Introduction to Unmanned Aerial Systems MEEN 3335
Mechanical Engineering
Fall 2019

A. COURSE INFORMATION

Course number/section: MEEN 3335.W01
Class meeting time: Online
Class location: Online
Course Website: https://bb9.tamucc.edu/webapps/login/

B. INSTRUCTOR INFORMATION

Instructor: David Bridges
Office location: EN 222E
Office hours: 3:00 – 5:00 pm MR, 1:00 pm – 3:00 pm W, others as available or by appointment
Telephone: 361-825-2181
E-mail: david.bridges@tamucc.edu
Appointments: Direct contact, phone call, or e-mail

C. COURSE DESCRIPTION

Catalog Course Description
(3 sem. hrs. 3:0) Overview of unmanned aerial systems: history, platforms, operations, command and control, sensor systems, payloads, regulations, policy. Current developments in unmanned aerial systems. Prerequisite: Junior-level standing in MEEN, MCET, EEEN, COSC, or GISC, or consent of instructor.

Extended Course Description
In this course, students will be provided an overview of unmanned aerial systems (UAS): what they are, how they are operated and controlled, and the purposes for which they are used. Students will also gain a basic understanding of the relevant FAA regulations and policies that govern the operation of UAS, and will be exposed to current developments in the field.

D. PREREQUISITES AND COREQUISITES

Prerequisites
Junior-level standing.

Corequisites
None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Optional Textbook(s) or Other References: None
Supplies: None.
Software: All assignments will be completed in Microsoft Word. The entire Microsoft Office Suite is available for free to all TAMU-CC students. Instructions for downloading may be found at https://iol.tamucc.edu/Office-365.html.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Identify elements and key technologies of unmanned aircraft systems.
2. Categorize UAS by groups and select a UAS platform to complete a specified mission.
3. Demonstrate a basic understanding of the control of and communication with UAS.
4. Demonstrate a basic understanding of the sensors and payloads used in unmanned aerial systems.
5. Demonstrate a basic understanding of the regulations and policies governing the operation of unmanned aerial systems and determine the appropriate regulatory system for a particular UAS platform.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Course will be based primarily on lecture, homework, tests, and the final exam.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Three one-hour tests will be given and these will count 65% of the final course grade. Assigned and graded homework will count 15%, and the comprehensive final exam will count for 20% of the final course grade. The online reading quizzes will count one-third of the homework grade (so 5% of the overall course grade).

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Tests</td>
<td>65</td>
</tr>
<tr>
<td>Homework</td>
<td>15</td>
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<tr>
<td>Final Exam</td>
<td>20</td>
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Grades will be assigned on a 10-point scale: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, below 60 = F.

I. COURSE CONTENT/SCHEDULE
   (dates for tests are tentative, subject to change)

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
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<tbody>
<tr>
<td>26 Aug 2019</td>
<td>First day of class</td>
<td></td>
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<tr>
<td></td>
<td>Introduction to Unmanned Aircraft Systems</td>
<td>3, 1</td>
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<tr>
<td></td>
<td>Survey and Classification of UAS Platforms</td>
<td>2</td>
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<td></td>
<td>UAS Controls</td>
<td>2.2.1, 13</td>
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<tr>
<td></td>
<td>Communications and Ground Support Equipment</td>
<td>12</td>
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<tr>
<td>30 Sep 2019</td>
<td>Test No. 1</td>
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<td></td>
<td>Introduction to the Federal Aviation Administration (FAA)</td>
<td>5</td>
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<tr>
<td></td>
<td>Public Aircraft Operations and Certificates of Authorization</td>
<td>5</td>
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<tr>
<td></td>
<td>Civil UAS Operations</td>
<td>5</td>
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<tr>
<td></td>
<td>Certificate of Authorization</td>
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<tr>
<td>30 Oct 2019</td>
<td>Test No. 2</td>
<td></td>
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<tr>
<td></td>
<td>Spectrum and Sensors</td>
<td>4</td>
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<tr>
<td></td>
<td>Radar and Lidar</td>
<td>4</td>
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<tr>
<td></td>
<td>Gimbaled Turrets and Other Payload Applications</td>
<td>4</td>
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<tr>
<td>See TAMU-CC Calendar</td>
<td>Last day to drop a class</td>
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<td>25 Nov 2019</td>
<td>Test No. 3</td>
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<td></td>
<td>Safety Risk Management</td>
<td>7</td>
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<tr>
<td></td>
<td><strong>Final exam: TBA</strong></td>
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</table>

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor and posted to the class Blackboard site. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Late Work and Make-up Exams
The only graded exercises in the class will be the homework, the three tests, and the final
exam. Tests missed as a result of unexcused absences will result in a score of zero. Under most circumstances, the final exam grade will be substituted for tests missed due to excused absences. The absence must be excused in advance except in case of extreme emergency. No makeup exams will be given, except under unusual circumstances and entirely at the discretion of the instructor.

Missed Exam
See “Late Work and Make-up Exams,” above.

Communications
All outside-of-class communications from the instructor to the students will be conducted through the message and e-mail functions of the Blackboard site for the class. Each student should make sure his or her preferred e-mail address is the one in the Blackboard system, and each student should check e-mail and the Blackboard message site regularly. Students are not required to go through Blackboard to contact the instructor but may do so through direct e-mail to the instructor. E-mails and other communications through Blackboard will be responded to during business hours (8 am to 5 pm) within 2 business days (Monday through Friday, excluding holidays). Responses outside of working hours (e.g., to queries on weekends) will be at the discretion of the instructor. Graded assignments will be returned within 3 business days unless otherwise specified.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at [http://judicialaffairs.tamucc.edu/studentcofc.html](http://judicialaffairs.tamucc.edu/studentcofc.html).

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to
demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://registrar.tamucc.edu/Academic%20Policies/Grades/Grade_Changes.html and the College of Science and Engineering Grade Appeals webpage at https://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods and will post any such changes to the class Blackboard site.