS (Fall 2018)

Instructor Dr. Mike McGee

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Office Hours: By appointment

**Meeting Times & Location:** Mondays/Wednesdays, 0900-1020 hrs, Chemistry Computer Sci Bldg G.0208

**Description:** This class will cover a wide range of engineering and operational aspects of Unmanned Aerial Systems. The first half of the course will cover aerodynamics, propulsion, sensor theory and use cases, datalinks and control, and real-world UAS applications. The second half of the course will cover the knowledge necessary to plan and execute basic UAS missions. Students will have the opportunity to gain their FAA Part 107 UAS license in the process (student cost is \$150 if you choose to take the Federal Aviation Administration exam necessary to obtain the license).

### Required Reading:

As assigned, no textbook

### Course Requirements:

1. Midterm Exam – 25%
2. Final Exam – 50% (you will be exempt from taking final exam if you obtaining Part 107 license before the Final Exam)
3. Class Participation – 25%

**Grading:** 100-90 (A), 89-80 (B), 79-70 (C), 69-60 (D), 59 & below (F)

### Course Schedule:

Monday	27 AUG	Overview
Wednesday	29 AUG	UAS History
Monday	03 SEP	No Class
Wednesday	05 SEP	NC Current UAS Use Cases
Monday	10 SEP	Aerodynamics 1
Wednesday	12 SEP	Aerodynamics 2
Monday	17 SEP	Propulsion 1
Wednesday	19 SEP	Propulsion 2
Monday	24 SEP	Common Sensors
Wednesday	26 SEP	Specialized Sensors
Monday	01 OCT	Datalinks 1
Wednesday	03 OCT	Command and Control 1
Monday	08 OCT	Future UAS Use Cases
Wednesday	10 OCT	Mid-Term Review
Monday	15 OCT	Mid-Term Exam
Wednesday	17 OCT	UAS Regulations
Monday	22 OCT	Airspace 1
Wednesday	24 OCT	Airspace 2
Monday	29 OCT	Aviation Weather

Wednesday	31 OCT	Effects of Weather on UAS
Monday	05 NOV	Dynamic Loading
Wednesday	07 NOV	Performance of UAS
Monday	12 NOV	Airport Operations
Wednesday	14 NOV	Radio Communication Procedures
Monday	19 NOV	Emergency Procedures
Wednesday	21 NOV	Crew Resource Management
Monday	26 NOV	Physiological Factors
Wednesday	28 NOV	Aeronautical Decision-Making and Judgment
Monday	03 DEC	Maintenance and Preflight Procedures
Wednesday	05 DEC	Final Exam Review
Monday	10 DEC	Final Exam

### Graduate Credit

Graduate students may receive credit for this class based on 1) approval from the Mechanical Engineering Department Chair, and 2) additional workload as assigned by the instructor. For Fall 2018, that extra workload will consist of integrating LIDAR sensors on an existing Intel sUAS and the collecting Simultaneous Location and Mapping data. Further details from Dr McGee.

**Plagiarism and Academic Dishonesty Statement:** Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording; it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/acadintg.htm> for further information.

### Disabilities Statement:

The course instructor will make any reasonable accommodations for students with limitations due to disabilities, including learning disabilities. Please see me personally before or after class in the first two weeks or make an appointment, to discuss any special needs you might have. If you have a documented disability and require specific accommodations, you will need to contact the Center for Accommodations and Support Services (CASS) in the East Union Bldg., Room 106 within the first two weeks of classes. The CASS Office can also be reached in the following ways:

Website: <http://sa.utep.edu/cass/>

Phone: (915) 747-5148 voice or TTY

Fax: (915) 747-8712

E-Mail: [cass@utep.edu](mailto:cass@utep.edu)