JOAN TISDALE

Joan.Tisdale@Colorado.edu

Engineer, researcher, philanthropist, scientist and educator

- Accomplished engineer with experience in aerospace, mechanical, chemical, civil and global engineering
- 2022 Award recipient of GPTI Teaching Excellence and ASEE Engineering Educator Awards
- Engineer in renewable energy for 5+years
- Impassioned engineer for sustainability and global engineering
- Engineering and science educator with 6+ years classroom experience
- Educator with a heart for students and a proven track record for student growth
- MIT Presidential Provost Fellowship Award Recipient
- NASA Space Grant Scholar and Aerospace Engineering Student of the Year
- Honor Societies Participation: Tau Beta Pi and Phi Kappa Phi (undergraduate)
- Bilingual: English and Spanish

EDUCATION

Doctor of Philosophy in Civil Systems Engineering (Student) **08.20-present**
University of Colorado, Boulder, CO

Master of Science in Mechanical Engineering **09.04**
Massachusetts Institute of Technology, Boston, MA

Bachelor of Science in Aerospace Engineering *(minor: French)* **05.02**
Auburn University, Auburn, AL

WORK EXPERIENCE

University of Colorado, Boulder, CO

Teaching Assistant Professor **08.22-present**
Instructor in Integrated Design Engineering. Teach Engineering Tools & Analysis and General Engineering Projects. Responsibilities include course development and preparation of inclusive and effective learning methods and materials, along with leading lectures, studios, labs and projects. Organizing class and providing guidance, instruction and support for students.

Graduate Instructor **08.20-05.22**
Instructor for engineering courses including Thermodynamics for Mechanical Engineers and General Engineering Projects for Freshmen and class assistant for Global Development in the Mortenson Center for Global Engineering. Coordinate a learning environment to meet student needs and course goals. Teach, encourage and mentor students.

TeachEngineering.org, Boulder CO **05.20-12.21**
Copyeditor
Provided engineering-based reviews and copyediting for material for the website. Updated older curriculum. Assisted with launch of a new program. Work to update educational standards alignment to website lessons and activities.

University of Denver, Denver, CO **09.19-11.19**
Adjunct Faculty **09.16-11.16**
Taught Introduction to Mechanical Systems to first year students. **03.14-06.14**
Worked to develop student skills in engineering drawing, engineering design, CAD, and other course materials. Additionally taught heat transfer and fluid mechanics. Prepared and delivered lectures, homework and exams.

References available upon request

Valor Christian High School, Highlands Ranch, CO **02.17-05.19**
Physics Instructor

Taught Advanced Placement Physics 1 and C. Taught physics principles and concepts. Worked toward student growth in problem solving and applications of mathematics to physics. Assisted in student experiences, such as co-leading discovery trips (Cuba and Honduras) and co-leading a life group. Attended to students and parents and their needs.

Valor Christian High School, Highlands Ranch, CO **11.19-05.20**
Tutor **08.14-02.17**

Assisted students to learn, grow, and to succeed in a variety of subjects, including: physics, chemistry, calculus, precalculus, algebra, geometry and trigonometry. Worked one-on-one with students to grow their confidence and to improve their study habits.

National Renewable Energy Laboratory (NREL), Golden, CO **01.08-12.13**
Process Engineer

Analyzed potential biofuels processes for both technical and economic feasibility. Provided analytical, technical, and project management support to NREL's thermochemical biofuels pilot plant.

Highlights

- Co-author biomass-to-gasoline technoeconomic analysis and publications
- Pioneered and led multiple successful staff awards nominations
- NREL Employee of the Month

Colorado Christian University, Lakewood, CO **08.07-12.07**
Affiliate Faculty

Affiliate professor of Physics and Algebra. Taught 5-credit college physics, including lab and 3-credit college algebra. Created and served lectures, homework, labs and exams. Mentored and guided students.

MIT Chemical Engineering Supercritical Fluids Laboratory, Cambridge, MA **09.03 – 01.05**
Research Assistant

Created computer models and simulations of biomass gasification processes using Aspen Plus software. Studied solids and condensation separations.

MIT Fuel Cell Laboratory, Cambridge, MA **08.02 – 08.03**
Research Assistant

Studied fuel cell capabilities and practicality for off grid applications in developing countries.

Highlights

- Completed a cost and research document evaluating renewable energy options for the application a rural health clinic in a developing country
- MIT Representative for Youth Encounter on Sustainability in Braunwald, Switzerland
- Presented MIT Fuel Cell Lab research at the University of Queensland, Australia

References available upon request

PUBLICATIONS:

Tisdale, J., & Bielefeldt, A., & MacDonald, L., & Salvinelli, C. (2022, August), *Sustainability Inclusion Efforts in Three Unique First-Year Engineering Courses* Paper presented at 2022 ASEE Annual Conference & Exposition, Minneapolis, MN. https://peer.asee.org/41706

Tisdale, J., & Bielefeldt, A., & Ramos, K., & Komarek, R. (2022, August), *Range of Practices of Sustainability Incorporation into First-Year General Engineering Design Course* Paper presented at 2022 ASEE Annual Conference & Exposition, Minneapolis, MN. https://peer.asee.org/41245

Tisdale, J. K., & Bielefeldt, A. R. (2021, July), *Sustainability Incorporation in Courses in Mechanical, Civil and Environmental Engineering: Insights from AASHE STARS Data* Paper presented at 2021 ASEE Virtual Annual Conference Content Access, Virtual Conference. (pp 17). https://peer.asee.org/37791.

Ashworth, John; Heeter, Jenny; Milbrandt, Anelia; Moriarty, Kristi; Penev, Michael; Tarud, Joan; Vimmerstedt, Laura; Zhang, Yimin. Advanced Fuel Production Technology Market Assessment. Prepared for the California Energy Commission.

Phillips, S. D.; Tarud, J. K.; Biddy, M. J.; Dutta, A. (2011). Gasoline from Woody Biomass via Thermochemical Gasification, Methanol Synthesis, and Methanol-to-Gasoline Technologies: A Technoeconomic Analysis. Industrial and Engineering Chemistry Research. Vol. 50(20), 19 October 2011; pp. 11734-11745; NREL Report No. JA-5100-51608. http://dx.doi.org/10.1021/ie2010675

Tarud, J.; Phillips, S. (2011). Technoeconomic Comparison of Biofuels: Gasoline, Methanol, and Ethanol from Gasification of Woody Residues. Abstract No. FUEL-60. American Chemical Society. Abstracts of Papers of the 242nd ACS National Meeting, 28 August - 1 September 2011, Denver, Colorado. Washington, DC: American Chemical Society (ACS) 1 pg.; NREL Report No. AB-5100-53247.

Phillips, S. D.; Tarud, J. K.; Biddy, M. J.; Dutta, A. (2011). Gasoline from Wood via Integrated Gasification, Synthesis, and Methanol-to-Gasoline Technologies. 115 pp.; NREL Report No. TP-5100-47594.

Tarud, J.; Phillips, S.; Biddy, M.; Dutta, A. (2010) Gasoline via Thermochemical Gasification of Woody Residues and the Methanol-to-Gasoline Technology – A Technoeconomic Analysis. Symposium on Thermo and Catalytic Sciences for Biofuels and Biobased Products (TCS2010). 21-23 September 2010, Ames, Iowa. Iowa State University.

*Previous last name: Tarud