DOUG F. HUNSAKER

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Education

Ph.D., Utah State University, Mechanical Engineering, *November 2011*
M.S., Brigham Young University, Mechanical Engineering, *April 2007*
B.S., Brigham Young University, Mechanical Engineering, *December 2005*

Professional Positions

Associate Professor, Utah State University, Mechanical and Aerospace Engineering, *July 2022 - Present*
Assistant Professor, Utah State University, Mechanical and Aerospace Engineering, *Jan. 2016 - July 2022*
CEO, Blucraft, LLC, *July 2014 – Present*
Adjunct Faculty, Utah State University, *January 2014 – April 2014*
Design Engineer, Scaled Composites, *September 2011 – November 2013*
Research Assistant, Utah State University, *January 2007 – August 2011*
Research Assistant, Brigham Young University, *August 2004 – December 2006*
Intern, Sandia National Laboratories, *May 2010 – August 2010*
Intern, AeroVironment, *May 2004 – August 2004*

Notable Industry Projects

AeroAcademy
Founder of AeroAcademy, an online aerospace learning platform with courses on aerodynamics, aircraft design, performance, statics, and dynamics.
4,500+ visitors | 100+ countries | 500+ users | 300+ Videos | 300+ views/day on the YouTube Channel

Stratolaunch Carrier Aircraft – *Scaled Composites*
Evaluated aerodynamic flight and landing loads using CFD, panel codes, and empirical methods. Managed subcontractors responsible for aeroelastic loads and S&C.
Evaluated aerodynamic effects of design changes and worked closely with systems and structures groups to understand global impacts of configuration changes.
Developed an aeroelastic code to predict wing deformation under aerodynamic loads based on numerical lifting-line theory coupled with beam theory. Elasticity was important because this aircraft has a gross lift-off weight of 1.3 million pounds and the largest wingspan in history.

Virgin Galactic SpaceShipTwo – *Scaled Composites*
Developed methodology and computer code to evaluate flutter speeds on SpaceShipTwo and WhiteKnightTwo. This code correlates massive amounts of experimental vibrational data to help the user predict the flutter characteristics of the airframes.
Monitored potential flutter issues from the control room during Mach and altitude envelope expansion of SpaceShipTwo.

Future Programs – *Scaled Composites*
Evaluated conceptual designs for a proposed future program. Calculated aircraft performance measures to assess likelihood of program success.

Wind and Water Technologies – *Sandia National Labs*
Developed a 3D object-oriented potential flow solver to model the flow effects of bodies near turbine blades. This code was designed to seamlessly integrate with Sandia's in-house CACTUS turbine blade code.

Puma UAV - *AeroVironment*
Involved in prototyping, aerodynamic analysis, flight testing, component testing, and circuit design.
Decreased control mechanism weight by 10%.

Design and Analysis – *Consultant for various Aerospace Companies*
Design and analysis work on airframes ranging from hand-launchable UAVs to large long-range aircraft.
Author of MachUp: Free web-based airframe design and analysis tools for academia and industry. Currently have over 6000 registered users from around the world.

Publications (Students are underlined) ORCID: 0000-0001-8106-7466

Journal Publications (34 Published, 1 Accepted)

35. Hoch, N., Bolander, C., and **Hunsaker**, D. F., "Application of the Adjoint Method to an Unstructured Subsonic/Supersonic Panel Method," *Journal of Aircraft*, 2025, 15 pages, DOI: 10.2514/1.C038478
34. Olsen, A., Montgomery, Z., and **Hunsaker**, D. F., "Lifting-Line Predictions for Optimal Dihedral Distributions in Ground Effect," Applied Sciences, 2025, Vol. 15, No. 17, 20 pages, DOI: 10.3390/app15179558
33. Hurwitz, J., Adams, S., Taylor, J., and **Hunsaker**, D. F., "Velocity Influence of an Arbitrarily Oriented Vortex Filament in Supersonic Flow," *Journal of Aircraft*, 2025, 6 pages, DOI: 10.2514/1.C038352
32. Bolander, C., and **Hunsaker**, D. F., "An Adaptation of Nonlinear Aerodynamic Models for Non-Traditional Control Effectors," *Aerospace*, 2025, Vol. 12, No. 5, 24 pages, DOI: 10.3390/aerospace12050426
31. Montgomery, Z., **Hunsaker**, D. F., and Joo, J., "Lifting-Line Predictions for the Ideal Twist Effectiveness of Spanwise Continuous and Discrete Control Surfaces," *Applied Sciences*, 2025, Vol. 15, No. 6, 14 pages, DOI: 10.3390/app15063383
30. Moulton, B., Harris, M., and **Hunsaker**, D. F., "Stabilizing a Bio-Inspired Rotating Empennage Fighter Aircraft in Multiple Trim Scenarios," *Journal of Guidance, Control, and Dynamics*, 2025, Articles in Advance, 17 pages, DOI: 10.2514/1.G008456
29. Goates, C., and **Hunsaker**, D. F., "A Novel, Direct Matrix Solver for Supersonic BEM Systems," *Aerospace*, 2024, Vol. 11, No. 12, 25 pages, DOI: 10.3390/aerospace11121018
28. Moulton, B., and **Hunsaker**, D. F., "Analytic Solutions for Volume, Mass, Center of Gravity, and Inertia of Wing Segments and Rotors of Constant Density," *Aerospace*, 2024, Vol. 11, No. 6, 22 pages, DOI: 10.3390/aerospace11060492
27. Abraham, T., Lazzara, D., and **Hunsaker**, D. F., "Multifidelity Comparison of Supersonic Wave Drag Prediction Methods Using Axisymmetric Bodies," *Aerospace*, 2024, Vol. 11, No. 5, 23 pages, DOI: 10.3390/aerospace11050359
26. Brincklow, J., Montgomery, Z., and **Hunsaker**, D. F., "Controlling Roll-Yaw Coupling with Aileron and Twist Design," *The Aeronautical Journal*, 2024, 13 pages, DOI: 10.1017/aer.2024.21
25. Goates, C., and **Hunsaker**, D. F., "MachLine: Development of a Dirichlet-Based, Subsonic/Supersonic Panel Method for Unstructured Grids," *Journal of Aircraft*, 2024, 20 pages, DOI: 10.2514/1.C037449
24. Goates, C., and **Hunsaker**, D. F., "Modern Implementation and Evaluation of Lifting-Line Theory for Complex Geometries," *Journal of Aircraft*, 2022, 19 pages, DOI: 10.2514/1.C036748
23. Harvey, C., Gamble, L., Bolander, C., **Hunsaker**, D., Joo, J., and Inman, D., "A Review of Avian-Inspired Morphing for UAV Flight Control," *Progress in Aerospace Sciences*, Vol. 132, July 2022, 27 pages, DOI: 10.1016/j.paerosci.2022.100825
22. Moorthamers, B., and **Hunsaker**, D. F., "Accuracy of Küchemann's Prediction for the Locus of Aerodynamic Centers on Swept Wings," *The Aeronautical Journal*, April 2022, 21 pages, DOI: 10.1017/aer.2022.34.
21. Taylor, J., and **Hunsaker**, D. F., "Comparison of Theoretical and Multifidelity Optimum Aerostructural Solutions for Wing Design," *Journal of Aircraft*, Vol. 59, No. 1, Jan-Feb 2022, pp. 103–116, DOI: 10.2514/1.C036374
20. Leal, P., Schrass, J., Giblette, T., **Hunsaker**, D., Shen, H., Logan, T., and Hartl, D., "Effects of atmospheric profiles on the perceived loudness of low-boom supersonic vehicles," *AIAA Journal*, 2021, 9 pages, DOI: 10.2514/1.J059209
19. **Hunsaker**, D. F., Moorthamers, B., and Joo, J., "Minimum-Series Twist Distributions for Yawing-Moment Control During Pure Roll," *Zeitschrift für Angewandte Mathematik und Mechanik*, Vol. 101, No. 10, Oct. 2021, 19 pages, DOI: 10.1002/zamm.201900177
18. Harvey, C., Baliga, V., Goates, C., **Hunsaker** , D., and Inman, D., "Gull-inspired joint-driven wing morphing allows adaptive longitudinal flight control," *Journal of the Royal Society Interface*, June 2021, Vol. 18, No. 179, 11 pages, DOI: 10.1098/rsif.2021.0132
17. Taylor, J., and **Hunsaker**, D. F., "Low-Fidelity Method for Rapid Aerostructural Optimisation and Design-Space Exploration of Planar Wings," *The Aeronautical Journal*, July 2021, Vol. 125, No. 1289, pp. 1209–1230, DOI: 10.1017/aer.2021.14
16. Brincklow, J., and **Hunsaker**, D. F., "Aileron Size and Location to Minimize Induced Drag During Roll Initiation," *The Aeronautical Journal*, Vol. 125, No. 1287, 2021, pp. 807–829, DOI: 10.1017/aer.2020.139
15. Reid, J. T., and **Hunsaker**, D. F., "A General Approach to Lifting-Line Theory, Applied to Wings with Sweep," *Journal of Aircraft*, Vol. 58, No. 2, 2021, pp. 334-346, DOI: 10.2514/1.C035994.
14. Taylor, J., and **Hunsaker**, D. F., "Minimum Induced Drag for Tapered Wings Including Structural Constraints," *Journal of Aircraft*, Vol. 57, No. 4, 2020, pp. 782–786. DOI: 10.2514/1.C035757.
13. **Hunsaker**, D. F., Montgomery, Z., and Joo, J., "Adverse-Yaw Control During Roll for a Class of Optimal Lift Distributions," *AIAA Journal*, Vol. 58, No. 7, 2020, pp. 2909-2920. DOI: 10.2514/1.J059038.

12. Phillips, W. F., **Hunsaker**, D. F., and Taylor, J., "Minimising Induced Drag with Weight Distribution, Lift Distribution, Wingspan, and Wing-Structure Weight," *The Aeronautical Journal*, Vol. 124, No. 1278, 2020, pp. 1208-1235. DOI: 10.1017/aer.2020.24.
11. **Hunsaker**, D. F., Montgomery, Z., and Joo, J., "Analytic and Computational Analysis of Wing Twist to Minimize Induced Drag During Roll," *Part G: Journal of Aerospace Engineering*, Vol. 234, No. 3, pp. 788–803, 2020. DOI: 10.1177/0954410019886939.
10. **Hunsaker**, D. F., Taylor, J., Hodson, J., and Pope, O., "Aerodynamic Centers of Arbitrary Airfoils Below Stall," *Journal of Aircraft*, Vol. 56, No. 6, pp. 2158–2171, 2019. DOI: 10.2514/1.C035579.
9. **Hunsaker**, D. F., Reid, J. T., and Joo, J. J., "Geometric Definition and Ideal Aerodynamic Performance of Parabolic Trailing-Edge Flaps," *International Journal of Astronautics and Aeronautical Engineering*, 4:026, 20 pages, 2019. DOI: 10.35840/2631-5009/7526
8. **Hunsaker**, D. F., Phillips, W. F., and Spall, R. E., "Smooth-Wall Boundary Conditions for Dissipation-Based Turbulence Models," *International Journal of Astronautics and Aeronautical Engineering*, 4:025, 27 pages, 2019. DOI: 10.35840/2631-5009/7525
7. Phillips, W. F. and **Hunsaker**, D. F., "Designing Wing Twist or Planform Distributions for Specified Lift Distributions," *Journal of Aircraft*, Vol. 56, No. 2, pp. 847–849, 2019. DOI: 10.2514/1.C035206
6. Phillips, W. F., **Hunsaker**, D. F., and Joo, J. J., "Minimizing Induced Drag with Lift Distribution and Wingspan," *Journal of Aircraft*, Vol. 56, No. 2, pp. 431–441, 2019. DOI: 10.2514/1.C035027
5. Tong, O., Yanagita, Y., Harris, S., Katz, A., and **Hunsaker**, D. F., "High-Order Strand Grid Methods for Shock Turbulence Interaction," *International Journal of Computational Fluid Dynamics*, 15 pages, July 2018. DOI: 10.1080/10618562.2018.1490411
4. **Hunsaker**, D. F., Phillips, W. F., "Propulsion Theory of Flapping Airfoils, Comparison with Computational Fluid Dynamics," *Journal of Aircraft*, Vol. 53, No. 5, pp. 1411–1418, September 2016. DOI: 10.2514/1.C033247
3. Phillips, W. F., **Hunsaker**, D. F., "Lifting-Line Predictions for Induced Drag and Lift in Ground Effect," *Journal of Aircraft*, Vol. 50, No. 4, pp. 1226–1233, July–August 2013. DOI: 10.2514/1.C032152
2. Phillips, W. F., Fowler, E.B., **Hunsaker**, D. F., "Energy-Vorticity Turbulence Model with Application to Flow near Rough Surfaces," *AIAA Journal*, Vol. 51, No. 5, pp. 1211–1220, May 2013. DOI: 10.2514/1.J052068
1. Phillips, W. F., **Hunsaker**, D. F., Niewoehner, R. J., "Estimating the Subsonic Aerodynamic Center and Moment Components for Swept Wings," *Journal of Aircraft*, Vol. 45, No. 3, pp. 1033–1043, June 2008. DOI: 10.2514/1.33445

AIAA Meeting Papers

2025

84. Goates, J., **Hunsaker**, D. F. and Goates, C., "A Unified Procedure for Velocity Influence Calculation Within Subsonic/Supersonic Linear Panel Methods," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-2829, DOI: 10.2514/6.2025-2829
83. Hurwitz, J., Adams, S., Taylor, J., and **Hunsaker**, D. F., "Derivation and Implementation of Relaxable Wake Vortex Filaments in a Supersonic Panel Code," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-2540, DOI: 10.2514/6.2025-2540
82. Freeman, L., Goates, J., and **Hunsaker**, D. F., "Theory and Implementation of a Rapid Hypersonic Impact Method (HI-Mach) Part II: Convective Heating," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-2264, DOI: 10.2514/6.2025-2264
81. Goates, J., Freeman, L., and **Hunsaker**, D. F., "Theory and Implementation of a Rapid Hypersonic Impact Method (HI-Mach) Part I: Aerodynamics," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-2263, DOI: 10.2514/6.2025-2263
80. Foster, Z., Taylor, J., and **Hunsaker**, D. F., "Effects of Equivalent Area Changes on Boom Loudness of the N+2 Supersonic Transport Concept Vehicle," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-2002, DOI: 10.2514/6.2025-2002
79. Hoch, N., Bolander, C., and **Hunsaker**, D. F., "Application of the Adjoint Method to a Subsonic/Supersonic Panel Code for Rapid Aerodynamic Optimization," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-1561, DOI: 10.2514/6.2025-1561
78. Moulton, B., Bolander, C., and **Hunsaker**, D. F., "Evaluation of Stability and Controllability of the Multiple Trim Solutions for a Bio-Inspired Rotating Empennage Fighter Aircraft," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-0662, DOI: 10.2514/6.2025-0662
77. Abraham, T. and **Hunsaker**, D. F., "Dynamic Mode Characteristics of Asymmetric Aircraft," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-0661, DOI: 10.2514/6.2025-0661
76. Adams, S., **Hunsaker**, D. F., Fagley, C., Lewis, J., and Graves, R., "Comparison and Combination of Aerodynamic Data Sources for a Modern Fighter Aircraft," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-0366, DOI: 10.2514/6.2025-0366

75. Olsen, A., Montgomery, Z., and **Hunsaker**, D. F., "Lifting-Line Predictions for Optimal Dihedral Distributions in Ground Effect," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-0246, DOI: 10.2514/6.2025-0246
74. Ford, B. and **Hunsaker**, D. F., "3 Degree-of-Freedom Aircraft Flight Analysis and Reporting (FLARE) for Trajectory Optimization," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-0225, DOI: 10.2514/6.2025-0225
73. Weaver, A. and **Hunsaker**, D. F., "Investigating Stability of Hypersonic Conically-Derived Waverider Vehicles," AIAA SciTech 2025 Forum, January 2025, AIAA-2025-0224, DOI: 10.2514/6.2025-0224

2024

72. Moulton, B., Harris, M., **Hunsaker**, D. F., and Joo, J., "Evaluation of First-Order Actuator Dynamics and Linear Controller for a Bio-Inspired Rotating Empennage Fighter Aircraft," AIAA SciTech 2024 Forum, January 2024, AIAA-2024-2649, DOI: 10.2514/6.2024-2649
71. Abraham, T., **Hunsaker**, D. F., and Joo, J., "Linearized Rigid-Body Dynamics of Asymmetric Aircraft," AIAA SciTech 2024 Forum, January 2024, AIAA-2024-2647, DOI: 10.2514/6.2024-2647
70. Moulton, B., Abraham, T., and **Hunsaker**, D. F., "Stick-Fixed Maneuver Points in Roll, Pitch, and Yaw and Associated Handling Qualities," AIAA SciTech 2024 Forum, January 2024, AIAA-2024-2480, DOI: 10.2514/6.2024-2480
69. Hurwitz, J. and **Hunsaker**, D. F., "Aerodynamic State Determination Using Multi-Port Pitot Probes with Arbitrary Port Locations," AIAA SciTech 2024 Forum, January 2024, AIAA-2024-2843, DOI: 10.2514/6.2024-2843

2023

68. Moulton, B., and **Hunsaker**, D. F., "Simplified Mass and Inertial Estimates for Aircraft with Components of Constant Density," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-2432, DOI: 10.2514/6.2023-2432
67. Houser, A., Goates, C., and **Hunsaker**, D. F., "Evaluation of the MachLine Subsonic-Supersonic Panel Code With Experimental Results," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-2250, DOI: 10.2514/6.2023-2250
66. Abraham, T., **Hunsaker**, D. F., and Lazzara, D., "Multi-Fidelity Comparison of Supersonic Wave Drag Prediction Methods Using Axisymmetric Bodies," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-1899, DOI: 10.2514/6.2023-1899
65. Goates, C., Houser, A., and **Hunsaker**, D. F., "Implementation of MachLine: A Subsonic/Supersonic, Unstructured Panel Code," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-1898, DOI: 10.2514/6.2023-1898
64. Church, K., and **Hunsaker**, D. F., "Lifting-Line Predictions for Lift and Twist Distributions to Minimize Induced Drag in Ground Effect," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-1574, DOI: 10.2514/6.2023-1574
63. Dixon, N., and **Hunsaker**, D. F., "A Theoretical Trade-Off Between Wave Drag and Sonic Boom Loudness Due to Equivalent Area Changes on a Supersonic Body," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-1512, DOI: 10.2514/6.2023-1512
62. **Hunsaker**, D. F. and Moulton, B., "An Alternate Dimensionless Form of the Linearized Rigid-Body Aircraft Equations of Motion with Emphasis on Dynamic Parameters," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-1366, DOI: 10.2514/6.2023-1366
61. Bolander, C., Kohler, A., **Hunsaker**, D. F., Myszka, D., and Joo, J., "Static Trim of a Bio-Inspired Rotating Empennage for a Fighter Aircraft," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-0624, DOI: 10.2514/6.2023-0624
60. Schoenfeld, J., Taylor, J., and **Hunsaker**, D. F., "Multi-Fidelity Predictions for Control Allocation on the NASA Ikhana Research Aircraft to Minimize Drag," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-0622, DOI: 10.2514/6.2023-0622
59. Kohler, A., Bolander, C., **Hunsaker**, D. F., and Joo, J., "Linearized Rigid-Body Static and Dynamic Stability of an Aircraft with a Bio-Inspired Rotating Empennage," AIAA SciTech 2023 Forum, January 2023, AIAA-2023-0621, DOI: 10.2514/6.2023-0621
58. Taylor, J. and **Hunsaker**, D. F., "Effects of Active Wing-Morphing on Aircraft Fuel Burn along Fuel-Optimal Trajectories" AIAA SciTech 2023 Forum, January 2023, AIAA-2023-0038, DOI: 10.2514/6.2023-0038

2022

57. Ives, C., Myszka, D. H., Joo, J., Bolander, C. R., and **Hunsaker**, D. F., "Using a Topology Optimization Results Interpreter on the Frame of an Aircraft with a Bio-Inspired Rotating Empennage," AIAA Aviation Forum, June 2022, AIAA-2022-3373, DOI: 10.2514/6.2022-3373
56. Montgomery, Z., and **Hunsaker**, D. F., "Control Mapping Methodology for Roll, Pitch, and Yaw Control on Morphing-Wing Aircraft," AIAA SciTech Forum, January 2022, AIAA-2022-2531, DOI: 10.2514/6.2022-2531

55. Bolander, C., and **Hunsaker**, D. F., Myszka, D., and Joo, J., "Attainable Moment Set and Actuation Time of a Bio-Inspired Rotating Empennage," AIAA SciTech Forum, January 2022, AIAA-2022-1670, DOI: 10.2514/6.2022-1670
54. **2022 Applied Aerodynamics Best Paper Award:** Goates, C., and **Hunsaker**, D. F., "Development of a Subsonic-Supersonic, Unstructured Panel Method," AIAA SciTech Forum, January 2022, AIAA-2022-0403, DOI: 10.2514/6.2022-0403

2021

53. Taylor, J. and **Hunsaker**, D. F., "Comparison of Theoretical and High-Fidelity Aerostructural Solutions," AIAA Scitech Forum, January 2021, AIAA-2021-0067, DOI: 10.2514/6.2021-0067
52. Goates, C. and **Hunsaker**, D. F., "Practical Implementation of a General Numerical Lifting-Line Method," AIAA Scitech Forum, January 2021, AIAA-2021-0118, DOI: 10.2514/6.2021-0118
51. Brincklow, J., Montgomery, Z., and **Hunsaker**, D. F., "Controlling Roll-Yaw Coupling with Aileron Placement and Wing Twist," AIAA Scitech Forum, January 2021, AIAA-2021-0327, DOI: 10.2514/6.2021-0327
50. Moulton, B. and **Hunsaker**, D. F., "3D-Printed Wings with Morphing Trailing-Edge Technology," AIAA Scitech Forum, January 2021, AIAA-2021-0351, DOI: 10.2514/6.2021-0351
49. Weaver-Rosen, J., Carpenter, F., Cizmas, P., Malak, R., Abraham, T., **Hunsaker**, D. F., and Lazzara, D., "Computational Design Methodology of Adaptive Outer Mold Line for Robust Low En-Route Noise of a Supersonic Aircraft," AIAA Scitech Forum, January 2021, AIAA-2021-0877, DOI: 10.2514/6.2021-0877
48. Snow, S. and **Hunsaker**, D. F., "Design and Performance of a 3D-Printed Morphing Aircraft," AIAA Scitech Forum, January 2021, AIAA-2021-1060, DOI: 10.2514/6.2021-1060
47. Thurgood, J. and **Hunsaker**, D. F., "Sensitivity and Estimation of Flying-Wing Aerodynamic, Propulsion, and Inertial Parameters Using Simulation," AIAA Scitech Forum, January 2021, AIAA-2021-1528, DOI: 10.2514/6.2021-1528
46. Taylor, J. and **Hunsaker**, D. F., "Characterization of the Common Research Model Wing for Low-Fidelity Aerostructural Analysis," AIAA Scitech Forum, January 2021, AIAA-2021-1591, DOI: 10.2514/6.2021-1591
45. Moorthamers, B., Wiberg, D., and **Hunsaker**, D. F., "Estimation of Incompressible Swept-Wing Aerodynamics Using Low-Fidelity Methods," AIAA Scitech Forum, January 2021, AIAA-2021-1825, DOI: 10.2514/6.2021-1825

2020

44. Taylor, J. and **Hunsaker**, D. F., "Numerical Method for Rapid Aerostructural Design and Optimization," AIAA Aviation Forum, Virtual Event, June 2020, AIAA-2020-3175. DOI: 10.2514/6.2020-3175
43. Stewart, A., and **Hunsaker**, D. F., "Minimization of Induced and Parasitic Drag on Variable-Camber Morphing Wings," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-0277. DOI: 10.2514/6.2020-0277
42. Brincklow, J. R., and **Hunsaker**, D. F., "Optimization of Ailerons to Minimize Induced Drag in Roll," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-0279. DOI: 10.2514/6.2020-0279
41. Moorthamers, B., and **Hunsaker**, D. F., "Accuracy of Küchemann's Prediction for the Locus of Aerodynamic Centers on Swept Wings," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-0533. DOI: 10.2514/6.2020-0533
40. **Hunsaker**, D. F., and Phillips, W. F., "Ludwig Prandtl's 1933 Paper Concerning Wings for Minimum Induced Drag, Translation and Commentary," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-0644 . DOI: 10.2514/6.2020-0644
39. Bolander, C. R., and **Hunsaker**, D. F., "Near-field Pressure Signature Splicing for Low-Fidelity Design Space Exploration of Supersonic Aircraft," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-0789. DOI: 10.2514/6.2020-0789
38. Abraham, T., **Hunsaker**, D. F., Weaver-Rosen, J. M., and Malak, R. J., "Identifying Optimal Equivalent Area Changes to Reduce Sonic Boom Loudness," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-0790. DOI: 10.2514/6.2020-0790
37. **Hunsaker**, D. F., Montgomery, Z. S., and Joo, J. J., "Control of Adverse Yaw During Roll for a Class of Optimal Lift Distributions," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-1264. DOI: 10.2514/6.2020-1264
36. Reid, J. T. and **Hunsaker**, D. F., "A General Approach to Lifting-Line Theory, Applied to Wings with Sweep," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-1287. DOI: 10.2514/6.2020-1287
35. Montgomery, Z. S., **Hunsaker**, D. F., and Joo, J. J., "Aerodynamic Efficiency Analysis of Morphing Wings Relative to Non-Morphing Wings," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-2008. DOI: 10.2514/6.2020-2008

34. Taylor, J. D., and **Hunsaker**, D. F., "Minimum Induced Drag for Tapered Wings Including Structural Constraints," AIAA Scitech Forum, Orlando, Florida, January 2020, AIAA-2020-2113. DOI: 10.2514/6.2020-2113

2019

33. Phillips, W. F., **Hunsaker**, D. F., and Taylor, J., "Minimizing Induced Drag with Weight Distribution, Lift Distribution, Wingspan, and Wing-Structure Weight," AIAA Aviation Forum, Dallas, Texas, June 2019, AIAA-2019-3349. DOI: 10.2514/6.2019-3349
32. Carpenter, F., Cizmas, P., Bolander, C., Giblette, T., and **Hunsaker**, D. F., "A Multi-Fidelity Prediction of Aerodynamic and Sonic Boom Characteristics of the JAXA Wing Body," AIAA Aviation Forum, Dallas, Texas, June 2019, AIAA-2019-3237. DOI: 10.2514/6.2019-3237
31. **Hunsaker**, D. F., Moorthamers, B., and Joo, J., "Minimum-Frequency Spanwise Twist for Yawing-Moment Control During Roll," AIAA Aviation Forum, Dallas, Texas, June 2019, AIAA-2019-2917. DOI: 10.2514/6.2019-2917
30. Ullah, A. H., Fabijanic, C., Estevadeordal, J., Montgomery, Z., **Hunsaker**, D. F., Staiger, J., and Joo, J., "Experimental and Numerical Evaluation of the Performance of Parabolic Flaps," AIAA Aviation Forum, Dallas, Texas, June 2019, AIAA-2019-2916. DOI: 10.2514/6.2019-2916
29. Abdel-Motaleb, S. A., Taylor, J. D., **Hunsaker**, D. F., and Coopmans, C., "Comparison of Induced and Parasitic Drag on Wings with Minimum Induced Drag," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-2120. DOI: 10.2514/6.2019-2120
28. Reid, J. T. and **Hunsaker**, D. F., "Effect of Sweep on Airfoil Section Properties," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-2118. DOI: 10.2514/6.2019-2118
27. Bolander, C. R., **Hunsaker**, D. F., Shen, H., and Carpenter, F. L., "Procedure for the Calculation of the Perceived Loudness of Sonic Booms," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-2091. DOI: 10.2514/6.2019-2091
26. Montgomery, Z. S., **Hunsaker**, D. F., and Joo, J. J., "A Methodology for Roll Control of Morphing Aircraft," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-2041. DOI: 10.2514/6.2019-2041
25. **Hunsaker**, D. F., Montgomery, Z. S., and Joo, J. J., "Lifting-Line Analysis of Wing Twist to Minimize Induced Drag During Pure Rolling Motion," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-2040. DOI: 10.2514/6.2019-2040
24. Giblette, T. N. and **Hunsaker**, D. F., "Prediction of Sonic Boom Loudness Using High-Order Panel Methods for the Near-Field Solution," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-0605. DOI: 10.2514/6.2019-0605
23. Leal, P. B., Giblette, T. N., **Hunsaker**, D. F., and Hartl, D. J., "Extended 3D Class/Shape Transformation Equations for Multicomponent Aircraft Assemblies," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-0604. DOI: 10.2514/6.2019-0604
22. Moorthamers, B. and **Hunsaker**, D. F., "Aerodynamic Center at the Root of Swept, Elliptic Wings in Inviscid Flow," AIAA Scitech Forum, San Diego, California, January 2019, AIAA-2019-0032. DOI: 10.2514/6.2019-0032

2018

21. **Hunsaker**, D. F., Reid, J. T., Moorthamers, B., and Joo, J., "Geometry and Aerodynamic Performance of Parabolic Trailing-Edge Flaps," AIAA Aerospace Sciences Meeting, Kissimmee, Florida, January 2018, AIAA-2018-1278. DOI: 10.2514/6.2018-1278
20. **Hunsaker**, D. F., Pope, O. D., Hodson, J. D., and Rosqvist, J., "Aerodynamic Centers of Arbitrary Airfoils," AIAA Aerospace Sciences Meeting, Kissimmee, Florida, January 2018, AIAA-2018-1276. DOI: 10.2514/6.2018-1276
19. Montgomery, Z., **Hunsaker**, D. F., "A Propeller Model Based on a Modern Numerical Lifting-Line Algorithm with an Iterative Semi-Free Wake Solver," AIAA Aerospace Sciences Meeting, Kissimmee, Florida, January 2018, AIAA-2018-1264. DOI: 10.2514/6.2018-1264
18. Taylor, J., **Hunsaker**, D. F., and Joo, J., "Numerical Algorithm for Wing-Structure Design," AIAA Aerospace Sciences Meeting, Kissimmee, Florida, January 2018, AIAA-2018-1050. DOI: 10.2514/6.2018-1050

2017

17. Hodson, J., **Hunsaker**, D. F., Andrews, B. C., and Joo, J. J., "Experimental Results for a Variable Camber Compliant Wing," 35th AIAA Applied Aerodynamics Conference, Denver, Colorado, June 2017, AIAA-2017-4222. DOI: 10.2514/6.2017-4222
16. **Hunsaker**, D. F., Phillips, W. F., and Joo, J. J., "Aerodynamic Shape Optimization of Morphing Wings at Multiple Flight Conditions," 55th AIAA Aerospace Sciences Meeting, Grapevine, Texas, 9–13 January 2017, AIAA-2017-1420. DOI: 10.2514/6.2017-1420

15. **Hunsaker**, D. F., Phillips, W. F., and Joo, J. J., "Designing Wings with Fixed Twist for Minimum Induced Drag," 55th AIAA Aerospace Sciences Meeting, Grapevine, Texas, 9–13 January 2017, AIAA-2017-1419. DOI: 10.2514/6.2017-1419
14. Work, D., Yanagita, Y., Katz, A. J., and **Hunsaker**, D. F., "Validation of Flux Correction on Three-Dimensional Strand Grids with an Overset Cartesian Grid," 55th AIAA Aerospace Sciences Meeting, Grapevine, Texas, 9–13 January 2017, AIAA-2017-0074. DOI: 10.2514/6.2017-0074
13. Hodson, J., and **Hunsaker**, D. F., Spall, R. E., "Wing Optimization using Dual Number Automatic Differentiation in MachUp," 55th AIAA Aerospace Sciences Meeting, Grapevine, Texas, 9–13 January 2017, AIAA-2017-0033. DOI: 10.2514/6.2017-0033

Pre 2016

12. **Hunsaker**, D. F., Phillips, W. F., "Propulsion Theory of Flapping Airfoils, Comparison with Computational Fluid Dynamics" 53rd AIAA Aerospace Sciences Meeting, Kissimmee, Florida, Jan. 5 – 9, 2015, AIAA-2015-0257. DOI: 10.2514/6.2015-0257
11. **Hunsaker**, D. F., Phillips, W. F., "Momentum Theory with Slipstream Rotation Applied to Wind Turbines," 31st AIAA Applied Aerodynamics Conference, San Diego, California, June 24 – 27, 2013, AIAA-2013-3161. DOI: 10.2514/6.2013-3161
10. Phillips, W. F., Miller, R. A., **Hunsaker**, D. F., "Decomposed Lifting-Line Predictions and Optimization for Propulsive Efficiency of Flapping Wings," 31st AIAA Applied Aerodynamics Conference, San Diego, California, June 24 – 27, 2013, AIAA-2013-2921. DOI: 10.2514/6.2013-2921
9. Phillips, W. F., **Hunsaker**, D. F., "Lifting-Line Predictions for Induced Drag and Lift in Ground Effect," 31st AIAA Applied Aerodynamics Conference, San Diego, California, June 24 – 27, 2013, AIAA-2013-2917. DOI: 10.2514/6.2013-2917
8. Fowler, E. B., **Hunsaker**, D. F., Phillips, W. F., "Application of an Energy-Vorticity Turbulence Model to Fully Rough Pipe Flow," 42nd AIAA Fluid Dynamics Conference and Exhibit, New Orleans, Louisiana, June 25 – 28, 2012, AIAA-2012-3288. DOI: 10.2514/6.2012-3288
7. Phillips, W. F., **Hunsaker**, D. F., Spall, R. E., "Smooth-Wall Boundary Conditions for Dissipation-Based Turbulence Models," 48th AIAA Aerospace Sciences Meeting, Orlando, Florida, Jan. 4-7, 2010, AIAA-2010-1103. DOI: 10.2514/6.2010-1103
6. Phillips, W. F., **Hunsaker**, D. F., Alley, N. R., Niewoehner, R. J., "Pitch Dynamics of Unmanned Aerial Vehicles," 47th AIAA Aerospace Sciences Meeting, Orlando, Florida, Jan. 5-8, 2009, AIAA-2009-62. DOI: 10.2514/6.2009-62
5. Phillips, W. F., **Hunsaker**, D. F., Niewoehner, R. J., "Estimating the Subsonic Aerodynamic Center and Moment Components for Swept Wings," 46th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 7-10, 2008, AIAA-2008-192. DOI: 10.2514/6.2008-192
4. **Hunsaker**, D. F., "A Numerical Blade Element Approach to Estimating Propeller Flowfields," 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007, AIAA-2007-374. DOI: 10.2514/6.2007-374
3. **Hunsaker**, D. F., Larson, G., Condie, S., "Optimization of Iris, a Small Autonomous Surveillance UAV," 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, 2007, AIAA-2007-360. DOI: 10.2514/6.2007-360
2. **Hunsaker**, D. F., Snyder, D. O., "A Lifting-Line Approach to Estimating Propeller / Wing Interactions," 24th Applied Aerodynamics Conference, San Francisco, California, June 5-8, 2006, AIAA-2006-3466. DOI: 10.2514/6.2006-3466
1. Boyce, J., Carr, R., Chipman, D., Larson, G., Hopkins, N., **Hunsaker**, D., Bowman, W. J., "Design of 'Iris', a Small Autonomous Surveillance UAV," 44th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 9-12, 2006, AIAA-2006-824. DOI: 10.2514/6.2006-824

Other Meeting Papers

2. Bolander, C., and **Hunsaker**, D. F., "A Sine-Summation Algorithm for the Prediction of Ship Deck Motion," OCEANS 2018 MTS/IEEE Conference, Charleston, South Carolina, 22-25 October 2018. DOI: 10.1109/OCEANS.2018.8604888
1. Joo, J. J., **Hunsaker**, D. F., and Montgomery, Z. S., "Aerodynamic Performance and Wing Structure Design of a Variable Camber Compliant Wing System," ICAST2018: 29th International Conference on Adaptive Structures and Technologies, Seoul, Korea, September 30-October 4, 2018.

Other Publications, Documents, and Software

1. Hunsaker, D. F., "Aeronautics Engineering Handbook," 2021, 78 pages, Digital Format
2. Hunsaker, D. F., "A is for Alpha: A Young Pilot's Alphabet Book," Amazon Kindle, 2019
3. Hunsaker, D. F., "Habits of Highly Successful Graduate Students," 2016-2021
4. USU AeroLab, "Open-Source Code," Available on Github

Research Awards (Total: $3.45M | PI: $1.97M | Co-I: $1.4M | Other: $77K)

PI, "AFRL Subject-Matter Expert: Bio-Inspired Flight Using a Rotating Empennage - Renewal," **AFRL Subject Matter Expert**, January 2023 – December 2025, $437,140. More information available on the project page

Co-I, "A Rapid Aerodynamic Prediction Tool for Maneuvering Hypersonic Air Vehicles," **AFRL AFWERX Phase II**, PI: Vivek Ahuja, Research in Flight, August 2023 – May 2025, Total: $1,200,000 (Co-I portion: $375,000).

Co-I, "A Multi-Fidelity Supersonic Flow Solver for Preliminary Design & Optimization," **AFRL AFWERX Phase II**, PI: Vivek Ahuja, Research in Flight, March 2023 – December 2024, Total: $1,200,000 (Co-I portion: $500,000). More information available on the project page

PI, "Sensitivity Analysis of UAS Design Parameters for Ship-Based Operations,," **ONR Sabbatical**, August 2022 – May 2023, $37,350.

Co-I, "A Rapid Aerodynamic Prediction Tool for Maneuvering Hypersonic Air Vehicles," **AFRL AFWERX Phase I**, PI: Vivek Ahuja, Research in Flight, November 2022 – January 2023, Total: $75,000 (Co-I portion: $28,500).

PI, "AFRL Subject-Matter Expert: Bio-Inspired Flight Using a Rotating Empennage," **AFRL Subject Matter Expert**, January 2020 – December 2022, $304,842. More information available on the project page

Co-I, "Adaptive Aerostructures for Revolutionary Civil Supersonic Transportation," **NASA University Leadership Initiative**, PI: Dimitris Lagoudas, Texas A&M, July 2017 – December 2022, Total: $10,000,000 (Co-I Portion: $410,000). More information available on the project page

PI, "Continuous Flight Optimization of Morphing-Wing Aircraft," **NASA ASTAR Fellowship for Jeff Taylor**, September 2018 – May 2022, $165,000

PI, "YIP: Control of Tailless Morphing Aircraft," **ONR Young Investigator Program**, June 2018 – December 2021, $509,802. Flight Test videos and more information available on the project page

Co-I, "A Multi-Fidelity Supersonic Flow Solver for Preliminary Design & Optimization," **AFRL AFWERX Phase I**, PI: Vivek Ahuja, Research in Flight, November 2021 – January 2022, Total: $50,000 (Co-I portion: $25,000).

PI, "High-Order Low-Fidelity Prediction of Supersonic Aerodynamics," **USU Research and Graduate Studies Seed Grant**, July 2020 – June 2021, $19,991.

PI, "SDL Joint Appointee: IR&D," **Space Dynamics Laboratory**, July 2020 – June 2021, $8,010

PI, "SDL Joint Appointee: IR&D," **Space Dynamics Laboratory**, July 2019 – June 2020, $7,800

PI, "AFRL Subject-Matter Expert: Morphing and Shape Adaptable Aircraft Structures," **AFRL Subject Matter Expert**, January 2018 – February 2020, $296,411. Flight Test videos and more information available on the project page

PI, "SDL Joint Appointee: IR&D," **Space Dynamics Laboratory**, January 2019 – June 2019, $7,600

PI, "Bio-Inspired Wing Development for Highly Efficient Aircraft," **Utah Water Research Lab**, July 2017 – Aug 2018, $28,180

PI, "Improvement of a Modern Lifting-Line Algorithm for Swept Wings," **NASA Rocky Mountain Space Grant Consortium**, April 2016 – April 2018, $25,250

Co-I, "STTR: Design, Development, and Testing of a Nanolaunch Hybrid Upper Stage," **Parabilis Space Technologies**, PI: Stephen Whitmore, Utah State University, May 2017 – December 2017, Total: $142,906 (Co-I Portion: $50,495)

PI, "Strand Grid Methodology for Dynamic Ship/Aircraft Interaction Simulations," **Office of Naval Research**, July 2016 – December 2017, $431,827, (Original PI: Dr. Aaron Katz, USU; Current PI portion $142,511)

Co-I, "An Introduction to Aerospace Engineering Through Basic Aircraft Design and Flight Mechanics," **4H USU Extension Services**, PI: Shannon Babb, July 2016 – Dec. 2017, $9,812

PI, "Development of a Propeller Model Based on Lifting-Line Theory," **USU Research and Graduate Studies Seed Grant**, Sept. 2016 – Aug. 2017, $19,902.

Fellow, "Optimization of Camber and Twist Distributions for Continuously Reconfigurable Wing Designs," **AFRL Summer Faculty Fellowship**, May 2017 – Aug 2017, $47,908

Fellow, "Optimization of Camber and Twist Distributions for Continuously Reconfigurable Wing Designs," **AFRL Summer Faculty Fellowship**, May 2016 – July 2016, $29,100

Courses Taught

Utah State University

Aerodynamics, *MAE 5500*, (Fall) 2019, 2020, 2021
Dynamics of Atmospheric Flight, *MAE 5510*, (Spring) 2014, 2016, 2017, 2020, 2021, 2022
Potential Flow, *MAE 6500*, (Fall) 2018, 2020
Aircraft Dynamics and Flight Simulation, *MAE 6510*, (Fall) 2016, 2017, 2018, 2019, 2021
Turbulence, *MAE 6490*, (Spring) 2014

Online Courses Available at AeroAcademy

Fundamentals of Aerodynamics
Airfoil Analysis
Airfoil Conformal Mapping
Wing Analysis
Static Trim and Stability
Aircraft Dynamics
Fixed-Wing Drone Design (Co-Authored with Sam Weiss)
5 Principles for Landing Your Dream Job
Introduction to Aircraft Design
Wing Design and Optimization

Service

AIAA Applied Aerodynamics Technical Committee Member, *2013–2016, 2019–2022*
Reviewer of manuscripts in the following journals:
AIAA Journal, Journal of Aircraft, Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering, Aerospace, Journal of Spacecraft and Rockets, ASME Journal of Fluids Engineering, *Theoretical and Computational Fluid Dynamics, Journal of Intelligent Material Systems and Structures, Proceedings of the Royal Society A*

Awards

Graduate Mentor of the Year, *USU College of Engineering*, 2025
Graduate Mentor of the Year, *USU Dept. of Mechanical and Aerospace Engineering*, 2025
Graduate Mentor of the Year, *USU Dept. of Mechanical and Aerospace Engineering*, 2024
Best Paper Award, *AIAA Applied Aerodynamics, SciTech Forum, 2022, First Author: Cory Goates*
Teacher of the Year, *USU College of Engineering*, 2022
Teacher of the Year, *USU Department of Mechanical and Aerospace Engineering*, 2022
UEC Engineering Educator of the Year, *Utah Engineers Council*, 2021 Acceptance Video | USU Announcement
Engineering Educator of the Year Nominee, *AIAA Utah Section*, 2021
Researcher of the Year, *USU College of Engineering*, 2020
Researcher of the Year, *USU Department of Mechanical and Aerospace Engineering*, 2020

Undergraduate Research Mentor of the Year, *USU Dept. of Mechanical and Aerospace Engineering*, 2020
Graduate Mentor of the Year, *USU Dept. of Mechanical and Aerospace Engineering*, 2019
Young Investigator Program (YIP) Recipient, *Office of Naval Research*, 2018
Graduate Mentor of the Year, *USU College of Engineering*, 2018
Graduate Mentor of the Year, *USU Dept. of Mechanical and Aerospace Engineering*, 2018
Engineering Educator of the Year Nominee, *AIAA Utah Section*, 2017

News Articles

International

Pressetext, "MachUp": Drohnen designen im Browser, October 2016

Drohnen Journal, MachUp3: Drohnen selbst designen, October 2016

National

Aerospace America, Stakes raised for NASA's planned supersonic X-plane, November 2018

NPR, NASA Hopes Supersonic X Plane Will Deliver Less Bang For The Buck, April 2018

Inside Unmanned Systems, Mach Up: Free Drone Design Software for Students, Startups, January 2017

TechXplore, Aerospace engineer creates free 3-D aircraft design software, October 2016

ScienMag, USU aerospace engineer creates free 3-D aircraft design software, October 2016

sUAS News, USU Aerospace Engineer Creates Free 3-D Aircraft Design Software, October 2016

Unmanned Aerial, University Engineer Offers Free Drone Design Tool, October 2016

3ders.org, USU aerospace engineer creates MachUp, a free online tool to bring 3D aircraft design to everyone, October, 2016

PACE, Aerospace engineer releases free aircraft design software, October 2016

Local

USU Today, Engineering Faculty, Students Earn Six Awards from Utah Engineers Council, March 2021

USU Today, USU's AeroLab Making Industry Shockwaves, April 2019

USU College of Engineering, NASA Awards Prestigious Fellowship to USU Engineering Graduate Student, September 2018

Cache Valley Daily, Research at USU underway to design new military aircraft, May 2018

USU College of Engineering, USU Aerospace Engineering Researcher Lands Prestigious Navy Grant, April 2018

USU College of Engineering, Shush! Aerospace Engineers Working to Hush Sonic Booms, October 2017

USU Today, News about New Drone Design Software goes International, October 2016

USU Today, Engineering Doctoral Student Receives $10,000 Scholarship, March 2008

Seminars and Talks

"Bio-Inspired Flight Using a Rotating Empennage," Universal Technology Corporation Technical Interchange Meeting, July 2020

"Morphing and Shape Adaptable Aircraft Structure Design and Control," Universal Technology Corporation Technical Interchange Meeting, July 2019

"MAE Aerospace Research Overview," Presented to the University Space Research Association (USRA), Utah State University, May 2019

"Analytic Methods and Solutions for the Design of Morphing Aircraft," University of Michigan, March 2019

"Morphing and Shape Adaptable Aircraft Structure Design and Control," Universal Technology Corporation Technical Interchange Meeting, July 2018

"Why We Need Bio-Inspired Aircraft, and a Promising Path to Development," AFRL Science and Technology 2030 Initiative, University of Utah, July 2018

"Shape Optimization for Control and noise Reduction of Future Morphing Aircraft," Space Dynamics Laboratory, June 2018

"Aerodynamic Design and Optimization," Armstrong Flight Research Center, March 2016

"A Fundamental Approach to Modeling Flapping Flight," Naval Research Laboratory, June 2015

"Optimization of Flapping-Flight Using Numerical Lifting-Line Analysis," Army Research Laboratory, June 2014

Students Mentored as Major Professor (Students who have graduated are underlined)

Doctoral

Jeremy Goates, September 2025 – Present
Nathan Hoch, January 2025 – Present
Steve Kesler, August 2024 – Present
Spencer Adams, May 2024 – Present
Benjamin Moulton, May 2021 – May 2025
Troy Abraham, January 2021 – December 2024
Cory Goates, January 2020 – August 2023
Christian Bolander, January 2019 – May 2023
Jeffrey Taylor (*NASA ASTAR Fellowship*), January 2018 – August 2022
Zachary Montgomery, January 2018 – May 2022
Bruno Moorthamers, September 2017 – August 2021
Jackson Reid (*USU PDRF Fellowship*), September 2016 – August 2020
Josh Hodson (*AFRL SFFP*), May 2016 – May 2019
Dalon Work, July 2016 – May 2017

Masters Plan A

Zach Jenkins, August 2025 – Present
Logan Freeman, August 2025 – Present
Jacob Wiberg, August 2025 – Present
Amanda Olsen, May 2024 – December 2025
Ashton Gilbert, May 2024 – December 2025
Kathle Tischner, May 2024 – December 2025
Ben Ford, August 2023 – May 2025
Adam Weaver, January 2024 – May 2025
Nathan Hoch, May 2023 – May 2025
Josh Hurwitz, May 2023 – December 2024
Parker Carter, August 2022 – December 2023
Kyler Church, August 2021 – December 2022
Justice Schoenfeld, August 2021 – December 2022
Nolan Dixon, May 2021 – December 2022
Austin Kohler, May 2021 – December 2022
Benjamin Moulton, January 2020 – May 2021
Jaden Thurgood, May 2019 – February 2021
Troy Abraham, May 2019 – December 2020
Josh Brincklow, June 2018 – May 2020
Austin Stewart, January 2019 – December 2019
Ted Giblette, September 2017 – May 2019
Steven Bennett, May 2017 – May 2019
Joshua Goates, May 2017 – December 2018
Jeffery Taylor (*AFRL SFFP*), September 2016 – December 2017
Orrin Pope, September 2016 – December 2017
Zachary Montgomery, September 2016 – December 2017

Masters Plan B

Zach Foster, August 2023 – December 2024
Sabrina Snow, September 2020 – December 2021
Sarah Abdel-Motaleb, May 2017 – December 2018
Dustin Weaver, May 2017 – December 2017
Yushi Yanagita, July 2016 – May 2017

Undergraduate

Daniel Olsen, September 2025 – Present
Brinton Montgomery, (USU EURP) May 2025 – May 2026
Jackson Mandry, (USU EURP) January 2025 – May 2026
Zach Jenkins, (USU EURP) August 2024 – May 2025
Tyler Black, (USU EURP) August 2024 – December 2024
Jacob Wiberg, (USU EURP) May 2024 – May 2025
Conner Carlile, May 2023 – May 2025
Logan Freeman, (USU EURP) February 2023 – May 2025
Jeremy Goates, February 2023 – May 2025
Spencer Adams, (USU EURP) March 2023 – May 2024
Ashton Gilbert, May 2023 – May 2024
Kathle Tischner, (USU EURP) January 2023 – May 2024
Amanda Olsen, (USU EURP) January 2023 – May 2024
Josh Hurwitz, (USU EURP) January 2021 – May 2023
Ammon Houser, November 2021 – May 2022
Dallin Wiberg (USU EURP), January 2020 – May 2021
Justice Schoenfeld, September 2019 – May 2020
Sabrina Snow (USU EURP), January 2019 – May 2020
Troy Abraham, January 2019 – May 2019
Jaden Thurgood, January 2019 – May 2019
Ben Moulton (USU EURP), May 2018 – December 2019
Cory Goates (USU EURP), January 2018 – May 2019
Christian Bolander (USU EURP), September 2017 – May 2018
Jacob Rosqvist (USU EURP), October 2016 – May 2018
Ted Giblette, September 2016 – August 2017
Jeff Taylor, January 2016 – May 2016
Jackson Reid, January 2016 – May 2016