Trudy Schwartz

University of Colorado
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Personal Statistics: Citizenship – United States

Academic Experience:

Principle Instructor (Teaching Professor) and Lab Manager **2005 – present**
Associate Chair for Experiential Learning **2023 – present**
Aerospace Engineering Sciences, University of Colorado, Boulder

Teaching Activities:

- *Microavionics for Aerospace*
  - Fall 2020, 2021, 2023 – Instructor for undergraduate/graduate level PIC based embedded systems lecture and lab course ASEN 4067/5067 *Microavionics for Aerospace.* (With dedicated course number)
  - Fall 2016, 2017, 2018, 2019 – Instructor for the same *Microavionics for Aerospace* course formerly listed as Special Topics 4519/5519
- *Thermodynamics*
  - Fall 2018 – ASEN 3113, Lab Instructor for 2 lab sections.
- *Statics, Structures and Materials*
  - Fall 2018 – ASEN 2001, Lab Instructor for 2 lab sections.
- *Introduction to Aerospace Vehicle Design and Performance*
  - Spring 2019 – ASEN 2004, Lab Instructor for 3 lab sections.
- *Senior Projects 1: Design Synthesis and Senior Projects 2: Design Practicum*
  - ASEN 4018/4028 AY 2005-2024 (19 years)
  - Year-long capstone design project courses. Attend, provide feedback and grade half of senior design project presentations every semester. Provide technical advising for all teams (currently 21 teams in 2 sections) in the areas of requirements-based design, systems engineering, testing, embedded systems, sensors, instrumentation, data acquisition, electronics design and fabrication, etc.
- *Graduate Projects 1 and Graduate Projects 2*
  - ASEN 5018/6028 – AY 2010-2024 (14 years)
  - Technical support. Review and sign Graduate Project Charters to advise and approve scoping and feasibility. Provide technical advising meetings as requested. Coordinate industry workshops on topics of strain gauges, piezo crystal sensors, etc.

Lab Managing, Teaching, Mentoring and Service:

- Oversee all lab content in the AES curriculum as senior member of Technical Engineering Support Team (TEST). Primary and detailed lab management and instruction provided specifically for select courses each semester: Vehicle Design and Performance, Structures and Material, Thermodynamic and Heat Transfer, Electronics and Communications and a 2

semester Senior Design Practicum. Lab management for courses includes responsibility for lab activities that require mini-teaching lectures to introduce labs, maintaining lab procedures and assisting faculty with laboratory assignment documents, and assisting/train new faculty teaching lab courses.

- (Summer 2022) Collaborated with Professor Bobby Hodgkinson to develop a new curriculum for ASEN 2082 – Aerospace Sciences Lab 1. The innovative new course combines topics of thermodynamics, aerodynamics, and structures in to a 1 credit lab.
- Collaborate with faculty and manage Laboratory Assistants (LAs) to design, build, teach and conduct laboratory experiments in all Aerospace undergraduate and graduate courses each academic year that have laboratory activities. Currently that equates to 22 lab courses. Share responsibility for ~ 60 lab experiments in the areas of aerodynamics, structures, controls, thermodynamics, vehicle design, materials, electronics, etc. Experienced in vibration testing, material testing, wind tunnel testing, rocket static testing, dynamics and controls, analog and digital circuits, thermodynamics, engine cycles, heat conduction, and embedded systems. Sensors, instrumentation, test and measurement equipment, electronics and data acquisition software development are all included in the development and maintenance of all lab experiments.
- Prepare lab documents, procedures, logistics, hardware, software and testing resources for testing experiments and design/build activities in the curriculum.
- Recruit, hire, train and co-manage a team of 10-12 student Laboratory Assistants to prepare labs and assist students in AES lab sections. Assign lead LA to each laboratory course.
- In general, provide instrumentation and electronics technical support for labs, senior projects, graduate projects, and research activities in the department. Provide workshop content for skills workshops, given by LAs, in areas of soldering, cable harnessing, surface mount technologies and Git software repository.
- Staff, organize and maintain equipment the AES Electronics and Instrumentation Laboratory that serves all Aero students, lab development and the department's needs.
- Manage department budget allocation to the support the department's support of current and developing laboratory activities in the courses.
- Supervise 2-3 AES Staff: Rapid Prototyping Engineer/Lab Manager, Software Engineer(s).
- Working extensively on curriculum development to maintain quality, handle growth and better accommodate our student population.

University of Colorado, Aerospace Engineering Sciences Committees:

- Department Chair's Cabinet 2023-2024
- Undergraduate Operations Committee 2023-2024
- Undergraduate Curriculum Committee 2006-2023
- Avionics and Instrumentation Curriculum Group Annually
- System Engineering/Design Curriculum Group Annually
- Thermal and Fluids Curriculum Group (as needed)
- Instructor Mentoring (3 instructors per AY) Annually
- Chair of Instructor Search Committee 2021-2022
- Instructor Search Committee 2017-2020
- Executive Committee for AES 2018-2019
- Faculty Advisor – (WIA) Women in Aerospace student organization 2017-2018

University of Colorado, College of Engineering and Applied Science Committees:

- Dean's Strategic Lab Planning Sub-Committee: 2022-2024
  HOLISTIC (Hands-On Learning Investment to Support Technology and Innovation Courses)
- Dean's Working Group on Laboratory Facilities 2020-2022
- Undergraduate Education Council of the College of Engineering 2020-2021
- Faculty Advisor – (WoAA) Women of Aeronautics and Astronautics 2019-present

Previous Academic Experience:

Aerospace Lab Manager, Senior Professional Research Associate **2003 – 2005**
Aerospace Engineering Sciences, University of Colorado, Boulder

- Collaborated with faculty and staff to develop and conduct laboratory experiments in all undergraduate courses. Lab management for sophomore and junior lab courses. The first two years were part-time shared with my predecessor in the Lab Manager Position, then full time after he retired.
- Assisted senior design projects and provided instrumentation and electronics technical support.

Professional Experience:

Module Integration Engineer **1997 – 2003**
Integrated Teaching and Learning Laboratory (ITLL), University of Colorado, Boulder

- Provided technical support to faculty, staff and students using the ITLL for experimentation and laboratory courses.
- Designed, built, configured, and maintained computer data acquisition workbenches using National Instruments hardware and software.
- Designed, built, configured, and maintained engineering lab modules in the areas of controls, fluids, structures, thermodynamics, aerodynamics to all six engineering departments using the ITLL.
- Developed and offered 6-hour strain gauge application, soldering and programming workshop.

Honors and Awards:

- Distinguished Performance Award, Faculty award in Smead Aerospace 2020
- Outstanding Service Award, Faculty award in the Aerospace Department. 2015

Outreach:

- American Heart Association – STEM event for Girls, Drone Flying Group 2023
- Colorado Space Business Roundup (Summer annual event.) 2014-2018, 2020-2023
  This outreach event for Colorado students every summer sponsored by industry partners. CU participates for one day to provide a hands-on rocket design, build, fly experience.
- Technical Advisor – Summit Ridge Middle School, NASA TechRise Student Challenge 2022
- Science Fair Judge – Jefferson Academy Secondary School, Broomfield. 2015

- Science Fair Judge – Summit Middle School, Boulder 2000

Publications:

Hodgkinson B, Schwartz T, *BYOE: An Apparatus for Exploring Small-satellite Estimation and Control*
2021 ASEE Virtual Annual Conference Content Access, 26 Jul 2021 - 29 Jul 2021.
2021 ASEE Virtual Annual Conference Content Access Proceedings. ASEE Conferences

Schwartz TL, Dunkin BM, *Facilitating Interdisciplinary Hands-on Learning using LabVIEW*
INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION **16**(3):218-227 (10 pages) 01 Jan 2000

External Presentations:

Schwartz T, *Aerospace Engineering Sciences Educational Program Overview*
Space Education Workshop
16 May 2023, Department of Aerospace Engineering, KAIST
291 Daehak-ro, Yuseong-gu, Daejeon 34141, KOREA.

Hodgkinson B, Schwartz T, *BYOE: An Apparatus for Exploring Small-satellite Estimation and Control*
2021 ASEE Virtual Annual Conference, Online Presentation, 28 Jul 2021.

Education:

MS in Aerospace Engineering **December 1998**
University of Colorado, Boulder

BS in Mechanical Engineering **December 1995**
University of Colorado, Boulder