Yong Hoon Lee, Ph.D.

Last updated: April 16, 2025

Assistant Professor
Department of Mechanical Engineering
Herff College of Engineering
The University of Memphis

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Google Scholar: https://scholar.google.com/citations?user=t-F0slQAAAAJ

Education

- **Ph.D.** Mechanical Engineering — Aug 10, 2020
  Dissertation: "Methods for the integrated design of viscoelastic materials and structural geometry"
  Advisors: James T. Allison, Ph.D. and Randy H. Ewoldt, Ph.D.
  University of Illinois at Urbana-Champaign, Urbana, IL, USA
- **M.S.** Mechanical Engineering — Aug 20, 2010
  Thesis: "A study on the application of Navier-Stokes equations to the unstructured grid system"
  Advisor: Yun-Ho Choi, Ph.D.
  Ajou University, Suwon, South Korea
- **B.S.** Mechanical Engineering — Aug 21, 2008
  Recognition: Top graduate in the College of Engineering
  Ajou University, Suwon, South Korea

Professional Appointments and Experiences

- **Assistant Professor** Department of Mechanical Engineering — Aug 15, 2022 – present
  The University of Memphis, Memphis, TN, USA
- **Postdoctoral Research Associate** Engineering System Design Laboratory — Jul 27, 2020 – Aug 14, 2022
  University of Illinois at Urbana-Champaign, Urbana, IL, USA
- **Research Assistant** Engineering System Design Laboratory — Aug 16, 2015 – Jul 20, 2020
  Teaching Assistant Dept. of Industrial & Enterprise Systems Engineering — Aug 16, 2019 – Dec 31, 2019
  Teaching Assistant Dept. of Mechanical Science & Engineering — Jan 1, 2019 – May 15, 2019
  University of Illinois at Urbana-Champaign, Urbana, IL, USA
- **Instructor** Dept. of Mechanical and Automotive Engineering — Mar 11, 2014 – Jun 29, 2014
  Masan University, Changwon, South Korea
- **CAE/CFD Research Engineer** Nuclear Energy Division — Jun 28, 2010 – Aug 26, 2013
  Korea Nuclear Engineering and Services Corp., Seoul, South Korea
- **Research Assistant** Computational Fluid Dynamics Laboratory — Sep 1, 2008 – Aug 20, 2010
  Teaching Assistant Dept. of Mechanical Engineering — Sep 1, 2008 – Aug 20, 2010
  Ajou University, Suwon, South Korea
- **Student Researcher** Thermal Hydraulics Safety Research Division — Sep 1, 2008 – Sep 1, 2009
  Korea Atomic Energy Research Institute, Daejeon, South Korea

Honors, Awards, and Media Coverage

- **ASME 50th Design Automation Conference Papers of Distinction** Aug 28, 2024
  Announced in: 2024 ASME IDETC/CIE Conference Final Program (pp. 12–13)
  American Society of Mechanical Engineers (ASME), New York, NY, USA
- **UofM Research+Innovation Newsletter Coverage in News and Impact Section** Apr 1, 2024
  Title: "Wind Energy with Integrated Servo-Control: Floating offshore wind turbines, innovative renewable energy systems"
  The University of Memphis, Memphis, TN, USA
- **Outstanding Lecture Award** Jan 21, 2023
  "Enabling Design of Floating Offshore Wind Energy Systems" in *Ygnite 2023*
  Korean-American Scientists and Engineers Association, Vienna, VA, USA
- **Mavis Fellowship** Mavis Future Faculty Fellows Program Aug 2019 – May 2020
  Grainger College of Engineering,,
  University of Illinois at Urbana-Champaign, Urbana, IL, USA
- **List of Teachers Ranked as Excellent by their Students** Dec 2019
  University of Illinois at Urbana-Champaign, Urbana, IL, USA
- **2017 Journal of Mechanical Design Editor's Choice Award: Honorable Mention** Oct 18, 2018
  Announced in: DOI 10.1115/1.4041528
  Yong Hoon Lee, et al., *J. Mech. Design*, 139(5):053401, May 2017. DOI 10.1115/1.4036133
  American Society of Mechanical Engineers (ASME), New York, NY, USA
- **2009 ATES Paper Contest for ANSYS Fluent Academic Users: Finalist Award** Aug 18, 2009
  Yong Hoon Lee, et al., in *ATES Paper Contest for ANSYS Fluent Academic Users*
  Advanced Technology Engineering Service (ATES), Seoul, South Korea

Publications

Refereed Journal Articles

(†: corresponding author)

8. Saeid Bayat, Yong Hoon Lee, and James T. Allison. "Nested control co-design of a spar buoy horizontal-axis floating offshore wind turbine". *Ocean Engineering* 328 (June 2025): 121037. `https://doi.org/10.1016/j.oceaneng.2025.121037`
7. Yong Hoon Lee†, Saeid Bayat, James T. Allison, Md Sanower Hossain, and D. Todd Griffith. "Multidisciplinary modeling and control co-design of a floating offshore vertical-axis wind turbine system". *Journal of Mechanical Design* 147, no. 6 (June 2025): 061702. `https://doi.org/10.1115/1.4068072`
6. Athul K. Sundarrajan, Yong Hoon Lee, James T. Allison, Daniel S. Zalkind, and Daniel R. Herber. "Open-loop control co-design of semisubmersible floating offshore wind turbines using linear parameter-varying models". *Journal of Mechanical Design* 146, no. 4 (Apr. 2024): 041704. `https://doi.org/10.1115/1.4063969`
5. Albert Patterson, Yong Hoon Lee, and James T. Allison. "Generation and enforcement of process-driven manufacturability constraints: A survey of methods and perspectives for product design". *Journal of Mechanical Design* 143, no. 11 (Apr. 2021): 110801. `https://doi.org/10.1115/1.4050740`
4. Yong Hoon Lee†, Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison. "Simultaneous design

of non-Newtonian lubricant and surface texture using surrogate-based multiobjective optimization". *Structural and Multidisciplinary Optimization* 60, no. 1 (July 2019): 99–116. https://doi.org/10.1007/s00158-019-02201-1

3. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "Design-driven modeling of surface-textured full-film lubricated sliding: Validation and rationale of nonstandard thrust observations". *Tribology Letters* 65, no. 2 (June 2017): 35. https://doi.org/10.1007/s11249-017-0818-8

2. Yong Hoon Lee, Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison. "Enhancing full-film lubrication performance via arbitrary surface texture design". *Journal of Mechanical Design* 139, no. 5 (May 2017): 053401. https://doi.org/10.1115/1.4036133. Presetned with the Honorable Mention of the 2017 Journal of Mechanical Design Editor's Choice Award

1. Dong-Gyu Lee, Jea-Ho Park, Yong Hoon Lee, Chang-Yeol Baeg, and Hyung-Jin Kim. "Natural convection heat transfer characteristics in the canister with horizontal installation of dual purpose cask for spent nuclear fuel". *Nuclear Engineering and Technology* 45, no. 7 (Dec. 2013): 969–978. https://doi.org/10.5516/NET.06.2012.092

Preprints

(†: corresponding author)

Yong Hoon Lee†, Saeid Bayat, and James T. Allison. "Control co-design of wind turbines using a nonlinear derivative function surrogate model based on OpenFAST linearization". *Applied Energy*, Submitted on January 10, 2025. Under review

Books and Book Chapters

1. Albert E. Patterson and Yong Hoon Lee. "Design for manufacturability with fused deposition modeling". Chap. 2 in *Fused Deposition Modeling: Technology, Applications, and Developments*, ed. by Anshuman Kumar Sahu. CRC Press, 2025. In press

Refereed Conference Proceedings Papers

(†: corresponding, ‡: presenting author)

15. Yong Hoon Lee†‡, Saeid Bayat, James T. Allison, Md. Sanower Hossain, and D. Todd Griffith. "Modeling and control co-design of a floating offshore vertical-axis wind turbine system". In *ASME IDETC/CIE Conference*, 1–10. DETC2024-143495. Washington, DC, USA, Aug. 2024. https://doi.org/10.1115/DETC2024-143495

14. Austin L. Griffin and Yong Hoon Lee†. "Experimentally supported design optimization of marine hydrokinetic turbine systems with adaptive duct contraction control". In *ASME IDETC/CIE Conference*, 1–10. DETC2024-143861. Washington, DC, USA, Aug. 2024. https://doi.org/10.1115/DETC2024-143861

13. Nowsheen Sharmili, Yong Hoon Lee†, and James T. Allison. "Battery thermal management systems design considering model fidelity levels and design optimization utility". In *AIAA SciTech Forum and Exposition*, 1–10. AIAA 2024-2363. Orlando, FL, USA, Jan. 2024. https://doi.org/10.2514/6.2024-2363

12. Prajwal Chinthoju, Yong Hoon Lee, Ghanendra K. Das, Kai A. James, and James T. Allison. "Optimal design of eVTOLs for urban mobility using analytical target cascading (ATC)". In *AIAA SciTech Forum and Exposition*, 1–13. AIAA 2024-2235. Orlando, FL, USA, Jan. 2024. https://doi.org/10.2514/6.2024-2235

11. Chandler S. Cain and Yong Hoon Lee†. "Hydro-structural design exploration of floating platform for offshore energy systems". In *ASME International Mechanical Engineering Congress and Exposition*

(IMECE), 1–8. IMECE2023-112479. New Orleans, LA, USA, Oct. 2023. https://doi.org/10.1115/IMECE2023-112479

10. Athul K. Sundarrajan, Yong Hoon Lee, James T. Allison, and Daniel R. Herber. "Open-loop control co-design of floating offshore wind turbines using linear parameter-varying models". In *ASME IDETC/CIE Conference*, 1–13. DETC2021-67573. Virtual Conference, Aug. 2021. https://doi.org/10.1115/DETC2021-67573

9. Yong Hoon Lee[†‡], Vedant, Randy H. Ewoldt, and James T. Allison. "Strain-actuated solar arrays for spacecraft attitude control assisted by viscoelastic damping". In *Advances in Structural and Multidisciplinary Optimization, Proceedings of the 13th World Congress of Structural and Multidisciplinary Optimization (Beijing, China)*, 149–155. Dalian: Dalian University of Technology Electronic & Audio-Visual Press, Dec. 2019

8. Albert E. Patterson, Yong Hoon Lee[‡], and James T. Allison. "Overview of the development and enforcement of process-driven manufacturability constraints in product design". In *ASME IDETC/CIE Conference*, 1–11. DETC2019-97384. Anaheim, CA, USA, Aug. 2019. https://doi.org/10.1115/DETC2019-97384

7. Chendi Lin, Daniel R. Herber, Vedant, Yong Hoon Lee, Alexander Robin Mercantini Ghosh, Randy H. Ewoldt, and James T. Allison. "Attitude control system complexity reduction via tailored viscoelastic damping co-design". In *AAS Guidance and Control Conference*. AAS 18-103. Breckenridge, CO, USA, Feb. 2018

6. Yong Hoon Lee[†‡], Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison. "Simultaneous design of non-Newtonian lubricant and surface texture using surrogate-based optimization". In *AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, AIAA SciTech Forum*, 1–14. AIAA 2018-1906. Kissimmee, FL, USA, Jan. 2018. https://doi.org/10.2514/6.2018-1906

5. Chendi Lin, Yong Hoon Lee, Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison. "Efficient optimal surface texture design using linearization". In *Advances in Structural and Multidisciplinary Optimization: Proceedings of the 12th World Congress of Structural and Multidisciplinary Optimization (Braunschweig, Germany)*, ed. by A. Schumacher, T. Vietor, S. Fiebig, K. U. Bletzinger, and K. Maute, 632–647. Cham: Springer, Jan. 2018. https://doi.org/10.1007/978-3-319-67988-4_48

4. Yong Hoon Lee[†‡], R. E. Corman, Randy H. Ewoldt, and James T. Allison. "A multiobjective adaptive surrogate modeling-based optimization (MO-ASMO) framework using efficient sampling strategies". In *ASME IDETC/CIE Conference, Volume 2B: 43rd Design Automation Conference*, V02BT03A023. DETC2017-67541. Cleveland, OH, USA, Aug. 2017. https://doi.org/10.1115/DETC2017-67541

3. Yong Hoon Lee[‡], Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison. "Shape parameterization comparison for full-film lubrication texture design". In *ASME IDETC/CIE Conference, Volume 2B: 42nd Design Automation Conference*, V02BT03A037. DETC2016-60168. Charlotte, NC, USA, Aug. 2016. https://doi.org/10.1115/DETC2016-60168

2. Dong-Gyu Lee, Yong Hoon Lee, Wi-Soo Jeong, and Jea-Ho Park. "Heat transfer analysis around transport cask under transport hood". In *The 8th International Symposium on Radiation Safety Management*, 1–6. Gyeongju, Korea, Nov. 2011

1. Yong Hoon Lee[‡], Jin-Won Seo, Jae-Hong Park, and Yun-Ho Choi. "Numerical study on performance assessment and installation conditions of an automotive air cleaner". In *Korean Society for Computational Fluids Engineering Spring Conference*, 263–270. 60115923. Jeju, Korea, May 2010. http://www.riss.kr/link?id=A60115923

Invited Talk in Conference and Workshop

2. Yong Hoon Lee. "Design of floating offshore wind turbines using OpenMDAO and Dymos". In *OpenMDAO Workshop*. NASA Glenn Research Center, Cleveland, OH, USA, Oct. 2022. `https://openmdao.org/2022-workshop-proceedings/`. Invited

1. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "1G.3 Rheological design for efficient fluid power". In *CCEFP Webinar Series*. Feb. 2016. Schuh and Lee contributed equally. Schuh presented part I and Lee presented part II. Invited

Invited Talk in University and Industry

2. Yong Hoon Lee. "Multidisciplinary design optimization in floating offshore wind turbines". In *MAE 5350: Multidisciplinary Design Optimization*. Ithaca, NY, USA: Cornell University, Apr. 2023. Invited

1. Yong Hoon Lee. "System-level integrated and multidisciplinary design on floating offshore wind turbine and engineered materials applications". In *Engineering Technology & Industrial Distribution Seminar Series (Departmental Seminar for Graduate Students)*. Texas A&M University, College Station, TX, USA, Oct. 2021. Invited

Abstract-Only Presentations and Posters

(†: corresponding, ‡: presenting author)

22. Nowsheen Sharmili, Yong Hoon Lee†, and James T. Allison. "Enhancing collaborative multidisciplinary optimization through surrogate modeling". In *ASME IDETC/CIE Conference*, 1–4. DETC2024-148473. Washington, DC, USA, Aug. 2024. Extended Abstract

21. Austin L. Griffin and Yong Hoon Lee†. "Experimental identification of reduced order model parameters for hydrokinetic energy system design". In *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, 1–6. IMECE2023-113489. New Orleans, LA, USA, Oct. 2023. Extended Abstract

20. Yong Hoon Lee†‡ and Yue Guan. "Multi-body modeling for conceptual design of co-located ocean renewable energy and aquaculture systems". In *ASME IDETC/CIE Conference*, 1–4. DETC2023-117954. Boston, MA, USA, Aug. 2023. Extended Abstract

19. Yong Hoon Lee†‡. "Enabling design of floating offshore wind energy systems". In *Korean-American Scientists and Engineers Association, 19th Young Generation Technical and Leadership Conference*. San Jose, CA, USA, Jan. 2023. Presented with the Outstanding Lecture Award

18. Yong Hoon Lee†‡, Saeid Bayat, and James T. Allison. "Control co-design using a nonlinear wind turbine dynamic model based on OpenFAST linearization". In *Applied Energy Symposium: MIT A+B*. Cambridge, MA, USA, July 2022

17. Saeid Bayat, Yong Hoon Lee†, and James T. Allison. "Nested control co-design of a spar buoy horizontal-axis floating offshore wind turbine". In *Applied Energy Symposium: MIT A+B*. Cambridge, MA, USA, July 2022

16. Yong Hoon Lee†‡, Sung Youn Boo, and James T. Allison. "A framework for integrating hydrostatics, hydrodynamics, and rigid-body dynamics for the control co-design of floating offshore vertical-axis wind turbine systems". In *Wind Energy Science Conference*, 9.80. 1345. Hannover, Germany, May 2021

15. Saeid Bayat, Yong Hoon Lee, and James T. Allison. "Control co-design of horizontal floating offshore wind turbines using a simplified low order model". In *Wind Energy Science Conference*, 9.78. Hannover, Germany, May 2021

14. Yong Hoon Lee[†‡], Vedant, and James T. Allison. "Computationally-efficient modeling and optimization of strain-actuated solar arrays with tailored viscoelastic damping for spacecraft attitude control". In *AAS Guidance and Control Conference*. Breckenridge, CO, USA, Feb. 2020

13. Yong Hoon Lee[†‡], R. E. Corman, Randy H. Ewoldt, and James T. Allison. "Continuous relaxation spectra and its reduced-dimensionality descriptions for engineering design with linear viscoelasticity". In *ASME 2019 International Mechanical Engineering Congress and Exposition*. IMECE2019-13370. Salt Lake City, UT, USA, Nov. 2019. Extended Abstract

12. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "Designing with nonlinear viscoelastic fluids". In *The 70th Annual Meeting of the American Physical Society - Division of Fluid Dynamics*. Denver, CO, USA, Nov. 2017

11. R. E. Corman, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "Selecting design-appropriate material descriptions for linear viscoelastic materials". In *The Society of Rheology 89th Annual Meeting*. Denver, CO, USA, Oct. 2017

10. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "Toward co-design of surface textures and non-Newtonian fluids for decreased friction in lubricated viscous sliding". In *The Society of Rheology 89th Annual Meeting*. Denver, CO, USA, Oct. 2017

9. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "A validated computational model for the design of surface textures in full-film lubricated sliding". In *The 69th Annual Meeting of the American Physical Society - Division of Fluid Dynamics*. Portland, OR, USA, Nov. 2016

8. Yong Hoon Lee[‡], Jonathon K. Schuh, Randy H. Ewoldt, and James T. Allison. "Generalization of surface texture shape reduces friction and increases load capacity simultaneously in sliding contact with full-film lubrication". In *CCEFP Fluid Power Innovation & Research Conference*. Minneapolis, MN, USA, Oct. 2016

7. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "Design appropriate modeling for determining optimal friction reduction with surface textures". In *CCEFP Fluid Power Innovation & Research Conference*. Minneapolis, MN, USA, Oct. 2016

6. Jonathon K. Schuh, Yong Hoon Lee, James T. Allison, and Randy H. Ewoldt. "Surface textures and non-Newtonian fluids for decreasing friction in lubricated sliding contact". In *CCEFP Fluid Power Innovation & Research Conference*. Minneapolis, MN, USA, Oct. 2015

5. Yong Hoon Lee[†‡], Duk Woon Jeong, and Jea Ho Park. "Preliminary design of a transport package for fresh fuels using LS-DYNA". In *LS-DYNA Korea User Conference*. Seoul, Korea, Nov. 2012

4. Yong Hoon Lee[†‡]. "Thermal design technology for casks considering spent fuel burnup credit". In *International Technical Seminar on SNF Storage and Transportation*. Daejeon, Korea, Nov. 2010

3. Yong Hoon Lee[†‡], Dong-Gyu Lee, Jea-Ho Park, Tae-Man Kim, and Hyung-Jin Kim. "Thermal design technology for spent nuclear fuel transport cask". In *Korea ANSYS User Conference*. Gyeongju, Korea, Sept. 2010. Extended Abstract

2. Yong Hoon Lee[‡], Jin-Won Seo, and Yun-Ho Choi. "A study of the assessment process of the performance of automotive HVAC system using FLUENT". In *Advanced Technology Engineering Service (ATES) Paper Contest for Academic Users*. Seoul, Korea, Sept. 2009. Nominated for the Best Paper Award and presented with the Finalist Award

1. Jin-Won Seo, Ji-Yeon Kim, Yong Hoon Lee, Yun-Ho Choi, Bongha Song, and Jongpaek Ha. "Numerical study for efficient air distribution in automotive HVAC system". In *The Korean Society of*

Automotive Engineers (KSAE) Annual Conference and Exhibition, 594. 76306949. Daejeon, Korea, Nov. 2008. http://www.riss.kr/link?id=A76306949

Tech Reports, Computer Codes, and Others

13. Joshua A. Polk. *MECH 4391 Mechanical Engineering Project: Optimizing wind farm design: Leveraging FLORIS for wake steering and flow control*. Technical Report. The University of Memphis, May 2024. Project supervised by Dr. Yong Hoon Lee
12. Saeid Bayat, Yong Hoon Lee, and James T. Allison. *Nested control co-design of a spar buoy horizontal-axis floating offshore wind turbine*. ArXiv e-prints. Oct. 2023. https://doi.org/10.48550/arXiv.2310.15463
11. Yong Hoon Lee. *Fluid Mechanics Laboratory: Lab Manual*. Technical Manual. The University of Memphis, July 2023
10. Yong Hoon Lee. *Thesis and Dissertation LaTeX Template for the University of Memphis*. Computer Code. The University of Memphis, Feb. 2023. https://github.com/yonghoonlee/UofM-thesis-template
9. Yong Hoon Lee and Saeid Bayat. *Derivative function surrogate model-based control co-design of nonlinear floating offshore wind turbine models*. Computer Code. Feb. 2021. https://github.com/WEIS-UIUC-CSU/WEIS/tree/uiuc-dfsm
8. Saeid Bayat and Yong Hoon Lee. *Simplified low-order floating offshore wind turbine model-based control co-design implementation for WEIS*. Computer Code. Jan. 2021. https://github.com/WEIS-UIUC-CSU/WEIS/tree/uiuc-proxy
7. Yong Hoon Lee. *Integrated design analysis and optimization tool for floating offshore vertical-axis wind turbines*. Computer Code. Dec. 2020. https://github.com/FloatVAWT/FloatVAWT-CapytaineDriver
6. Yong Hoon Lee, Daniel R. Herber, and Athul Krishna Sundarrajan. *Control co-design driver for linear OpenFAST wind turbine model*. Computer Code. Oct. 2020. https://github.com/WEIS-UIUC-CSU/FASTLin_DTQP_Driver
5. Tais Rocha Pereira, Albert Patterson, Yong Hoon Lee, and Sherri L. Messimer. *Critical buckling load of thin-walled plastic cylinders in axial and radial loading: overview and FEA case study*. EngrXiv e-prints. Aug. 2019. https://doi.org/10.31224/osf.io/2mtfu
4. Yong Hoon Lee. *Multiobjective adaptive surrogate modeling-based optimization (MO-ASMO) toolbox II*. Computer Code. Aug. 2018. https://github.com/yonghoonlee/MO-ASMO-II
3. Yong Hoon Lee. *Multiobjective adaptive surrogate modeling-based optimization (MO-ASMO) toolbox I*. Computer Code. Aug. 2017. https://github.com/yonghoonlee/MO-ASMO-I
2. Daniel R. Herber, Yong Hoon Lee, and James T. Allison. *DT QP Project*. Computer Code. June 2017. https://github.com/danielrherber/dt-qp-project
1. Yong Hoon Lee. *A modular code for teaching surrogate modeling-based optimization*. Computer Code. Apr. 2017. https://github.com/yonghoonlee/SMBO_TeachingTool

Instruction

Primary Instructions

8. **MECH 4305/6305** Fluid Mechanics II — Fall 2025, Spring 2023
7. **MECH 3335** Fluid Mechanics Lab — Fall 2025, Spring 2025, Fall 2024, Spring 2024, Fall 2023, Spring 2023
6. **MECH 3319** Engineering Econ and Project Mgmt — Spring 2025
5. **MECH 4316/6316** Energy Systems/Optimization — Fall 2024
4. **MECH 7901/8901** ST: Design Optimization — Spring 2024
3. **MECH 7341/8341** Engineering Analysis I — Fall 2023
2. **MECH 3331** Fluid Mechanics I — Fall 2022
1. Machine Component Design (Masan University, Changwon, South Korea) — Spring 2014

Guest Lectures and Other Instructions

8. **MECH 4314** Senior Design I — Fall 2023, Fall 2022
   Oct 26, 2023: Engineering design optimization: practical tutorial
   Nov 8, 2022: Engineering design optimization: practical tutorial
7. **MAE 5350** Multidisciplinary Design Optimization (at Cornell University, Ithaca, NY) — Spring 2023
   Apr 25, 2023: Multidisciplinary design optimization and control co-design in renewable energy systems design
6. **SE 413** Engineering Design Optimization — Spring 2017, Spring 2020
   Spring 2020: guest lecture on surrogate-based optimization
   Spring 2017: assisted curriculum development + guest lecture on surrogate-based optimization
   (University of Illinois at Urbana-Champaign, Urbana, IL)
5. **SE 320** Control Systems — Fall 2019
   (Laboratory teaching assistant, University of Illinois at Urbana-Champaign, Urbana, IL)
4. **ME 310** Fundamentals of Fluid Dynamics — Spring 2019
   (Laboratory teaching assistant, University of Illinois at Urbana-Champaign, Urbana, IL)
3. Numerical Analysis — Spring 2009, Spring 2010
   (Teaching assistant, Ajou University, Suwon, South Korea)
2. Computational Fluid Dynamics — Fall 2009
   (Co-Instructor, Teaching assistant, Ajou University, Suwon, South Korea)
1. Engineering Drawing and Computer Aided Design — Fall 2008
   (Laboratory teaching assistant, Ajou University, Suwon, South Korea)

Student Research Supervision

Advisees (and My Role)

6. Sophie M. Nieder, M.S. ABM Student (Director of Thesis Research) — May 2025 – present
5. Sunil Tamang, Ph.D. Student (Director of Dissertation Research) — Aug 2024 – present

4. Nowsheen Sharmili, Ph.D. Student (Co-Director of Dissertation Research) Dec 2022 – present
3. Josh A. Polk, B.S. Student (Undergraduate Research Supervisor) Spe 2023 – May 2024
2. Austin L. Griffin, M.S. Student (Director of Thesis Research) Oct 2022 – May 2024
1. Chandler S. Cain, M.S. ABM Student (Director of Thesis Research) Aug 2022 – May 2024

Mentees (and My Role)

16. Dhritiman Roy, M.S. Student (Thesis Research Mentor) Mar 2023 – present
15. Yu Wang, Non-Thesis M.S. Student (Project Mentor) Mar 2023 – Dec 2023
14. Nowsheen Sharmili, Ph.D. Student (Dissertation Research Mentor) May 2022 – Aug 2022
13. Prerna Rathi, Non-Thesis M.S. Student (Project Mentor) Jan 2022 – Aug 2022
12. Mika Lew, B.S. Student (Undergraduate Research Mentor) Sep 2021 – May 2022
11. Dario Rodriguez Claudio, M.S. Student (Thesis Research Mentor) Jun 2021 – Aug 2022
10. Annabella Console, B.S. Student (Undergraduate Research Mentor) Jun 2021 – Sep 2021
9. Jane Li, B.S. Student (Undergraduate Research Mentor) Jan 2021 – May 2021
8. Sagar Sachdev, B.S. Student (Undergraduate Research Mentor) May 2020 – Apr 2021
7. Daniel Moreno, B.S. Student (Undergraduate Research Mentor) May 2020 – Aug 2020
6. Kinga Wrobel, B.S. Student (Undergraduate Research Mentor) Dec 2019 – May 2020
5. Gayatri Dandu, B.S. Student (Undergraduate Research Mentor) Jan 2019 – Dec 2019
4. Abbey Merges, B.S. Student (Undergraduate Research Mentor) Jan 2019 – Dec 2019
3. Angad Paintal, M.S. Student (Thesis Research Mentor) May 2017 – Aug 2018
2. Chendi Lin, B.S. Student (Undergraduate Research Mentor) May 2016 – May 2018
1. Abhinab Choudhury, Non-Thesis M.S. Student (Project Mentor) Jan 2016 – Dec 2016

Senior Design Team Supervision

5. **Wave Generating Pool** Sep 2024 – May 2025
   Student Lead: Saylor Price
   Team Members: Elizabeth Lumsdaine, Timothy Warburton, Parker Ruffin
4. **Fill'er Up! Soap Manufacturing Process Improvement** Sep 2024 – May 2025
   External Support: Donation of $10,000 from Vanguard Soap Company
   Student Lead: Karston Salsbury
   Team Members: Daquala Butler, Zaid Mohamad, Nathan Kleiser
3. **Aerodynamic Design of Offshore Wind Turbine** Sep 2023 – May 2024
   External Support: US DOE Collegiate Wind Competition 2024 (Phase II Prize of $2,000)
   Student Lead: Aleks Vincent
   Team Members: Blake Acree, Daveren Coburn, Joseph Saucier
2. **Mechanical and Control Design of Offshore Wind Turbine** Sep 2023 – May 2024
   External Support: US DOE Collegiate Wind Competition 2024 (Phase II Prize of $2,000)

Student Lead: Nihar Patel
Team Members: Marlon Young, Adrian Lewis

1. **Energy Harvester Design Utilizing Fluid Flow Phenomena** Sep 2022 – May 2023
Student Lead: Cecil Shipley
Team Members: Devin Allen, Brooke Calvo, Josh Foster

Grants

External Research Grants

2. **US DOE ARPA-E** DE-AR-0001766 Sep 5, 2023 – Sep 4, 2026
Project: "Wind Energy with Integrated Servo-control (WEIS): A Toolset to Enable Controls Co-Design of Floating Offshore Wind Energy Systems (Phase 2)"
Prime: National Renewable Energy Laboratory
UofM PI: Yong Hoon Lee
US DOE Advanced Research Programs Agency–Energy (ARPA-E), Washington, DC, USA

1. **US DOE ARPA-E** DE-AR-0001179 Jan 1, 2023 – Oct 15, 2023
Project: "A Low-Cost Floating Offshore Vertical Axis Wind System"
Prime: University of Texas at Dallas
UofM PI: Yong Hoon Lee
US DOE Advanced Research Programs Agency–Energy (ARPA-E), Washington, DC, USA

Internal Research Grants

1. **Community of Research Scholar** Nov 30, 2022 – Jun 30, 2023
Project: "Exploring Synergies in Astrophysical and Engineering Simulation"
PI: Benjamin Keller, Co-PI: Yong Hoon Lee
Division of Research and Innovation, The University of Memphis, Memphis, TN

External Educational Grants

1. **US DOE Collegiate Wind Competition (CWC) 2024** Phase II Award Sep 1, 2023 – May 31, 2024
Project: Student educational activities in learning wind turbine technologies and designing prototype toward Phase III competition.
Senior/Key Personnel: Yong Hoon Lee
US Department of Energy, Washington, DC, USA

Service to the University

Departmental Committee

1. Department of Mechanical Engineering Graduate Process Team Aug 15, 2022 – present

Thesis and Dissertation Committee

8. Sunil Tamang (Dissertation Committee Chair) Aug 26, 2024 – present
Service Started: Aug 26, 2024 / Proposal Defense: TBD /
Final Defense: TBD / Graduation: TBD

7. Hamid Hafezi (Dissertation Committee Member) Aug 26, 2024 – present

Service Started: Aug 26, 2024 / Proposal Defense: TBD /
Final Defense: TBD / Graduation: TBD

6. Apratim Dasgupta (Dissertation Committee Member) Jun 2, 2023 – present
   Service Started: Jun 2, 2023 / Proposal Defense: Aug 4, 2023 /
   Final Defense: TBD / Graduation: TBD
5. Sravan Kumar Dumpeti (Thesis Committee Member) Feb 6, 2025 – May 10, 2025
   Service Started: Feb 6, 2025 /
   Final Defense: Mar 28, 2025 / Graduation: May 10, 2025
4. Sophie Abigail Wood (Thesis Committee Member) Nov 24, 2024 – May 10, 2025
   Service started: Nov 24, 2024 / Proposal defense: Dec 10, 2024 /
   Final defense: Mar 26, 2025 / Graduation: May 10, 2025
3. Venkata Srinuvas Sai Kiran Madugula (Thesis Committee Member) Dec 12, 2022 – May 4, 2024
   Service Started: Dec 12, 2022 / Proposal Defense: Jul 7, 2023 /
   Final Defense: Feb 21, 2024 / Graduation: May 4, 2024
2. Austin Griffin (Thesis Committee Chair) Oct 14, 2022 – May 4, 2024
   Service Started: Oct 14, 2022 / Proposal Defense: Dec 8, 2023 /
   Final Defense: Mar 15, 2024 / Graduation: May 4, 2024
1. Chandler S. Cain (Thesis Committee Chair) Aug 15, 2022 – May 4, 2024
   Service Started: Aug 15, 2022 / Proposal Defense: Sep 7, 2023 /
   Final Defense: Dec 5, 2023 / Graduation: May 4, 2024

Exam Committee

4. **Qualifying Exam** Engineering Analysis I/II Spring 2025, Spring 2024
3. **Qualifying Exam** Fluid Mechanics Fall 2024, Spring 2023
2. **M.S. Comprehensive Exam** Gowthami Lakshmi Prasanna Dasari Apr 25, 2024
1. **M.S. Comprehensive Exam** Daniel Hrvoich Feb 8, 2023

New Graduate Program Proposal Development

2. Proposal: Graduate Certificate Program in Nuclear Engineering Sep 19, 2024 – Nov 19, 2024
1. Proposal: Graduate Degree/Certificate Program in Systems Engineering Nov 2, 2023 – Nov 19, 2024

Service to the Profession

Review Panelist

2. National Defense Science and Engineering Graduate Fellowship Program Dec 2, 2024 - Jan 20, 2025
1. Dutch Research Council NWO Talent Programme: Veni 2023 Feb 12, 2023 - Mar 2, 2023

Academic and Professional Society

[Conferences]

3. **Review Coordinator, Session Organizer** Mar 17, 2025 – Aug 20, 2025
   DFMLC-3 Modeling and Optimization for Sustainable Design and Manufacturing

Design for Manufacturing and the Life Cycle Conference,
ASME International Design Engineering Technical Conferences, Anaheim, CA, USA

2. **Review Coordinator, Session Organizer & Chair** Mar 15, 2024 – Aug 28, 2024
DFMLC-3 Modeling and Optimization for Sustainable Design and Manufacturing
Design for Manufacturing and the Life Cycle Conference,
ASME International Design Engineering Technical Conferences, Washington, DC, USA

1. **Review Coordinator, Session Organizer & Co-Chair** Nov 5, 2022 – Aug 23, 2023
DFMLC-2 Modeling and Optimization for Sustainable Design and Manufacturing
Design for Manufacturing and the Life Cycle Conference,
ASME International Design Engineering Technical Conferences, Boston, MA, USA

[Technical Committee]

4. Renewable Energy and Energy Conversion Technical Committee (REEC TC) Nov 1, 2023 – present
ASME Advanced Energy System Division, New York, NY, USA

3. Design Automation Conference Technical Committee (DAC TC) Aug 22, 2023 – present
ASME Design Engineering Division (DED), New York, NY, USA

2. Design for Manufacturing and the Life Cycle Technical Committee (DFMLC TC) Aug 21, 2023 – present
ASME Design Engineering Division (DED), New York, NY, USA

1. Fluid Applications & Systems Technical Committee (FASTC) Nov 6, 2022 – present
ASME Fluid Engineering Division (FED), New York, NY, USA

Manuscript Peer Review

[Journal Manuscripts]

9. Journal of Dynamic Systems, Measurement, and Control 2025(1)
8. Optimization and Engineering 2024(2), 2025(1)
7. Journal of Mechanical Design 2020(2), 2022(1), 2023(4), 2025(1)
6. Structural and Multidisciplinary Optimization 2019(1), 2020(5), 2021(2), 2022(5), 2023(2) 2024(1), 2025(1)
5. Wind Energy Science 2023(2)
4. Wind Energy 2021(1), 2022(4)
3. Advances in Tribology 2020(1)
2. Engineering Optimization 2020(1)
1. Engineering Computations 2015(1)

[Conference Proceedings Manuscripts]

5. ASME International Design Engineering Technical Conferences 2017(4), 2018(3), 2023(5), 2024(7), 2025(6)
4. AIAA SciTech Forum and Exposition 2023(1), 2024(1)
3. ASME International Mechanical Engineering Congress and Exposition 2023(3)
2. AIAA AVIATION Forum and Exposition 2022(11), 2023(8)
1. ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems 2019(1)

Service to the Community

Educational Outreach

4. **TVA Allen Combined-Cycle Power Plant Tour** Organizing Apr 24, 2025
   Organized a tour to TVA Southaven Combined-Cycle Power Plant to provide student learning experience on the power plant facilities during scheduled maintenance.
   Tennessee Valley Authority Allen Combined Cycle Plant, Memphis, TN, USA

3. **Mini-Conference** Hosting/Organizing Jun 27, 2023
   Topic: Fluid Dynamics in Astrophysics and Engineering Domains
   Hosted a mini-conference as a part of Community of Research Scholars (CoRS) grant research activity.
   Approximately 10 students from both Mechanical Engineering and Physics departments attended.
   The University of Memphis, Memphis, TN, USA

2. **TVA Southaven Combined-Cycle Power Plant Tour** Organizing May 2023
   Organized a tour to TVA Southaven Combined-Cycle Power Plant to provide student learning experience on the power plant facilities during scheduled maintenance. Potential collaborative research and educational opportunities discussed.
   Tennessee Valley Authority Southaven Combined Cycle Plant, Southaven, MS, USA

1. **Junior Scientist Day** K-12 STEM Outreach Apr 2017
   Topic: Dynamics of reconfigurable trebuchet demonstration
   Presented a hands-on demonstration of trebuchets with simulation and experimentation as a part of the Urbana School District Junior Scientist Day.
   Yankee Ridge Elementary School, Urbana, IL, USA

Other Outreach

2. CCL Label Specialty Plant Sep 25, 2023
   Visited for establishing partnership with the ME department and the CCL Label to promote student internship, job placement, student senior design project, and potential research collaboration.
   CCL Label Memphis, Specialty Plant, Collierville, TN, USA

1. TVA HQ and TVA Raccoon Mountain Pumped-Storage Plant May – Jun 2023
   Visited TVA Raccoon Mountain Pumped-Storage Plant and TVA Chattanooga Headquarter (System Operations Center, Asset Performance Center, Monitoring & Diagnostics Center, etc.) to learn their facilities while scheduled maintenance, and discuss about potential collaborative research and educational opportunities.
   Tennessee Valley Authority Headquarter, Chattanooga, TN, USA

Professional Memberships, Activities, and Collaboration

Professional Development Activities

[Grant Writing Training]

4. UofM NSF CAREER Grant Writing Cohort Apr 2 – Jul 23, 2025
   Division of Research & Innovation,
   The University of Memphis, Memphis, TN

3. NSF Virtual Grants Conference Jun 5-8, 2023
   National Science Foundation, Alexandria, VA, USA

2. NSF CAREER Program Webinar May 15, 2023
National Science Foundation, Alexandria, VA, USA

1. NSF Virtual Grants Conference Nov 14-17, 2022
National Science Foundation, Alexandria, VA, USA

[Teaching Effectiveness Training]

2. Teaching and Leadership Seminar Series Spring 2019
Center for Innovation in Teaching & Learning,
University of Illinois at Urbana-Champaign, Urbana, IL, USA

1. Graduate Academy for College Teaching Jan 9-11, 2019
Graduate College,
University of Illinois at Urbana-Champaign, Urbana, IL, USA

[Other Scholarly Training]

1. Mavis Future Faculty Fellows (MF3) Academy Aug 2019 – May 2020
A series of workshops, seminars, and activities that cover three main components of the Mavis Future Faculty Fellows (MF3) program: research, teaching, and mentoring.
Grainger College of Engineering,
University of Illinois at Urbana-Champaign, Urbana, IL, USA

Professional Society Memberships

5. **Member** International Society for Structural and Multidisciplinary Optimization (ISSMO) 2019 – present
4. **Member** American Institute of Aeronautics and Astronautics (AIAA) 2017 – present
3. **Member** American Society of Mechanical Engineers (ASME) 2015 – present
2. **Member** Korean-American Scientists and Engineers Association (KSEA) 2022 – present
1. **Student Member** Korean Society for Computational Fluids Engineering (KSCFE) 2010 – 2013

Collaborations

[Active External Collaborations]

12. Florida Institute of Technology (Dr. Anand Nellippallil) 2024 – present
11. Vanguard Soap LLC (Chris Buzard, CEO) 2024 – present
10. University of Arkansas (Dr. Jenn Campbell 2024 – present
9. University of North Carolina at Charlotte (Dr. John Hall) 2024 – present
8. American Bureau of Shipping (ABS, Dr. Xi-Ying Zhang) 2024 – present
7. Artimus Robotics (Dr. Shane Mitchell, CTO) 2024 – present
6. Tennessee Valley Authority (TVA) 2023 – present
5. Ecobee 2023 – present
4. Aquantis, Inc. (Henry Swales, Chief Engineer) 2023 – present
3. Christian Brothers University (Dr. Deepa Kodali) 2023 – present
2. University of Illinois at Urbana-Champaign (Dr. James T. Allison) 2022 – present

1. National Renewable Energy Laboratory (Dr. Daniel Zalkind, Dr. Alan D. Wright) 2020 – present

[Active Internal Collaborations]

4. Dynamics and Controls Lab (Dr. Vipin Agarwal) 2023 – present
3. Autonomous & Complex Systems Lab (Dr. Mohammadreza Davoodi) 2023 – present
2. Fluid Dynamics + Computational Science Lab (Dr. Daniel Foti) 2022 – present
1. Energy System Control and Optimization Lab (Dr. Alexander Headley) 2022 – present

[Past Collaborations]

6. University of Texas at Dallas (Dr. Todd Griffith) 2020 – 2024
5. CCL Label Memphis, Specialty Plant, Collierville, TN 2023
4. Sandia National Laboratories (Dr. Reed Wittman) 2023
3. UofM Physics and Materials Science (Dr. Benjamin Keller) 2022 – 2023
2. Colorado State University (Dr. Daniel R. Herber) 2020 – 2022
1. VL Offshore, LLC (Dr. Sung Youn Boo) 2020 – 2022