

John Mah

Instructor, SMEAD Aerospace Engineering Sciences
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Curriculum Vitae

EDUCATIONAL BACKGROUND

M.S., Aeronautics & Astronautics, Stanford University, 1999
B.S., Aeronautical Engineering, United States Air Force Academy, 1998

TEACHING EXPERIENCE

Assistant Teaching Professor (2018-Pres)
Associate Chair for Undergraduate Operations (2021-2023)
Smead Aerospace Engineering Sciences | University of Colorado | Boulder, CO

Assistant Professor (2009-2012)
Deputy Lab Director (2010-2012)
Department of Aeronautical Engineering | US Air Force Academy | Colorado Springs, CO

Instructor (2007-2009)
Director of Operations (2008-2009)
Air Force Weapons School | Nellis Air Force Base | Las Vegas, NV

OTHER MILITARY EXPERIENCE

Chief of Target Operations & Plans (2015-2018)
Joint Staff Intelligence Directorate | Pentagon | Washington, DC

Deputy Division Chief, Intelligence, Surveillance & Reconnaissance (2012-2015)
613th Air Operations Center | Joint Base Pearl Harbor | Honolulu, HI

Director of Intelligence Operations, Chief of Intelligence, Deputy Chief of Intelligence (2000-2007)
1st Special Operations Wing | Hurlburt Field | Hurlburt, FL
391st Fighter Squadron | Mountain Home Air Force Base | Mountain Home, ID
80th Fighter Squadron | Kunsan Air Base | South Korea

HONORS AND AWARDS

- Department Outstanding Undergraduate Instructor (2020) — AES Department CU Boulder
- University Marinus Smith Teaching Award (2019) — CU Boulder
- Peebles Innovation in Education Award (2019) — CEAS, CU Boulder
- Orlosky Award for Outstanding Contributor (2012) — Dept of Aeronautics, USAF Academy
- Department Field Grade Officer of the Year (2010) — Dept of Aeronautics, USAF Academy
- Department Top New Instructor Award (2009) — Dept of Aeronautics, USAF Academy
- Outstanding Mission Instructor (2008) — USAF Weapons School

CLASSES TAUGHT (2018-2023)

Class	Semester	Students
ASEN 2002 Intro to Thermodynamics & Aerodynamics (Aerodynamics)	Fall 18	248
GEEN 1400 Engineering Projects	Fall 18	30
ASEN 4018 Senior Projects (PAB - 2x Teams)	Fall 18	23
ASEN 2004 Vehicle Design and Performance (Aircraft Lectures/Aircraft Lab)	Spring 19	201
ASEN 4028 Senior Project (PAB - 2x teams)	Spring 19	23
ASEN 2002 Intro to Thermodynamics & Aerodynamics (Aerodynamics half)	Fall 19	261
GEEN 1400 Engineering Projects	Fall 19	30
ASEN 2004 Vehicle Design and Performance (Aircraft Lectures/Aircraft Lab)	Spring 20	225
ASEN 3128 Aircraft Stability and Control (Lecture & Lab – half semester)	Spring 20	94
ASEN 2002 Intro to Thermodynamics & Aerodynamics (Aerodynamics)	Fall 20	319
GEEN 1400 Engineering Projects	Fall 20	32
ASEN 4018 Senior Projects (PAB - 2x Teams)	Fall 20	22
ASEN 2004 Vehicle Design and Performance (Aircraft lecture / Aircraft lab)	Spring 21	256
ASEN 4028 Senior Project (PAB - 2x teams)	Spring 21	22
ASEN 2002 Intro to Thermodynamics & Aerodynamics (Aerodynamics)	Fall 21	330
ASEN 4018 Senior Projects 1	Fall 21	23
GEEN 1400	Fall 21	34
ASEN 2004 Vehicle Design and Performance (Aircraft Lecture + full lab)	Spring 22	254
ASEN 4028 Senior Projects 2	Spring 22	23
ASEN 2004 Vehicle Design and Performance (Aircraft Lecture + Aircraft Lab)	Summer 22	17
ASEN 4018 Senior Projects 1	Fall 23	24
ASEN 4028 Senior Projects 2	Spring 23	24
ASEN 2704 Vehicle Design & Performance (Aircraft lecture)	Spring 23	263
ASEN 2804 Aero Veh Design Lab (full)	Spring 23	261
ASEN 2702 Intro to Thermo & Aerodynamics (Aerodynamics)	Spring 23	33
ASEN 2804 Aero Veh Design Lab	Summer 23	17
ASEN 2704 Vehicle Design & Performance	Summer 23	25
ASEN 4138 Aircraft Design	Fall 23	54
GEEN 1400 Freshman Engineering Projects	Fall 23	32

MAJOR COURSE MATERIALS DEVELOPED

ASEN 2004 Glider Design Lab (Spring 2019): Created new glider design lab focused on application and validation of first-order aerodynamic and stability models towards specific aircraft performance requirements. Continued to update lab yearly with varying design requirements to avoid stagnation of material and incorporate new rapid fabrication and data collection methods. Successfully submitted an Engineering Excellence Fund (EEF) request to support purchase of video and GPS modules as a payload requirement for the gliders in Spring 2020. Lab's current form was updated in Spring 2023 to merge glider design lab with rocket design lab into a single, boost-glide vehicle.

ASEN 2002/2004 Playposit Application Media (Fall 2019/Spring 2021): Created 22 video quiz practice problems utilizing Playposit platform in lieu of static solutions and textbook problems. Videos stepped students through an application with strategic pauses for quizzing comprehension before allowing the video to continue. Unique original problems focused on aircraft design applications of aerodynamic, performance, and stability and control concepts.

ASEN 2004 Macroethics Lesson (Spring 2021): Co-developed an aerospace macroethics lesson with former faculty member (Dr. Aaron Johnson, now at University of Michigan). Received EEF funding to support student development of macroethics issue papers. Lesson consisted of an introductory lesson of macroethics concepts and their relevance within aerospace followed by breakout sessions to discuss specific macroethics issue papers on the military industrial complex, space settlement and resource extraction, and orbital debris/space commons. This curriculum continues today as a joint venture with Dr. Aaron Johnson and the University of Michigan.

ASEN 4018/4028 HERD-CU Project (2021-2023): Developed a student project for a High Endurance Rapidly Deployable Collaborative UAS (HERD-CU) to support emergency first responders to natural disasters. This project was tackled by two teams in AY21-22 and three teams in AY22-23 with a focus on a high endurance airframe design and autonomous flight control for optimizing flight trajectories for high endurance. As part of the project requirements, I developed a Request for Proposal that outlined customer objectives and requirements and served as their primary customer representative for the course. Additionally, to support flight test activities, I developed a flight test safety evaluation and approval process to ensure student teams safely planned for flight operations.

ASEN 4138 Aircraft Design Sizing Tools (Fall 2023): Shifted aircraft design course away from purchased/licensed design software by creating in-house tools for initial mission and performance sizing of aircraft and leveraging the open-source, NASA developed Open Vehicle Design Sketchpad (Open VSP) software tool. By moving to in-house and open-source solutions, student access to software was greatly improved as our past software license could only be installed on lab computers. Additionally, the use of the Open VSP tool ensured that students learned a toolset that they could continue to use after graduation and that is currently used by several companies in the aerospace industry.

MENTORSHIP

- **Aerospace Professionalism Seminar (Fall 22 / Spring 23):** Created and delivered a seminar for ASEN 1009 Aerospace Seminar course discussing professionalism standards for aerospace. Seminar was aimed at addressing key issues seen among the undergraduate student community such as the importance of personal integrity, how to engage with potentially controversial topics and visiting speakers, and the importance of knowing history and context in aerospace.

- **Faculty Advisor for Student Clubs:** Served as a faculty advisor for American Institute of Aeronautics and Astronautics (AIAA) CU Student Club, the Design, Build, and Fly Student Club from Fall 2018 to present, and mentored the Aerospace Student Committee for Undergraduate Success (ASC-US) during Academic Years 2021/2022 to 2022/2023.
- **Teaching Panel for Rising Stars in Aerospace Symposium (Spring 22):** Symposium offered doctoral candidates and recent PhD recipients who are completing post-doctoral research or working in the aerospace field and opportunity to showcase their work and get advice on a variety of topics. The teaching panel was focused on success in the classroom and methodologies for teaching.

LEADERSHIP AND SERVICE ACTIVITIES

University Level:

- Member of CU Tri-Military ROTC Board of Advisors (2021-Pres)
The role of the Advisory Board is to serve as an advocate for ROTC/military matters in relation to the university and greater Boulder community.

College Level:

- Member of Undergraduate Education Committee (2021-2023)

Department Level:

- Undergraduate Operations Committee (Fall 23–Pres)
Focused on assessing and developing solutions to issues related to the effective execution of the undergraduate curriculum.
- Associate Chair for Undergraduate Operations (2021–2023)
Lead the execution of the AES undergraduate curriculum. Managed teaching assignments for 48 faculty members and advised on enrollment, scheduling, and advising issues. Adjudicated student petitions and transfer credit requests. Managed the undergraduate student awards process. Represented the AES department at the CEAS Undergraduate Education Committee. Planned and executed events focused on undergraduate student academic performance, professional development, and wellness.
- Undergraduate Curriculum Committee (2018–2021)
Focused on continued development of AES curriculum to meet future educational and accreditation needs.
- Thermo-Fluids and Design/Systems Engineering Curriculum Groups (2018–Pres)
Reviewed course objectives and fundamental concepts, supported teaching assignment discussions, and facilitated crosstalk between Curriculum Groups on syllabus & learning objectives that spanned disciplines. As required, develop new courses within group discipline expertise.
- Faculty Advisor, American Institute of Aeronautics & Astronautics AIAA Student Club (2018-Pres)
Meet monthly with student leadership to plan student outreach and professional development events.

- Faculty Advisor, CU Design, Build, Fly Club (2018–Pres)
Club represents CU in annual AIAA aircraft design, build, and fly competition. Meet weekly with student leadership to advise on their aircraft design and coordinate fabrication requirements with department resources.
- AeroBuffs Engineering Education Research Group (2019-2021)
Discussed, developed, and reviewed ideas for engineering education research within the aerospace department. Conducted reviews and feedback on peer paper drafts and paper ideas.