

AE 4332

Rotorcraft Design II

Fall 2026

Professor Chance McColl, PhD

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ESM 203A

Health and well-being

- Georgia Tech and the School of Aerospace Engineering understand that many students experience stress through a variety of academic, financial and personal experiences. We value you and want to make you aware of resources available to you should you need them. Your well-being and mental health are important, and we are here for you.

- Center for Assessment, Referral and Education (CARE) <https://care.gatech.edu/>
- Campus Police (any emergency): 404-894-2500 <http://www.police.gatech.edu/>
- Counseling Center: 404-894-2575 <https://counseling.gatech.edu/>
- Dean of Students Office: 404-894-6367 <https://studentlife.gatech.edu/>
- Georgia Crisis and Access Line: 800-715-4225
- National Suicide Prevention Lifeline: 800-273-TALK (8255) <https://suicidepreventionlifeline.org/>
- Crisis Text Line: Text HOME to 741741
- VOICE: Victims Survivor Support: 404-385-4464 (or 4451) <http://healthinitiatives.gatech.edu/well-being/voice>
- Stamps Health Services <https://health.gatech.edu/contact>

Other resources:

- [Office of Disability Services](#)
- [Georgia Tech Honor Code](#)
- [Student-Faculty Expectations Agreement](#)
- The last day to withdraw with a W grade (**October 25**); see [VI. Scholastic Regulations, I. Course Requirements](#)

Course structure, expectations

- We will follow the USG/Georgia Tech general health/COVID-19 protocols, course attendance policies, etc.
- Grading will be based on biweekly team progress updates, a midterm review, and a final project
- We will adhere to the [Georgia Tech honor code](#)

Course structure, expectations

- **Professor's right policy**
 - The professor reserves the right to change the course within Georgia Tech policy
 - Due dates are tentative and for general information; they may be shifted to other dates at the discretion of the professor
- **Academic integrity**
 - Although this is a **100% team-based course**, all graded components of this course (projects, lab work assignments, research) are to reflect the efforts of each individual team member
- **AI policy**
 - Generative AI-based **assistance**, such as, but not limited to ChatGPT and Copilot, is comparable to collaboration with other people
 - For an individual assignment, the use of generative AI to fully solve a problem is a violation of the Georgia Tech honor code

About the instructor

- **Professor Chance McColl, PhD** chance@gatech.edu (404) 290-8841 (cell)
- Dr. McColl is a Professor of the Practice at Georgia Tech (2015-present).
- Dr. McColl has 30+ years' experience as an aircraft structural loads engineer. He serves as Vice President of TDA (Technical Data Analysis, Inc.; Virginia, Maryland, and Georgia) and oversees TDA's loads engineering (fixed wing, rotary wing, UAS) and software development efforts for US military (USN, US Army, USAF) and govt (NASA, NOAA), international (Australia, Canada, Germany, Norway, Greece, Netherlands, Portugal, South Korea) and industry (General Atomics, Sikorsky, Northrop Grumman, Sierra Nevada Corporation, etc.).
- Dr. McColl has been with TDA since 2001. Prior to that, he was a lead loads engineer, both at Boeing and Lockheed Martin.
- Dr. McColl received his BS in Aerospace Engineering from the University of Colorado at Boulder and his MS and PhD in Aerospace Engineering from Georgia Tech. Dr. McColl has served as co-chair of the Georgia Aerospace Policy Working Group and as a member of the Georgia UAS Working Group.
- Over the past 20+ years, Dr. McColl has taught numerous aircraft external loads and aeroservoelastic control courses for clients such as the US Navy, USAF, General Atomics Aeronautical Systems, Sierra Nevada Corporation, and Korean Aerospace Industries.

Course overview

- Expectations
 - See “Course structure, expectations,” above
 - Georgia Tech honor code
 - Attendance: 4 ***unexcused*** absences allowed (lecture and lab combined) – does not apply to midterm review, final semester project presentations
 - **Beyond that, final grade dropped by 1 letter grade**
 - AE 4332: pre-reqs:
 - AE 4331 (Rotorcraft Design I)
 - **Matlab, Simulink, other tools/codes**
 - Cell phone, tablet, laptop use
 - Homework
- **Textbook: *Principals of Helicopter Dynamics (2nd ed.)*, Leishman**
 - ISBN: 0-521-85860-7
- Acknowledgements: course content includes a range of sources, including Leishman, Prof. Smith, and others

Grading scheme

A/B/C/D = 90/80/70/60

- 30% Biweekly team progress updates
 - ~ 6 of these
 - 30% Midterm review
 - 40% Final project
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- All the above are ***team-based*** efforts, though team members will be polled to aid in assessing each team member's participation and completion of their assigned work in the team(s); the final grade assessment will be made with the professor

- I always add 1 point before computing final grades:
 - An 89 becomes a 90 (A)
 - An 88.5 becomes an 89.5 (B)
 - A 79 becomes an 80 (B)
 - A 78.9 becomes a 79.9 (C)
 - etc.
- **Beyond that, no further grade changes made**

Objectives

- The course exposes students to different rotary-wing air vehicle design techniques, including traditional rotorcraft, unmanned aerial vehicles (UAV), and urban/advanced air mobility (UAM/AAM) and allows them to apply these techniques to a vehicle design in a team-oriented environment
- The objectives are:
 - a. To familiarize the students with preliminary design techniques and applications
 - b. To teach students modern design theory and techniques
 - c. To allow the student to apply the methods learned to the preliminary design of a vehicle, typically as part of the Vertical Flight Society (VFS) Student Design Competition (SDC)