James Sanders, O.P., Ph.D.

University of Saint Thomas (TX)
Department of Physics and Engineering
Associate Professor

james.sanders@stthom.edu

Post-secondary Educational Background

Ph.D., Physics, University of Texas at Austin (August 2014). Graduate student in physics from 2006-2014. Advisor: Michael C. Downer. Dissertation Title: “Terawatt Raman Laser System for Two-Color Laser Plasma Interactions”

H.B.S., Physics (Optics Concentration), Oregon State University (June 2006). Undergraduate student in physics September 2002-June 2006. Undergraduate Thesis: “Near Earth Object Collisional Mitigation Via Intense Neutron and Photon Sources: a Study in Asteroid Interdiction and Energy Coupling”

Administrative Assignments

Associate Chair, Department of Chemistry and Physics, Troy Unversity, (August 2015 - June 2018).
Create department course assignment schedule, generate loads for overload/adjunct contracts, and evaluate adjunct faculty in PHY and SCI courses

Professional Positions

Academic

Associate Professor of Physics, University of Saint Thomas in Houston, TX (August 17, 2024-present).

Adjunct Instructor, Germanna Community College (May 2024-present).

Adjunct Professor, Troy University. (August 1, 2024-present).

Associate Professor (Tenured), Troy University. (August 1, 2021 – July 31, 2024).

Adjunct Instructor, Catawba Valley Community College (May 15, 2023-Present).

Assistant Professor (Tenure Track), Troy University. (August 1, 2015 – July 31, 2021).

Visiting Assistant Professor, Troy University. (August 1, 2014 - July 31, 2015).

Assistant Instructor, University of Texas. (August 2009 - June 2014).

Teaching

Teaching Experience

University of Saint Thomas (TX)

PHYS 1332, General Physics II, 2 courses.
PHYS 2333, University Physics I1, 1 courses.
PHYS 2334, University Physics II, 2 courses.
PHYS/ENGR 3343, Mathematical Methods for Physics and Engineering, 2 courses.
PHYS/ENGR 4364, Fundamentals of Nanotechnology, 2 courses.
PHYS 2111, University Physics I Laboratory, 1 course.
PHYS 2112, University Physics II Laboratory, 4 courses.
PHYS 3137, Modern Physics Laboratory, 2 courses (co-taught in 2 sections).
PHYS/ENGR 3133, Electrical Circuits 1 Laboratory, 2 courses.

Germanna Community College/Virginia Community College System

PHY 201, General Physics I Lecture + Lab (Online Asynchronous), 2 courses.
PHY 202, General Physics II Lecture + Lab (Online Asynchronous), 2 courses.

Catawba Valley Community College

PHY 110, Conceptual Physics Lecture + Lab (Online Asynchronous), multiple courses.
PHY 110A, Conceptual Physics Lab (Online Asynchronous), multiple courses.
PHY 151, College Physics I Lecture + Lab (Online Asynchronous), multiple courses.
PHY 152, College Physics II Lecture + Lab (Online Asynchronous), multiple courses.

Troy University

PHY 2252, General Physics I, multiple courses.
PHY 2253, General Physics II, multiple courses.
PHY 2262, Physics I With Calculus, multiple courses.
PHY 2263, Physics II with Calculus, multiple courses.
PHY 3359, Waves and Optics, multiple courses.
PHY 4445, Quantum Mechanics I, 3+2 courses (3 traditional, 2 as independent studies).
PHY 4446, Quantum Mechanics II, 3 courses (1 online/virtual).
PHY 4491, Guided Independent Research, 4 courses.
PHY 4492, Guided Independent Research, 1 course.
PHY 4494, Guided Independent Study, 1 course.
PHY L252, General Physics I Lab, multiple courses.
PHY L253, General Physics II Lab, multiple courses.
PHY L262, Physics I With Calculus Lab, multiple courses.
PHY L263, Physics II with Calculus Lab, 3 courses.
PHY L359, Waves and Optics Lab, multiple courses.
SCI 2233, Physical Science, multiple (both in-person and online).
SCI L233, Physical Science Laboratory, multiple courses (both in-person and online).

University of Texas at Austin

PS 301 Introduction to Physical Science I, multiple courses.

Directed Student Learning

“Double Slit Interference with Oblique-Incidence Illumination,” Physics and Engineering. (January 2026-Present).
Advised: Alwin Clase.

"Mie Scattering from Water Droplets in a Vapor Cloud," Chemistry and Physics. (May 2019 – May 2021).
Advised: Rakshak Adhikari, Caroline Howell, Nicholas Johnson, James Allen III

Supervised Research, "Dynamics of Solid-Body Collisions," Chemistry and Physics. (October 2018 – March 2020).
Advised: HC Regan Babu Bhatta, Pawan Khanal

Supervised Research, "GNU-OCTAVE Simulations for Sound Mapping," Chemistry and Physics. (May 2018 – May 2022).
Advised: Caroline Howell, Soumitra Ganguly

Supervised Research, "Experimental Mapping of Sound Waves," Chemistry and Physics. (January 2018 – May 2022).
Advised: Suraj Thapa Magar, Nicholas Johnson, Soumitra Ganguly, Victoria Colvin, Ernest Sebastian Lee

Supervised Research, "Viscosity Measured via Damping," Chemistry and Physics. (January 2018 - January 2020).
Advised: Donavan Ebersole, Ty Naquin

Directed Individual/Independent Study, "Angle Scans of Scattered Light Intensity," Chemistry and Physics, Mathematics. (August 2019 - December 2019).
Advised: Caroline Howell

Directed Individual/Independent Study, "Arduino-Based Sound Sensor," Chemistry and Physics. (August 2019 - December 2019).
Advised: Nicholas Johnson

Directed Individual/Independent Study, "Ultrafast transient optical response of gold nanoparticlae by broadband laser spectroscopy," Chemistry and Physics. (May 2019 - December 2019).
Advised: Ty Naquin

Directed Individual/Independent Study, "Theremin," Chemistry and Physics. (January 2018 - May 2018).
Advised: Tanner Jackson

Directed Individual/Independent Study, "Acoustic Tractor Beam," Chemistry and Physics. (August 2017 - December 2017).
Advised: Tanner Jackson

Supervised Research, "Polarization and Boundary Conditions at Optical Interfaces," Chemistry and Physics. (January 2017 - December 2017).
Advised: HC Regan Babu Bhatta, Aashishe Kafle

Directed Individual/Independent Study, "Waxy and Starchy Potatoes Morphology," Chemistry and Physics. (January 2017 - May 2017).

Advised: Rakshak Adhikari

Research and Scholarly Activity

Published Intellectual Contributions

Refereed Journal Articles

Colvin, V. C., Ganguly, S., Howell, C. E., Johnson, N. A., Lee, E. K., Thapa Magar, S., Sanders, J. (2023). Adherence to and deviation from inverse square law of intensity for sound and light. T*he Physics Teacher*/AAPT/AIP Publishing, 61(5), 374-377.

Sanders, J., Zgadzaj, R., Downer, M. C. (2020). Terawatt chirped pulse Raman amplified laser for two color experiments. *SPIE/Optical Engineering*, **57**(7), 076110. https://doi.org/10.1117/1.OE.59.7.076110

Sanders, J. (2020). The Effects of Projectile Mass on Ballistic Pendulum Displacement. *American Journal of Physics, **88*** (5), 360. https://aapt.scitation.org/doi/10.1119/10.0000384

Sanders, J., Cohen, G. M. (2019). Chemical and Optical Demonstration of Starch Granules and Glucose in Potatoes. *American Biology Teacher, **81*** (9), 644-646. https://bioone.org/journals/The-American-Biology-Teacher/volume-81/issue-9/abt.2019.81.9.644/Observation-of-the-Optical--Chemical-Properties-of-Starch-Granules/10.1525/abt.2019.81.9.644.full

Sanders, J. (in press, accepted September 2019). A Ballistic Pendulum with Varied Launch Speed. *The Physics Teacher*, 7 pages. https://aapt.scitation.org/journal/pte

Peer-reviewed Conference Proceedings

Sanders, J., Menon, G. K., Zhan, W. (2017). Development of a New Electrical Engineering Technology Program. *No* (pp. 18738). American Society for Engineering Education. https://www.asee.org/public/conferences/78/papers/18738/view

Non-refereed Journal Articles

Sanders, J. (2017). Is college teaching as a calling being impacted by research? *American Journal of Physics, **85*** (10), 730. https://aapt.scitation.org/doi/full/10.1119/1.4997024

Presentations Given

Without Students:

Sanders, J., AAPT Winter 2020 Meeting, "Determining Ballistic Pendulum Effective Mass via Varied Projectile Launch Speed," American Association of Physics Teachers, Orlando, FL, United States of America.

(January 19, 2020).

Sanders, J., AAPT Summer 2019 Meeting, "The Effect of Projectile Mass on Ballistic Pendulum Displacement," American Association of Physics Teachers, Provo, UT, United States of America. (July 22, 2019).

Sanders, J., Menon, G. K., Zhan, W., 2017 ASEE Annual Conference and Exposition, American Society for Engineering Education, Columbus, OH, United States of America. (June 27, 2017).

Sanders, J. (Presenter & Author), Cohen, G. M. (Author Only), Association of Southeastern Biologists 2017 Annual Meeting, "Differing Appearance of Starch Granules In Waxy and Starchy Potatoes," Association of Southeastern Biologists, Montgomery, AL, United States of America. (March 30, 2017).

With Students:

Clase, Alwin (Presenter & Author), **Sanders, J. C.** (Author Only), UST Undergraduate Research Symposium, "Double Slit at Oblique Incidence," University of Saint Thomas, Houston, TX, United States of America. (April 23, 2026).

Kannan, A. C. (Presenter & Author), **Sanders, J. C.** (Author Only), AAS 100th Meeting, "Calculating the Effects of Longitudinal Magnetic Field Gradient on Electron Spin," Alabama Academy of Science, Birmingham, AL, United States of America. (March 9, 2023).

Howell, C. E. (Presenter & Author), Johnson, N. A. (Author Only), **Sanders, J.** (Author and Principal Investigator), AAS 97th Meeting, "Angle Scans of Light Intensity," Alabama Academy of Science, Florence, AL, United States of America. (March 19, 2020).

Johnson, N. (Presenter & Author), **Sanders, J.** (Author and Principal Investigator), AAS 97th Meeting, "Building an Arduino-Based Sound Sensor for Mapping Sound Waves," Alabama Academy of Science, Florence, AL, United States of America. (March 19, 2020).

Johnson, N. (Presenter & Author), Colvin, V. (Author Only), Ganguly, S. (Author Only), Lee, S. (Author Only), Thapa Magar, S. (Author Only), **Sanders, J.** (Author and Principal Investigator), AAPT 2020 Winter Meeting, "Experimentally Mapping Sound Wave Intensity vs. Distance," American Association of Physics Teachers, Orlando, Florida, United States of America. (January 20, 2020).

Ganguly, S. (Presenter & Author), Howell, C. E. (Author Only), **Sanders, J**. (Author and Principal Investigator), AAPT 2020 Winter Meeting, "Mapping Sound Waves on Octave," American Association of Physics Teachers, Orlando, Florida, United States of America. (January 20, 2020).

Ebersole, D. K. (Presenter & Author), Naquin, T. D. (Author Only), **Sanders, J.** (Author and Principal Investigator), APS 2019 March Meeting, "Measuring Viscosity with A Damped Harmonic Oscillator," American Physical Society, Boston, MA, United States of America. (March 5, 2019).

Ebersole, D. K. (Presenter & Author), Naquin, T. D. (Author Only), **Sanders, J.** (Author and Principal Investigator), AAS 96th Annual Meeting, "Measuring Viscosity with a Damped Harmonic Oscillator," Alabama Academy of Science, Tuskegee, AL, United States of America. (February 21, 2019).

Lee, E. S. K. (Presenter & Author), Colvin, V. C. (Author Only), **Sanders, J.** (Author and Principal Investigator), AAS 96th Annual Meeting, "Sound Intensity Measurements to Meter Scales," Alabama Academy of Science, Tuskegee, AL, United States of America. (February 20, 2019).

Bhatta, H. R. B. (Presenter & Author), Khanal, P. (Presenter & Author), **Sanders, J.** (Author and Principal Investigator), AAS 96th Annual Meeting, "The Effects of Impact Velocity on Imparted Impulse," Alabama Academy of Science, Tuskegee, AL, United States of America. (February 20, 2019).

Howell, C. E. (Presenter & Author), **Sanders, J.** (Author and Principal Investigator), AAS 96th Meeting, "Mapping Sound Waves in GNU Octave," Alabama Academy of Science, Tuskegee, AL, United States of America. (February 20, 2019).

Howell, C. E. (Presenter & Author), **Sanders, J.** (Author and Principal Investigator), 2018 MathFest, "Mapping Sound Waves in Octave," Mathematical Association of America/Pi Mu Epsilon, Denver, CO, United States of America. (August 2, 2018).

Other Research Projects

"Asymmetric Slits" (Active/On-Going).
Project start Spring 2024. There are several double-slit and triple-slit experiments planned, with some simulated results already and a plan in place to begin research with students. There is another related project, also in the planning/beginning stages, of using single slits to measure razor blade cut precision (a measurement of the keenness of a razor blade, or of the size and taper of its edge).

"Fluid Flow Regimes as a Function of Aperture Parameters" (Planning/Initial Data collected).
Project start Spring 2024. This project aims to probe the transition from Bernoulli flow to Poiseuille flow as aperture size (or size/length ratio) decreases.

"Experimental and Computational Mapping of Sound Waves" (On-Going).
Project start Spring 2018. This project is related to another project which I have listed, and began as a simple demonstration of the limits of two-source interference (and single-source diffraction) patterns using sound waves instead of light waves. However, the mapping of the intensity pattern is made more complex by the presence of many reflections of the sound waves e.g. from the boundaries of the room in which the experiment is carried out. I have published some results in *The Physics Teacher* along with several students who worked on the project. There have also been a variety of spin-off projects from this, from the development of an Arduino-driven detector (and range-finder) to computational mapping in OCTAVE to the possible development of acoustic filters, and there have been several undergraduate students involved in this project. Possible Future work includes probing the resonance conditions for open and closed tubes as wavelength approaches tube diameter ($\lambda \rightarrow d$) and as diameter exceeds wavelength, as well as probing alternative “tube” geometries.

"Control of Damping Regimes in a Fluid" (Currently on hold).
Project start Spring 2018. This project combines fluid dynamics with oscillatory motion. A harmonic oscillator mass-on-spring is damped by a high-viscosity fluid. Since viscosity is a function of fluid temperature, we control the damping by changing the fluid temperature in an attempts to access all three damping regimes, as well as to investigate the Stokes'-Law drag force and the turbulent drag force of the fluid.

"Impulse Imparted During Impact" (Writing Results).
Project start Spring 2019. This is a short project which I began with two undergraduate students, one of whom has now graduated and the other of whom will graduate this next semester. We were interested in the force vs time of impulse during impacts between solid objects. Writing is in-progress on a short manuscript from our results. The students involved have presented some of this work at the state level to the Alabama Academy of Sciences.

"Mie Scattering from Water Droplets in Steam" (completed).
Project start Spring 2019. We measure the intensity of Mie-scattered light from condensation clouds produced by boiling water. The measurements are as a function of polar angle and distance to source, as well as the temperature of the water source and the temperature and humidity of the environment, hence also of the evaporation and condensation rates. This project is the development of an optical remote sensor, and also allows us to test some of the basic predictions of Mie scattering theory. Some results from this research have been presented at the local level, and our abstract was accepted to the 2020 Alabama Academy of Sciences annual meeting, which was canceled due to Coronavirus concerns.

"Measurement of Coherence via Interference Effects" (Planning).
Project start Spring 2020. In this project, we will attempt to measure acoustical and optical coherence of a variety of simple sources by measuring the interference of two or more waves from the same source which

have taken different paths to reach our detector. The coherence length and time of a Gaussian pulse are both well-defined, but actual measurements of controllable sources are rare.

"Optical Measurements of Power Use in Electronic Circuits" (On-Going).
Project start Spring 2020. I measure the optical intensity output of an Ohmic resistor as a function of driving voltage, current, and distance from the source.

Service

Departmental Service

Recruitment, Retention, and Advising:

Academic Advising, University of Saint Thomas, Physics and Engineering Majors (2024 Summer-present)
Current load is 43 advisees.

Committee Member, Department Curriculum Committee, University of Saint Thomas, Department of Physics and Engineering (April 2025-present).
Some activities include: sifting through the undergraduate catalog, departmental documents, and degree plans for all 5 majors to make these documents consistent with each other and with our intended degree curricula, as well as submitting these proposed changes to the UCC; revamping the physics minor; reviewing, approving, and proposing changes to our 5 existing majors.

MS Semiconductor Science Steering Committee, University of Saint Thomas (Fall 2025-present).
One of three faculty members appointed to this committee to establish a new master's degree program in semiconductor science/engineering to be offered in partnership with NYCU in Taiwan. My contribution so far has been to develop and propose the curriculum plan for this degree.

Departmental Seminar Organizer, University of Saint Thomas (Spring 2026).
I am tasked with organizing the monthly department seminar for Physics and Engineering. I solicit speakers, organize the day/time for presentations, advertise the presentations around the department.

Student Recruiter, Physics Recruiting. (August 1, 2015 – Spring 2024).
I did a lot of the department's day-to-day recruitment and retention activities. Every semester, I receive a list of international students accepted to Troy University for physics, and I email these students to encourage them to attend Troy. Many write back with questions, which I then answer, and so I become one of our new students' points of contact at Troy. Likewise, I send an email to all potential physics majors in the STARS report of community college students who are interested in transferring to Troy. I also send an email to all newly-enrolled physics students at the start of the academic year to welcome them to Troy; as a result, I often meet our new students one-on-one at the start of their Troy careers.

Program Coordinator, Physics Trojan Day Panel. (2015 – Spring 2024).
I have attended every Trojan Day Browse Session excepting 1 since arriving at Troy University. I typically coordinate the tables for the Physics Major and for the Physics Club. Among other things, this means helping the physics club to design, setup, and test a few eye-catching demos beforehand.

IMPACT Major Faculty Representative/Advisor, IMPACT Sessions. (2015 – Spring 2024).
I have been the principal physics faculty member present at IMPACT orientation sessions for the physics majors since becoming a tenure-track faculty member. During my first two years, I attended as a member of a panel consisting of myself, one chemistry faculty member, and the department chair. After that, I often was the sole representative, or the coordinator of all representatives for physics sessions. I also met with pre-engineering students, and with EET students from 2018-2019, until we hired EET faculty. I have also met with the IMPACT student leaders to answer their questions in years past.

Academic Advising, Physics Majors (2015-Spring 2024)

I have served as one of the two primary academic advisors for the physics department, both officially and unofficially. I try to meet with each of my advisees at least once per semester, although many of my advisees will meet with me multiple times to discuss not only their academic schedule, but also preparation for the GRE and graduate school, career options, and internships. I have had as many as 22 official advisees during any given semester (counting pre-engineering and EET students), and on average they require 30-60 minutes per meeting, with some requesting multiple meetings during a given semester. Most of the physics majors in the department will at one time or another come to my office for advising, both academic and career/graduate school.

Faculty Advisor, Troy Physics Club/SPS Troy Chapter. (August 2016 – Spring 2024).

I am a very hands-on advisor, in that I attend the club's meeting fairly regularly and suggest new projects for them to undertake. I also help them with any physics projects (e.g. demos) which they conceive. In the 2019-2020 academic year, I helped the Troy Physics Club to officially become the Troy University chapter of the Society for Physics Students.

Academic Advising, Pre-Engineering (2015-Spring 2024)

I serve as the primary advisor for pre-engineering students, who register as physics students while at Troy. These students typically attend Troy for 2 years before transferring to a university which has an engineering program.

Academic Advising, Electronics Engineering Technology (2018-2020).

I also served as the primary advisor for the nascent EET program until we hired faculty for this department.

Student Recruiter, Physics Recruiting: Homeschool Day. (March 31, 2017).

I attended the Troy University Homeschool Day Browse Session on behalf of the physics major at Troy University.

Student Recruiter, Physics Recruiting: March Major Madness (March 7, 2017).

I attended the March Major Madness browse session to recruit on behalf of the physics major at Troy University.

Attendee, Meeting, Alabama Section AAPT "College Physics on Parade" Recruiting Event. (February 6, 2016).

I attended the Alabama Section of the American Association of Physics Teachers meeting to promote the physics major at Troy University. This event is attended by physics teachers at all levels: high school, 2-year community college, 4-years colleges and universities.

Hiring Committees:

Committee Member, Faculty Hiring Search Committee: Visiting Assistant Professor of Mechanical Engineering. (May 2026-present).

Committee Member, Faculty Hiring Search Committee: Assistant Professor of Electrical Engineering. (October, 2025 – May 2026).

Committee Member, Faculty Hiring Search Committee: Lecturer in Physics and Astronomy. (March 6, 2024 – April 12, 2024).

Committee Member, Faculty Hiring Search Committee: Tenure Track Assistant Professor in Physics and Cosmology. (October 5, 2023 – January 28, 2024).

Committee Member, Faculty Hiring Search Committee: Tenure Track Assistant Professor in Physics. (June 1, 2023 – June 29, 2023).

Committee Member, Faculty Hiring Search Committee: Tenure Track Assistant Professor in Physics. (April 5, 2023 – June 29, 2023).

Committee Member, Faculty Hiring Search Committee: Tenure Track Assistant Professor, Astronomy. (June

15, 2021 – July 23, 2021).

Committee Member, Faculty Hiring Search Committee: Lecturer, Electronics Engineering Technology. (November 9, 2020 - May 6, 2021).

Committee Member, Faculty Hiring Search Committee: Tenure-Track Assistant Professor and EET Program Coordinator. (November 13, 2018 - November 12, 2019).

Committee Member, Faculty Hiring Search Committee: EET Faculty. (November 14, 2018 - May 22, 2019).

Committee Member, Faculty Hiring Search Committee: Tenure Track Assistant Professor in Physics. (2019).

Committee Member, Faculty Hiring Search Committee: Physics Lecturer (Dothan). (2017).

Committee Member, Faculty Hiring Search Committee: SST Grants Coordinator/Lecturer. (2017).

Committee Member, Faculty Hiring Search Committee: Tenure Track Assistant Professor, Astronomy. (December 19, 2016 - April 20, 2017).

Committee Member, Faculty Hiring Search Committee: Temporary Chemistry Lecturer. (August 2016).

Other Departmental Service:

Faculty Mentor, New Faculty Mentor. (August 2017 – July 2024). [DA 398-401; 333-339]

This service involves mentoring new faculty in our department. I have officially been assigned to five new faculty members, although a few others have also looked to me for mentoring.

Committee Member, Course Materials Evaluation/Selection, Troy University Department of Chemistry and Physics. (August 2015 – Spring 2024).

Standing committee consisting of all physics faculty. My biggest accomplishment was getting the department to switch to the *OpenStax* open-access textbooks for all supported introductory courses. Also took much of the lead on building virtual labs during COVID crisis.

Committee Member, Physics Degree/Discipline Committee, Troy Department of Chemistry and Physics (August 2015 – Spring 2024).

I have been responsible for the Physics MyDegreeMap since its inception. I have also made an unofficial degree map for pre-engineering students who intend to transfer from Troy to an engineering program after 2 years. Moreover, I have worked with the department chair to develop the degree requirements for both the physics major and for the electronics engineering technology program, as well as for the physics and mathematics double-major. Some of my specific contributions to the physics major requirements include crating the option of replacing the Mathematics methods courses with Vector Calculus and Calculus III; combining the General Physics labs with the Physics with Calculus labs so that the students in these labs have more section options; and pushing back the Physics with Calculus sequence to begin in Spring rather than Fall semester of the freshman year.

Task Force Member, Physics Departmental Assessment. (June 1, 2017 - June 6, 2017).

This was a brief assessment of the strengths, weaknesses, and needs of the physics department/major at Troy University. I wrote the report for this. There was a second report which I wrote for our recruiting office at the same time.

College/Division Service

Organizer/Instructor, MCAT Physics Preparation Sessions. (Spring 2025). I organized these sessions with the help of Dr. Gabriel Villares (pre-med advisor), and I taught the sessions once per week for the semester.

Organizer/Instructor, MCAT Physics Preparation Sessions. (Spring 2023 and Spring 2024 semesters). I organized these sessions with the help of Ms. Janet Gaston (pre-med advisor), and I taught the sessions once per week.

Elected Committee Member, Tenure and Promotion College Review Committee, Troy University College of Arts and Sciences. (August 1, 2021-2024).

Committee Member, Math Museum Advisory Committee. (September 20, 2019 - November 5, 2019).

Committee Member, CAS Handbook Committee. (February 1, 2018 - May 23, 2018).

This was a 3-person committee whose purpose was to collect the policies of the Collage of Arts and Sciences into a single location, now posted to the CAS Communications Hub on CANVAS. Each member of the committee was responsible for considering handbooks produces by other colleges at Troy, as well as reading through a variety of policy-related memos and other documents to determine what policies the college had established.

SST Advisory Council. (November 2015 – 2017).

This committee was formed when the School of Science and Technology formed. It included 2-3 representatives from each department/major in the STEM programs at Troy. We met with the SST Steering Committee, as well as various business leaders in the Pike County area to establish stronger ties between Troy and the local industry. I specifically was part of delegations which met with KW Plastics (1 time), HB&C Architectural (1 time), and Brundidge Electronics (1 time). Finally, I contributed to the planning of the Troy University's NIST grant in its early stages, before it was made into a grant specifically for polymers research.

SST/MOU with UAB. (September 28, 2017).

I travelled to UAB along with the director of the School of Science and Technology to seek an MOU with the engineering graduate school. The goal of the MOU was that we would be able to send our STEM majors to UAB for graduate school upon successful completion of their degrees at Troy. We ended up with a handshake agreement with the Materials Engineering program.

Program Coordinator, Troy SST/Vels University Delegation. (June 1, 2016 - September 29, 2016).

This service was assigned to me by the Director of the School of Science and Technology. A delegation from Vels University, India was interested in visiting Troy University and the surrounding area with the intention of establishing ties to Troy. My job was to set the itinerary, including contacting all venues, arranging lodging, meals, and transportation; and to determine the budget. I mostly did this alone with some help from the department secretary, but I did report to Dr. Menon as well as to the International Office for this service. The delegation ended up not coming here.

University Service

Session Moderator, UST Undergraduate Research Symposium, University of Saint Thomas, Houston, TX, United States of America. (April 24, 2026).

Member, Faculty Senate Special Task for Faculty Conversion of Term to Tenure Track, University of Saint Thomas (Fall 2025-Spring 2026).

The charge for this task force is to develop a policy for the conversion of term (full-time, non-tenure-track) faculty to tenure-track positions.

Faculty Mentor, Leadership Scholar Mentor. (August 10, 2018 - March 10, 2020).

I have mentored a student in the Leadership Scholars program for the last 2 years. Her task has been to video my lectures (and some lab demonstrations), which I post on my YouTube channel and into CANVAS for my students to watch in the event that they either miss the day's lecture or are taking the course online.

Professional Service

Reviewer, Journal Article, American Association of Physics Teachers. (July 5-October 6, 2025). Note: I reviewed this manuscript, and then was again asked to review the revised manuscript (two sets of revisions).

Reviewer, Journal Article, American Association of Physics Teachers. (March 4-18, 2025).

Reviewer, Journal Article, American Association of Physics Teachers. (June 9, 2023 – June 27, 2020).

Reviewer, Journal Article, American Association of Physics Teachers/American Journal of Physics. (February 1, 2020 - May 27, 2020).

Reviewer, Journal Article, American Association of Physics Teachers/The Physics Teacher. (January 3, 2020 - January 24, 2020).

Reviewer, Journal Article, American Association of Physics Teachers/The Physics Teacher. (August 10, 2019 - August 30, 2019).

Public Service

Committee Member, Gorgas Competition/Alabama Gorgas Finalist Science Fair Judging Committee, Tuskegee, AL. (February 21, 2019 - February 22, 2019).

Guest Speaker, Troy Kiwanis Club, Troy, Alabama. (October 25, 2016).
Along with some students, I built and tested a Michelson interferometer, which we demonstrated at the Kiwanis club in conjunction with a talk on gravity waves by Dr. Govind Menon. The LIGO facility which first detected gravity waves uses a modified Michelson interferometer.

External Connections and Partnerships

Recruitment

Recruitment, Smith's Station High School, Smith's Station, AL. (March 27, 2020). Note: Event was canceled due to Coronavirus concerns; however, I put quite a bit of work into it before it got canceled.

Recruitment, Caroll High School, Ozark, AL. (April 30, 2019).
School-wide event in which we met each of the morning science classes at Caroll High School, and gave a variety of physics demonstrations. Note that this even involved myself, 2 other physics faculty members, and 3 undergraduate physics majors from Troy.

Recruitment, Geneva County School District, Geneva, Alabama. (April 20, 2017).
I gave a ~45 minute optics lecture and demonstration to the advanced physics class at Geneva County High School, and then discussed physics at Troy for an additional 30 minutes.

Recruitment: SE Alabama Area High Schools, Alabama (September 2019).
Made phone calls and sent emails to various high school counselors in Pike County and surrounding areas to advertise the physics major at Troy and to invite students to the Trojan Day Browse session, and to arrange visits to these schools for the spring semester. However, I did not visit any due to coronavirus.

Professional Memberships

Troy University Chapter Founding Advisor, Society of Physics Students. (March 25, 2020 – May 2024).

Troy University Founding co-Advisor: Sigma Pi Sigma. (March 2023-May 2024).

American Association of Physics Teachers. (December 2017 - April 2020).

Council on Undergraduate Research. (January 2017 - January 2020).

Alabama Academy of Science. (December 2018 - December 2019).

Association of Southeastern Biologists. (2017 - 2018).

Licensures and Certifications

Micro-Credential Course: Designing Learner-Centered and Equitable Courses, ACUE. (July 10, 2023 - Present).

Micro-Credential: Inspiring Inquiry and Preparing Lifelong Learners, ACUE. (May 13, 2023 - Present).

Micro-Credential: Promoting Active Learning, ACUE. (March 15, 2023 – Present).

Certification: Distance-Learning Certification, Germanna Community College/The Virginia Community College System (January 2026-present).

Certification: Accessibility Training, Germanna Community College/The Virginia Community College System (January 2026-present).

Development Activities Attended

This excludes the required annual training for TITLE IX, FERPA, cybersecurity, etc. These are “non-certification” trainings.

Discussion Panel, "AAPT Virtual Coffee Hour: Virtual Instructional Share-A-Thon," American Association of Physics Teachers. (May 26, 2020 – Present).

Conference Attendance, "AAPT Winter 2020 Meeting," American Association of Physics Teachers, Orlando, Florida, United States of America. (January 18, 2020 - January 21, 2020).

Conference Attendance, "AAPT Summer 2019 Meeting," American Association of Physics Teachers, Provo, Utah, United States of America. (July 20, 2019 - July 24, 2019).

Conference Attendance, "AAPT 217 Winter Meeting and Workshop," American Association of Physics Teachers, Atlanta, GA, United States of America. (February 17, 2017 - February 21, 2017).

Workshop, "AL. Sec. AAPT Meeting and Workshop," Alabama Section of the American Association of Physics Teachers, Montgomery, AL, United States of America. (February 4, 2017).

Workshop, "AL. Sec. AAPT Meeting and Workshop 2016," Alabama Section of the American Association of Physics Teachers, Auburn, AL, United States of America. (February 6, 2016).

Awards and Honors

Ingalls Award for Classroom Teaching Excellence (nominee), Troy University. (2020). Due to COVID-19, this honor was not awarded for the 2019-2020 academic year.

Media Contributions

Internet

Southron Science (blog). (September 13, 2019-Present).
Most of the material on this site pertains to courses which I am teaching, but I do also post discussions of various research projects and interesting demonstrations there as well.
https://southronscience.blogspot.com

YouTube Channel. (January 2016-Present).
My You Tube channel primarily consists of educational materials which I have prepared for my students (and other interested viewers) over the years. This includes videos of my in-class lectures, screen-sharing lectures, the virtual lectures which I have given during the Coronavirus lockdowns, a few video demonstration, and some video question-and-answer and worked example sessions.
https://www.youtube.com/channel/UCqyfc2pL7mOR5fsHwyZ8GAg?view_as=subscriber

Newspaper

Tropolitan. (February 7, 2020). Interviewed about physics students who will have international research internships.

Tropolitan. (September 25, 2019). Interviewed for “Faculty Spotlight” feature.

Tropolitan. (August 15, 2018). Interviewed about physics students who received research internships.