Aaron Estes

Department of Mechanical and Aerospace Engineering
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Education:

Ph.D.	Mechanical Engineering, University at Buffalo, 2016
B.S.E.	Mechanical Engineering, Arizona State University, 2011

Employment History:

Department of Mechanical and Aerospace Engineering, University at Buffalo

Director of Undergraduate Studies, Aerospace Engineering	1/24 – Present
Associate Professor of Teaching	8/23 – Present
Assistant Professor of Teaching	1/17 – 8/23
Adjunct Instructor	8/16 – 12/16
MAE Ph.D. Teaching Fellow	5/16 – 7/16
Research Assistant	1/16 – 5/16
Teaching Assistant	8/11 – 12/15

Honors and Awards:

AIAA Special Service Citation, AIAA (2023)
Best Teaching Faculty of the Year, UB (2020)
UB Teaching Innovation Award, UB (2020)
Vanderhoef Faculty Award, UB (2019)
Professor of the Year, awarded by Tau Beta Pi Engineering Honor Society, UB (2018)
Excellent Reviewer Recognition, *AIAA Journal of Guidance, Control, and Dynamics* (2015-2018)
Teaching Assistant of the Year, awarded by Tau Beta Pi Engineering Honor Society, UB (2013)
National Merit Finalist Scholarship, Arizona State University (2007-2011)

Teaching Experience

Courses taught at UB:

EAS 198, UB Seminar—The Places You'll Go	Introductory seminar that prepares transfer students for success at UB
MAE 334, MAE Laboratory I	Junior-level course on the experimental analysis of dynamic systems/introduction to microcontrollers
MAE 340, Dynamic Systems	Junior-level course on linear system theory, and the modeling of mechanical, electrical, and hydraulic systems
MAE 364, Manufacturing Processes	Junior-level course on fundamental manufacturing processes
MAE 436, Flight Dynamics	Senior-level course on the dynamics and control of aircraft
MAE 444/544, Digital Control Systems	Senior-level/graduate course on digital control of dynamic systems, applications to robotics
MAE 454/554, Road Vehicle Dynamics	Senior-level/graduate course on the dynamics and control of two- and four-wheel road vehicles
MAE 460/566, System Identification	Senior-level/graduate course on black-box modeling of dynamic systems

Service

Department

MS Robotics Teaching Faculty Search Committee (Fall 2022)
MAE Student Excellence and Diversity Committee
Chair (Spring 2023 – Present)
Co-Chair (Fall 2021 – Spring 2022)
Member (Fall 2017 – Fall 2020)
MAE Scholarship Review Committee (Fall 2018 – Present)

School

SEAS Freshman-Faculty Mentor Program (Spring 2020 – Present)
Steering Committee: Women in Science and Engineering (WiSE) (Fall 2018 – Spring 2022)
Sustainable Manufacturing and Advanced Robotic Technologies Infrastructure Committee (Spring 2017)

University

Faculty Mentor, AIAA UB Student Chapter (Fall 2021 – Present)
Chair of Planning Committee for the 2023 AIAA Region I Student Conference (Hosted at UB)
Faculty Mentor, UB Theme Park Club (Fall 2022 – Present)

Publications and Presentations

Thesis

Estes, Aaron E. "Dynamics and Control of Constrained Flexible Structures." Order No. 10163912 State University of New York at Buffalo, 2016. Ann Arbor: *ProQuest*.

Journal Articles

(*denotes graduate students supervised by Estes)

3. Hulme, K., Schiferle, M.*, Lim, R., **Estes, A.**, Schmid, M., "Incorporation of Modeling, Simulation, and Game-Based Learning in Engineering Dynamics Education to enhance Learning Outcomes towards improving Vehicle Design and Driver Safety" *Safety* (2021), 7(2), 30 https://doi.org/10.3390/safety7020030.
2. Mou, F., Khakpour, H., **Estes, A.**, Hall, J., "Weighted Least Squares Approach for an Adaptive Aerodynamic Engineered Structure with Twist Transformation" *ASME Journal of Energy Resources Technology*, 141(5), 051207 (Feb 18, 2019), doi: 10.1115/1.4042642.
1. **Estes, A.,** and Manoranjan Majji. "Generalization of Lagrange's Equations for Constrained Hybrid-Coordinate Systems." *Journal of Guidance, Control, and Dynamics* 40.3 (2016): 710-713., doi: 10.2514/1.G000450.

Conference Publications

(*denotes graduate students supervised by Estes)

8. Shon, H.*, **Estes, A.**, "Teaching Control Systems with Pong" *2022 ASEE Annual Conference & Exposition*, Minneapolis, MN, 2022, August, https://strategy.asee.org/41243.
7. Lim, R., Hulme, K., **Estes, A.**, Rivera-Reyes, R., Hartloff, J., Still, S., Schiferle, M.*, "Gamifying M&S Transportation Education & Training to Improve Engineering Learning Outcomes" *Interservice/Industry Training, Simulation, and Education Conference*, 2020 (accepted, conference canceled due to COVID).
6. Hulme, K., **Estes, A.**, Schiferle, M.*, Lim, R., "Game-based Learning to Enhance Post-secondary Engineering Training Effectiveness" *Interservice/Industry Training, Simulation, and Education Conference*, Dec., 2019.
5. Hulme, K., **Estes, A.**, Schmid, M., Torres, E., Hendrick, C., Sivashangaran, S., "Game-based Proving-grounds Simulation to Assess Driving & Learning Preferences" *Interservice/Industry Training, Simulation, and Education Conference*, Nov. 2018.

4. Mou, F., Khakpour, H., **Estes, A.**, Hall, J., "Weighted-Least Squares Optimization Method for Control and Shape Design of an Adaptive Blade Twist Distribution to Increase Wind Capture," *ASME Dynamic Systems and Control Conference,* Atlanta, GA, Sep. 30-Oct. 3, 2018, doi:10.1115/DSCC2018-9233.
3. Mou, F., Khakpour, H., **Estes, A.**, Hall, J., "A Weighted-Least Squares Approach for the Design of Adaptive Aerodynamic Structures Subjected to an Out-Of-Plane Transformation," *ASME International Design Engineering Technical Conferences & Computer and Information in Engineering Conference*, Quebec City, Canada, Aug. 2018, doi:10.1115/DETC2018-86101.
2. **Estes, A.**, Singh, T., Majji, M., "A Post-maneuver Penalty Approach to Robust Input-Shaper Design," *AIAA/AAS Astrodynamics Specialist Conference*, Vail, CO, Aug. 2015, AAS 15-811.
1. **Estes, A.**, Majji, M., Juang, J., "Time-Varying Methods for Identification of Constrained Flexible Structures," *AIAA/AAS Astrodynamics Specialist Conference*, San Diego, CA, Aug. 2014, AIAA 2014-4305, https://doi.org/10.2514/6.2014-4305.

Professional Affiliations

American Institute of Aeronautics and Astronautics (AIAA)
American Society for Engineering Education (ASEE)