Randall J. Scalise

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7926 Prescott Drive
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Personalia

Born: 2 November 1965; Citizenship: USA; Marital Status: Married

Education

- The Pennsylvania State University, University Park, PA 16802;
  Ph.D. in Theoretical Elementary Particle Physics, 4.0 GPA — 13 August 1994
  - Thesis: "Renormalization of Composite Operators in Yang-Mills Theories"
  - Co-advisors: Professor John C. Collins and Professor Emil Kazes
- Cornell University, Ithaca, NY 14853; Bachelor of Arts *magna cum laude*
  in Physics, with Distinction in All Subjects, 3.84 GPA — 31 May 1987

Employment

- Southern Methodist University
  - Senior Lecturer II (Teaching Professor) in Physics — August 2025 - present
  - Senior Lecturer I (Associate Teaching Professor) in Physics — Fall 2001 - August 2025
  - Lecturer (Assistant Teaching Professor) in Physics — Fall 1999 - Fall 2001
  - Visiting Assistant Professor of Physics — Fall 1995 - Fall 1999
- The Pennsylvania State University
  - Lecturer in Physics — Spring & Summer 1995
  - Postdoctoral Research Assistant to Professor John C. Collins — 1994 - 1996
  - Postdoctoral Teaching Assistant — Fall 1994
  - Graduate Research Assistant to Professor John C. Collins — 1992 - 1994
  - Computer System Administrator for the Pennsylvania State University
    Department of Physics SUN network — 1990 - 1991
  - Computer System Administrator for the Pennsylvania State University
    Laboratory for Elementary Particle Science (PSULEPS) VaxCluster — 1990 - 1992
  - Teaching Assistant — 1987 - 1990

Research Interests

- Parton distribution functions; Running of the strong coupling; Matching conditions;
  Dokshitzer-Gribov-Lipatov-Altarelli-Parisi (DGLAP) parton distribution function evolution
- $\overline{\text{MS}}$ renormalization of composite operators in Yang-Mills theories using dimensional regularization;
  Renormalization theory
- Elementary particles and field theory; Operator Product Expansion;
  Becchi-Rouet-Stora-Tyutin (BRST) symmetry

Refereed Publications

- "Regularization, renormalization, and dimensional analysis: Dimensional regularization meets freshman E&M," with Fredrick I. Olness, *American Journal of Physics*, March 2011, Volume 79, Issue 3, pp. 306.
- "Predictions for Neutrino Structure Functions," with Fredrick I. Olness *et al.*, *Physical Review* **D64** (2001) 033003
- "Heavy Quark Hadroproduction in Perturbative QCD," with Fredrick I. Olness and Wu-Ki Tung, *Physical Review* **D59** (1999) 014506
- "Infra-red Kuiper Belt Constraints," with Vigdor L. Teplitz *et al.*, *Astrophysical Journal* **516** (1999) 425
- "Heavy Quark Parton Distributions: Mass-dependent or Mass-independent Evolution?," with Fredrick I. Olness, *Physical Review* **D57** (1998) 241-244
- "Renormalization of Composite Operators in Yang-Mills Theories Using a General Covariant Gauge," with John C. Collins, *Physical Review* **D50** (1994) 4117-36
- "Unitary Lowest Weight Representations of the Non-Compact Supergroup $OSp(2M^*/2N)$," with Murat Günaydin, *Journal of Mathematical Physics* **32** (1991) 599-606
- "Scintillating Fibers and Waveguides for Tracking Applications," with B. Baumbaugh *et al.*, *IEEE Transactions on Nuclear Science* **38** (1991) 441-445

Other Publications

- Editor of the web version of the CTEQ Handbook of Perturbative QCD (see http://cteq.org) PostScript and PDF formats; searchable, with thumbnails, scalable fonts, and hyperlinks
- "The QCD / SM Working Group: Summary Report," with W. Giele *et al.*, hep-ph/0204316
- "Parton Distributions Working Group," with L. de Barbaro *et al.*, Contributed to QCD and Weak Boson Physics Workshop in preparation for Run II at the Fermilab Tevatron, hep-ph/0006300
- "Heavy Quark Production and PDFs Subgroup Report," with R. Demina *et al.*, Contributed to Physics at Run II: QCD and Weak Boson Physics Workshop: 2nd General Meeting, Batavia, Illinois, 3-4 Jun 1999, hep-ph/0005112
- "SMU Physics Electricity and Magnetism Laboratory Manual," January 2001, http://www.physics.smu.edu/∼scalise/emmanual/
- "SMU Physics Mechanics Laboratory Manual," January 2001, http://www.physics.smu.edu/∼scalise/mechmanual/
- "Poynting-Robertson effect on Kuiper Belt IR signal," with V.L. Teplitz *et al.*, Centennial Meeting of APS, contributed paper, Bull. Am. Phys. Soc. 44, Part I (1999).
- "On the Mass of the Kuiper Belt," with V.L. Teplitz *et al.*, in *The Problem of Mass*, B.N. Kursunoglu *et al.*, eds., Plenum Press, 1999
- "Summary of the Very Large Hadron Collider Physics and Detector Workshop," with G. Anderson *et al.*, FERMILAB-CONF-97-318-T, for the Very Large Hadron Collider Physics and Detector Workshop: Beyond the LHC, Batavia, IL, 13-15 Mar 1997, hep-ph/9710254
- "Precision Measurements of Heavy Objects Working Group Summary," with M. Demarteau *et al.*, contributed to Very Large Hadron Collider Physics and Detector Workshop: Beyond the LHC, Batavia, IL, 13-15 Mar 1997, hep-ph/9708331
- "Scintillating Fiber Detectors," with R. Ruchti *et al.*, Fort Worth 1990 Proceedings, Detector research and development for the Superconducting Super Collider, 90-99
- "Structure Function Subgroup Summary," The studies and discussions of the Structure Function Subgroup of the QCD Working Group of the Snowmass 1996 Workshop: *New Directions for High Energy Physics*, with M. Albrow *et al.*, in the Snowmass 1996 Conference Proceedings
- "Heavy Quark Hadroproduction: Resumming Large Logarithms via Heavy Quark PDFs," with Fredrick I. Olness and Wu-Ki Tung, SMU preprint SMU-HEP-9608, in the Proceedings of *Particles & Fields '96*: Meeting of the Division of Particles & Fields of the APS (Minneapolis, 1996)

– "Renormalization of Composite Operators in Yang-Mills Theories Using a General Covariant Gauge," Pennsylvania State University Ph.D. thesis, 1994

– "Survivability of the SDC Scintillating Fiber Tracker," By the SDC Collaboration and Fiber Tracking Group (B. Abbott *et al.*), SDC-93-425, Dec 1992, Fermilab library

– "Effects of a Hadron Irradiation on Scintillating Fibers," By the Fiber Tracking Group and SDC Collaboration (B. Abbott *et al.*), SDC-93-423, Nov 1992, FTG note, Fermilab library

– "Conceptual Design Scintillating Fiber Outer Tracking," By the Fiber Tracking Group and SDC Collaboration (B. Abbott *et al.*), SDC-92-189, Feb 1992, Fermilab library

– "Simulation Studies For A Scintillating Fiber Tracker," By the SDC Collaboration (B. Abbott *et al.*), SDC-91-00072, Jan 1992, Fermilab library

– "Scintillating Fiber Detectors," By the Fiber Tracking Group and SDC Collaboration (B. Abbott *et al.*), SDC-91-00065, Jan 1992, Fermilab library

Publications That I Reviewed

– *American Journal of Physics*
  - SOURCE-WORK-ID:TYQOhPUFwcfIs7QBwkyDbg Date 2026
  - SOURCE-WORK-ID:oZyo32STGWZh8rMHAaTw Date 2025
  - SOURCE-WORK-ID:YhoykQxP30KqmH1c6aj2g Date 2025
  - SOURCE-WORK-ID:4sOjtJ8zZjMs27uB6PhAOw Date 2024
– *The Physics Teacher*
  - SOURCE-WORK-ID:biiVj8EADat8O7O5noMJA Date 2026
  - SOURCE-WORK-ID:I9gvfs5CJw1yHajSKmBXvg Date 2025
  - SOURCE-WORK-ID:fM5xNgPCuMoFs1XKWDWR0g Date 2024
  - SOURCE-WORK-ID:IASZY3u5D84qpP1751yvsw Date 2023
  - SOURCE-WORK-ID:VCSjpT9demDJ5U8jIBHg Date 2023
  - SOURCE-WORK-ID:Tnje1vEL0UAAAYtZCzwWgQ Date 2022

Graduate Research Supervision

– Mr. Mohamed Saadawy (SMU Physics M.S. 2024)

– Mr. Govinda Dhungana (SMU Physics Ph.D. 2018) - Cosmological Distance Measurements with ROTSE Supernovae IIP and Observational Systematics on DESI Emission Line Galaxy Clustering

– Mr. Matthew Stein (SMU Physics Ph.D. 2018) - A Fast, Parallel Algorithm for Distant-dependent Calculation of Crystal Properties

– Mr. Farley Ferrante (SMU Physics M.S. 2014) - The Search for Variable Stars in ROTSE3 Data

– Mr. Matthew Nicola Rispoli (SMU Electrical Engineering M.S. 2013) - Use of Genetic Algorithms in the Optimization of Patch Antennas and Patch Antenna Arrays for the Observation of the 21cm H-I Line.

– Mr. Lin Zhu (SMU Physics M.S. 2012) - The Performance of a Field Programmable Gate Array in the Cryogenic Environment of a Liquid Argon Time Projection Chamber

– Mr. Reed Johnson (SMU Mathematics M.S. 2004)

– Mr. Jian Wang (SMU Physics M.S. 1998) - Parametrization of parton distribution functions

– Mr. Wanjun Yu (SMU Physics M.S. 1997) - Error estimates of parton distribution functions

Undergraduate Research Supervision

– Ms. Mayisha Zeb Nakib (SMU Physics B.S. 2015) "Background Characterization And Studies Using The Xia Ultralo-1800 For Dark Matter Experiments"

– Mr. Burak Ozsoy - Dedman College Interdisciplinary Institute (DCII) Undergraduate Research Fellowship for 2026-27, to work on the project Feasibility of Signal Detection at Variable Ocean Depths Using Simulated NV-Center Magnetometers. Advisor.

Grants

- President's Partners 665007-25 in the amount $2,500 for purchasing Geiger counters for the SMU undergraduate Physics laboratories June 2000
- President's Partners 665006-25 in the amount $1,500 for upgrading and augmenting lecture demonstration equipment for introductory SMU Physics courses June 1999
- National Science Foundation DUE-95522156 in the amount $53,785+matching funds during 6/15/95-05/31/98 (extended) with Professor Thomas Coan (SMU) for upgrading the SMU undergraduate Physics laboratories

Professional Affiliations and Honors

- Rotunda Outstanding Professor Award 2005
- Golden Key International Honour Society - elected honorary member by students Fall 1998
- The Society of Physics Students / Sigma Pi Sigma Honor Society
  Southern Methodist University Chapter Faculty Advisor 1996 - present
- The American Physical Society - lifetime membership
- The American Association of Physics Teachers - lifetime membership
- The Mathematical Association of America
- Phi Beta Kappa
- Marquis Who's Who in Science and Engineering
- Braddock Graduate Fellowship at the Pennsylvania State University 1987 - 1990
- Zwetch Scholarship at Cornell University 1983 - 1987

Technical Experience

- Author and maintainer of the CTEQ World Wide Web Page at http://cteq.org
- Proficiency in the Hypertext Markup Language (HTML) used by World Wide Web browsers;
  Presented an introductory seminar on HTML for Dedman College at SMU Summer 1999
  Presented an introductory seminar on HTML for SMU Physics Spring 1996
- Introductory and advanced undergraduate laboratory design and construction of experiments and apparatus for data acquisition
- Lecture demonstration apparatus design and development
- Expertise in installation, management, and use of the VMS, UNIX, and Linux operating systems; Proficiency in the DOS, Windows, and Macintosh operating systems, networking
- Programming experience in C, FORTRAN, PASCAL, BASIC; Exposure to C^{++}
- Expertise in the large formula manipulation language, FORM,
  and in the *Mathematica* and *Maple* symbolic manipulators; Exposure to MATLAB
- Expertise in the LaTeX typesetting system and in PostScript manipulation;
  Presented an introductory lecture series on LaTeXat PSU Summer 1993
- Familiarity with many VMS, UNIX, DOS, Windows, and Macintosh applications including World Wide Web browsers and servers, X-windows tools, in addition to several word processors, spreadsheets, and graphing packages

Presentations and Invited Seminars

- SMU QuarkNet "Making the Scientific Method Interesting to Students", organized by Heidi Wu SMU Physics **(Invited)** 15 July 2025
- SMU, 2024 Fall Joint Meeting Texas Section of APS and AAPT and Zone 13 SPS "The Scientific Method: Debunking PseudoScience." **(Invited)** 18 October 2024
- TAMU Commerce, 2011 Fall Joint Meeting Texas Section of APS and AAPT and Zone 13 SPS "The Scientific Method: Debunking PseudoScience." **(Invited)** 7 October 2011
- Kenyon College, Physics Colloquium: "Heavy Quark Hadroproduction in Perturbative QCD (What is Inside the Proton?)" **(Invited)** 16 April 1998
- California State University at Fresno, Physics Colloquium: "Heavy Quark Hadroproduction in Perturbative QCD (What is Inside the Proton?)" **(Invited)** 13 April 1998
- Pheno-CTEQ Symposium 98, University of Wisconsin, Madison "Mass-dependent or Mass-independent Evolution for Heavy Quark PDFs" 24 March 1998
- Argonne National Laboratory, High Energy Physics Division, Theoretical Physics Seminar: "Heavy Quark Hadroproduction" **(Invited)** 12 February 1998
- Pheno 97 - *Recent Developments in Phenomenology*, University of Wisconsin, Madison "Heavy Quark Hadroproduction", 17 - 19 March 1997
- VLHC - Very Large Hadron Collider Physics and Detector Workshop, Fermilab "Heavy Quark Hadroproduction" **(Invited)** 13 - 15 March 1997
- Southern Methodist University, High-Energy Physics Seminar: "Heavy Quark Hadroproduction: Resumming Large Logarithms via Heavy Quark PDFs" 2 December 1996
- Southern Methodist University, High-Energy Physics Seminar: "Ghosts (no, not that kind!)" 31 October (Halloween) 1996
- TSAPS 1996, University of Texas at Arlington, "Heavy Quark Hadroproduction: Resumming Large Logarithms via Heavy Quark PDFs" 10-12 October 1996
- DPF 96 - Particles & Fields '96: Meeting of the Division of Particles & Fields of the APS, Minneapolis, MN, "Heavy Quark Hadroproduction: Resumming Large Logarithms via Heavy Quark PDFs" 10-15 August 1996
- Southern Methodist University, High-Energy Physics Seminar: "Glue in the Proton" **(Invited)** 11 September 1995
- Massachusetts Institute of Technology, Center for Theoretical Physics, Nuclear Theory Seminar: "Renormalization of Composite Operators" **(Invited)** 5 December 1994

Schools, Meetings, and Workshops Attended

- Co-organizer SMU Quarknet project, Dallas, TX Summer 2002 - present
- Speaker SMU Quarknet project, Dallas, TX Summer 2001
- Pheno-CTEQ Symposium 98 - *Frontiers of Phenomenology from Non-perturbative QCD to New Physics*, University of Wisconsin, Madison 23 - 26 March 1998
- CTEQ5 (The Coordinated Theoretical-Experimental Project on QCD) Summer School for QCD Phenomenology and Experiment, Lake Geneva, Wisconsin 27 May - 4 June 1997
- Pheno 97 - *Recent Developments in Phenomenology*, University of Wisconsin, Madison 17 - 19 March 1997
- VLHC - Very Large Hadron Collider Physics and Detector Workshop, Fermilab 13 - 15 March 1997
- CTEQ 1996 Symposium - *Confronting QCD with Experiment: Puzzles and Challenges*, Fermilab 7-9 November 1996
- TSAPS 1996 - The Texas Section of the American Physical Society, University of Texas at Arlington 10-12 October 1996
- DPF 1996 - The American Physical Society, Division of Particles and Fields, Minneapolis, Minnesota 10 - 15 August 1996

– Snowmass 1996 - The American Physical Society, *New Directions for High Energy Physics*, Snowmass, Colorado 25 June - 12 July 1996

– CTEQ3 Summer School for QCD Phenomenology and Experiment, Lake Ozark, Missouri 10 August - 18 August 1994

– CTEQ2 Summer School for QCD Phenomenology and Experiment, Lake Monroe, Indiana 25 July - 3 August 1993

– CTEQ1 Summer School for QCD Phenomenology and Experiment, Mackinac Island, Michigan 27 May - 3 June 1992

– Polarized Collider Workshop, The Pennsylvania State University 14 - 17 November 1990

Courses Created or Redesigned and Taught

– PHYS 3333 / CFB 3333 / KNW 2333 - The Scientific Method - Critical and Creative Thinking (Debunking Pseudoscience) Created in Fall 2003, wildly popular filling to room capacity for 26 consecutive semesters. Provides students with an understanding of the scientific method sufficient to detect pseudoscience in its many guises: paranormal phenomena, free-energy devices, alternative medicine, intelligent design creationism/creation science, denial of human-induced climate change, propaganda, denial of science-based medicine, misuse of data and statistics, and many others. Texts: Sagan, Shermer, Battersby, and various.

– PHYS 4321 - Undergraduate Theoretical Methods
Created in Fall 2003 and taught every year since. The theoretical tools needed for advanced physics coursework: Fourier series and transform; Hilbert space; ordinary and partial differential equations; distributions; separation of variables; numerical integration; Monte Carlo methods; divergence, gradient, curl, Laplacian; divergence theorem, Stokes theorem; linear algebra; complex analysis. The emphasis is on practical applications. Text: Boaz.

– PHYS 7305 - Graduate Theoretical Methods
Created in Fall 2003 and taught every year since. Mathematical methods; theory of analytic functions, evaluation of integrals, linear vector spaces, special functions, integral equations, tensor analysis, calculus of variations, group theory. Prerequisites: Working knowledge of complex variable, Fourier transforms, and partial differential equations. Text: Arfken.

– PHYS 3374 - Undergraduate Thermodynamics and Statistical Mechanics
Redesigned in Fall 2015 and taught every year since. Review of the laws of thermodynamics. Study of para-magnetism; partition function; Maxwell-Boltzmann distribution; quantum statistics: Planck, Fermi-Dirac, and Bose-Einstein distributions; superconductivity. Text: Schroeder.

– PHYS 6351 - Graduate Statistical Mechanics
Redesigned in Fall 2015 and taught every year since. Derivation of classical and quantum statistical distribution functions; partition functions; the laws of thermodynamics; ensemble theory; applications to gases and solids. Text: Kardar.

– PHYS 5337 - Undergraduate Solid State Physics
Redesigned Spring 2016, taught 3 times. Crystal lattices and the reciprocal lattice, the free-electron model of metals, crystal binding, lattice vibrations-phonons, thermal properties of solids, and energy bands in solids. Text: Kittel.

– PHYS 6338 - Graduate Condensed Matter Physics
Redesigned Spring 2016, taught 3 times. Crystal lattices and the reciprocal lattice, the free-electron model of metals, crystal binding, lattice vibrations-phonons, thermal properties of solids, and energy bands in solids. Text: Ashcroft and Mermin.

Teaching Experience (Teaching evaluation summaries are available upon request.)

– Course Name (Text Author)	number students	SMU	Semester year
– Quantum Field Theory I (Coleman)	2 students	SMU	Fall 2026
– Graduate E&M II (Jackson)	3 students	SMU	Fall 2026
– Quantum Mechanics (Griffiths)	2 students	SMU	Fall 2026
– Introductory Mechanics (Walker)	12 students	SMU	Summer 2026
– Graduate E&M I (Jackson)	6 students	SMU	Spring 2026

– Advanced E&M (Griffiths)	10 students	SMU	Spring 2026
– General Physics - E&M (Walker)	33 students	SMU	Spring 2026
– Quantum Field Theory I (Coleman)	4 students	SMU	Fall 2025
– Graduate E&M II (Jackson)	4 students	SMU	Fall 2025
– Thermodynamics/Statistical Mechanics (Schroeder) (overload - team taught with Simon Dalley, did not receive course relief)	8 students	SMU	Fall 2025
– Introductory Mechanics (Walker)	10 students	SMU	Summer 2025
– Graduate E&M I (Jackson)	4 students	SMU	Spring 2025
– Graduate Statistical Mechanics (Kardar)	7 students	SMU	Spring 2025
– General Physics - E&M (Walker)	33 students	SMU	Spring 2025
– Thermodynamics/Statistical Mechanics (Schroeder)	3 students	SMU	Fall 2024
– Introductory Mechanics (Walker)	4 students	SMU	Summer 2024
– Graduate Theoretical Methods (Arfken)	2 students	SMU	Spring 2024
– Theoretical Methods (Boaz)	9 students	SMU	Spring 2024
– General Physics - E&M (Walker)	14 students	SMU	Spring 2024
– Thermodynamics/Statistical Mechanics (Schroeder)	3 students	SMU	Fall 2023
– General Physics - Mechanics (Walker)	59 students	SMU	Fall 2023
– Introductory Mechanics (Walker)	4 students	SMU	Summer 2023
– Graduate E&M II (Jackson)	6 students	SMU	Spring 2023
– Graduate Theoretical Methods (Arfken)	2 students	SMU	Spring 2023
– Theoretical Methods (Boaz)	2 students	SMU	Spring 2023
– Graduate E&M I (Jackson)	8 students	SMU	Fall 2022
– Thermodynamics/Statistical Mechanics (Schroeder)	4 students	SMU	Fall 2022
– Introductory Mechanics (Walker)	5 students	SMU	Summer 2022
– Graduate Mechanics (Goldstein)	4 students	SMU	Spring 2022
– Graduate Theoretical Methods (Arfken)	2 students	SMU	Spring 2022
– Theoretical Methods (Boaz)	3 students	SMU	Spring 2022
– Graduate Quantum Mechanics (Cohen-Tannoudji)	8 students	SMU	Fall 2021
– Thermodynamics/Statistical Mechanics (Schroeder)	8 students	SMU	Fall 2021
– Introductory Mechanics (Walker)	17 students	SMU	Summer 2021
– Graduate Theoretical Methods	1 student	SMU	Spring 2021
– Theoretical Methods	3 students	SMU	Spring 2021
– Introductory E&M (Walker)	19 students	SMU	Spring 2021
– Introductory Honors Physics	6 students	SMU	Fall 2020
– Thermodynamics/Statistical Mechanics (Schroeder)	7 students	SMU	Fall 2020
– Introductory Mechanics (Walker)	18 students	SMU	Summer 2020
– Graduate Solid State (Ashcroft & Mermin)	3 students	SMU	Spring 2020
– Solid State (Kittel)	3 students	SMU	Spring 2020
– Graduate Theoretical Methods	2 students	SMU	Spring 2020
– Theoretical Methods	6 students	SMU	Spring 2020
– Graduate Quantum Mechanics (Cohen-Tannoudji)	4 students	SMU	Fall 2019
– Thermodynamics/Statistical Mechanics (Schroeder)	4 students	SMU	Fall 2019
– Introductory Mechanics (Walker)	6 students	SMU	Summer 2019
– Graduate E&M II (Jackson)	4 students	SMU	Spring 2019
– Theoretical Methods	5 students	SMU	Spring 2019

– Thermodynamics/Statistical Mechanics (Schroeder)	5 students	SMU	Fall 2018
– Introductory E&M (Walker)	34 students	SMU	Fall 2018
– Introductory E&M (Walker)	9 students	SMU	Summer 2018
– Graduate Solid State (Ashcroft & Mermin)	1 student	SMU	Spring 2018
– Solid State (Kittel)	3 students	SMU	Spring 2018
– Graduate Theoretical Methods	2 students	SMU	Spring 2018
– Theoretical Methods	6 students	SMU	Spring 2018
– Graduate Thermodynamics/Statistical Mechanics	5 students	SMU	Fall 2017
– Undergraduate Thermodynamics/Statistical Mechanics	3 students	SMU	Fall 2017
– Introductory E&M (Walker)	70 students	SMU	Fall 2017
– Introductory E&M (Walker)	17 students	SMU	Summer 2017
– Graduate Theoretical Methods	5 students	SMU	Spring 2017
– Theoretical Methods	5 students	SMU	Spring 2017
– Cosmology (Maoz/Ryden)	5 students	SMU	Spring 2017
– Graduate Thermodynamics/Statistical Mechanics	2 students	SMU	Fall 2016
– Undergraduate Thermodynamics/Statistical Mechanics	4 students	SMU	Fall 2016
– Introductory E&M (Walker)	70 students	SMU	Fall 2016
– Introductory E&M (Walker)	16 students	SMU	Summer 2016
– Solid State (Kittel)	5 students	SMU	Spring 2016
– Graduate Theoretical Methods	5 students	SMU	Spring 2016
– Theoretical Methods	5 students	SMU	Spring 2016
– Quantum Mechanics	8 students	SMU	Fall 2015
– Graduate Thermodynamics/Statistical Mechanics	3 students	SMU	Fall 2015
– Undergraduate Thermodynamics/Statistical Mechanics	5 students	SMU	Fall 2015
– Introductory E&M (Walker)	16 students	SMU	Summer 2015
– Advanced Laboratory	5 students	SMU	Spring 2015
– The Scientific Method	65 students	SMU	Spring 2015
– Graduate Theoretical Methods	5 students	SMU	Fall 2014
– Theoretical Methods	5 students	SMU	Fall 2014
– The Scientific Method	65 students	SMU	Fall 2014
– Introductory E&M (Walker)	16 students	SMU	Summer 2014
– Graduate E&M II (Jackson)	4 students	SMU	Spring 2014
– Advanced Laboratory	6 students	SMU	Spring 2014
– Master Physics Teacher Certificate	20 students	SMU	Spring 2014
– Graduate E&M I (Jackson)	4 students	SMU	Fall 2013
– Graduate Theoretical Methods	2 students	SMU	Fall 2013
– Theoretical Methods	8 students	SMU	Fall 2013
– Introductory E&M (Walker)	16 students	SMU	Summer 2013
– Classical Mechanics (Taylor)	13 students	SMU	Spring 2013
– The Scientific Method	65 students	SMU	Spring 2013
– Graduate E&M II (Jackson)	6 students	SMU	Fall 2012
– Cosmology (Maoz/Ryden)	6 students	SMU	Fall 2012
– Master Physics Teacher Certificate	20 students	SMU	Fall 2012
– Introductory E&M (Walker)	16 students	SMU	Summer 2012
– Advanced Laboratory	7 students	SMU	Spring 2012

– Graduate E&M I (Jackson)	6 students	SMU	Spring 2012
– The Scientific Method	61 students	SMU	Fall 2011
– Solid State (Kittel)	5 students	SMU	Fall 2011
– Graduate Mechanics (Goldstein)	5 students	SMU	Fall 2011
– Introductory E&M (Walker)	16 students	SMU	Summer 2011
– The Scientific Method	65 students	SMU	Spring 2011
– Graduate E&M II (Jackson)	8 students	SMU	Spring 2011
– The Scientific Method	64 students	SMU	Fall 2010
– Advanced E&M (Griffiths)	4 students	SMU	Fall 2010
– Graduate E&M I (Jackson)	9 students	SMU	Fall 2010
– The Scientific Method	65 students	SMU	Spring 2010
– Introductory Laboratory, Mechanics and E&M	225 students	SMU	Spring 2010
– Graduate Theoretical Methods	2 students	SMU	Fall 2009
– Theoretical Methods	4 students	SMU	Fall 2009
– The Scientific Method	65 students	SMU	Fall 2009
– Introductory Laboratory, Mechanics and E&M	205 students	SMU	Fall 2009
– Introductory Mechanics (Serway)	12 students	SMU	Summer 2009
– The Scientific Method	67 students	SMU	Spring 2009
– Introductory Laboratory, Mechanics and E&M	199 students	SMU	Spring 2009
– Graduate Theoretical Methods	3 students	SMU	Fall 2008
– Theoretical Methods	2 students	SMU	Fall 2008
– The Scientific Method	59 students	SMU	Fall 2008
– Introductory Laboratory, Mechanics and E&M	201 students	SMU	Fall 2008
– The Scientific Method	65 students	SMU	Spring 2008
– Introductory Laboratory, Mechanics and E&M	185 students	SMU	Spring 2008
– Graduate Theoretical Methods	5 students	SMU	Fall 2007
– Theoretical Methods	2 students	SMU	Fall 2007
– The Scientific Method (co-teacher)	58 students	SMU	Fall 2007
– Introductory Laboratory, Mechanics and E&M	166 students	SMU	Fall 2007
– Introductory E&M (Serway)	16 students	SMU	Summer 2007
– The Scientific Method	68 students	SMU	Spring 2007
– Introductory Laboratory, Mechanics and E&M	158 students	SMU	Spring 2007
– Classical Mechanics (Marion & Thornton)	6 students	SMU	Fall 2006
– The Scientific Method (co-teacher)	70 students	SMU	Fall 2006
– Introductory Laboratory, Mechanics and E&M	146 students	SMU	Fall 2006
– Introductory E&M (Serway)	16 students	SMU	Summer 2006
– The Scientific Method	73 students	SMU	Spring 2006
– Introductory Laboratory, Mechanics and E&M	155 students	SMU	Spring 2006
– Graduate E&M II (Jackson)	9 students	SMU	Fall 2005
– The Scientific Method (co-teacher)	75 students	SMU	Fall 2005
– Introductory Laboratory, Mechanics and E&M	125 students	SMU	Fall 2005
– Introductory Mechanics (Serway)	10 students	SMU	Summer 2005
– Introductory E&M (Serway)	8 students	SMU	Summer 2005
– Graduate E&M I (Jackson)	9 students	SMU	Spring 2005
– The Scientific Method	76 students	SMU	Spring 2005

– Introductory Laboratory, Mechanics and E&M	146 students	SMU	Spring 2005
– Graduate Theoretical Methods	1 student	SMU	Fall 2004
– Theoretical Methods	4 students	SMU	Fall 2004
– The Scientific Method (co-teacher)	75 students	SMU	Fall 2004
– Introductory Laboratory, Mechanics and E&M	121 students	SMU	Fall 2004
– The Scientific Method	4 students	SMU	Summer 2004
– The Scientific Method	56 students	SMU	Spring 2004
– Introductory Laboratory, Mechanics and E&M	170 students	SMU	Spring 2004
– Astronomy Laboratory	4 students	SMU	Spring 2004
– Graduate Theoretical Methods	4 students	SMU	Fall 2003
– Theoretical Methods	8 students	SMU	Fall 2003
– The Scientific Method (co-teacher)	52 students	SMU	Fall 2003
– Introductory Laboratory, Mechanics and E&M	170 students	SMU	Fall 2003
– The Scientific Method	60 students	SMU	Spring 2003
– Introductory Laboratory, Mechanics and E&M	170 students	SMU	Spring 2003
– Astronomy Laboratory	10 students	SMU	Spring 2003
– Graduate E&M I (Jackson)	8 students	SMU	Fall 2002
– Introductory Laboratory, Mechanics and E&M	200 students	SMU	Fall 2002
– Astronomy Laboratory	10 students	SMU	Fall 2002
– Introductory Mechanics (Serway)	16 students	SMU	Summer 2002
– Introductory E&M (Serway)	15 students	SMU	Summer 2002
– Introductory Laboratory, Mechanics and E&M	22 students	SMU	Summer 2002
– Advanced Mechanics (Marion & Thornton)	6 students	SMU	Spring 2002
– Introductory Mechanics (Serway)	100 students	SMU	Spring 2002
– Introductory Laboratory, Mechanics and E&M	180 students	SMU	Spring 2002
– Astronomy Laboratory	20 students	SMU	Spring 2002
– Introductory Mechanics (Serway)	100 students	SMU	Fall 2001
– Introductory Laboratory, Mechanics and E&M	180 students	SMU	Fall 2001
– Astronomy Laboratory	20 students	SMU	Fall 2001
– Introductory Mechanics (Serway)	15 students	SMU	Summer 2001
– Introductory E&M (Serway)	15 students	SMU	Summer 2001
– Introductory Laboratory, Mechanics and E&M	30 students	SMU	Summer 2001
– Graduate E&M I (Jackson)	3 students	SMU	Spring 2001
– Introductory Laboratory, Mechanics and E&M	150 students	SMU	Spring 2001
– Astronomy Laboratory	5 students	SMU	Spring 2001
– Advanced Mechanics (Marion & Thornton)	4 students	SMU	Fall 2000
– Introductory Laboratory, Mechanics and E&M	150 students	SMU	Fall 2000
– Astronomy Laboratory	5 students	SMU	Fall 2000
– Classical Mechanics (Marion & Thornton)	12 students	SMU	Spring 2000
– Introductory Laboratory, Mechanics and E&M	120 students	SMU	Spring 2000
– Astronomy Laboratory	20 students	SMU	Spring 2000
– Introductory Laboratory, Mechanics and E&M	120 students	SMU	Fall 1999
– Astronomy Laboratory	20 students	SMU	Fall 1999
– Introductory Laboratory, Mechanics and E&M	27 students	SMU	Summer 1999
– Introductory E&M (Serway)	42 students	SMU	Spring 1999

– Introductory Laboratory, Mechanics and E&M	143 students	SMU	Spring 1999
– Astronomy Laboratory	6 students	SMU	Spring 1999
– Introductory Laboratory, Mechanics and E&M	125 students	SMU	Fall 1998
– Astronomy Laboratory	18 students	SMU	Fall 1998
– Introductory E&M (Serway)	10 students	SMU	Summer 1998
– Introductory Mechanics (Serway)	4 students	SMU	Summer 1998
– Introductory Laboratory, Mechanics and E&M	27 students	SMU	Summer 1998
– Current Topics in Theory, Graduate Seminar	3 students	SMU	Spring 1998
– Advanced Mechanics (Marion & Thornton)	4 students	SMU	Spring 1998
– Introductory Mechanics (Serway)	90 students	SMU	Spring 1998
– Classical Mechanics (Marion & Thornton)	11 students	SMU	Fall 1997
– Introductory Mechanics (Serway)	5 students	SMU	Summer 1997
– Quantum Mechanics (Cohen-Tannoudji)	1 student	SMU	Spring 1997
– Introductory Mechanics (Serway)	∼80 students	SMU	Spring 1997
– Modern Physics (Thornton & Rex)	11 students	SMU	Fall 1996
– Introductory E&M (Halliday, Resnick, & Walker)	7 students	SMU	Summer 1996
– Introductory Mechanics (Halliday, Resnick, & Walker)	5 students	SMU	Summer 1996
– Introductory Mechanics (Halliday, Resnick, & Walker)	∼30 students	SMU	Spring 1996
– Graduate E&M II (Jackson)	5 students	SMU	Spring 1996
– Graduate E&M I (Jackson)	6 students	SMU	Fall 1995
– Introductory Mechanics (Serway)	∼30 students	PSU	Summer 1995
– Introductory Mechanics (Serway)	∼1000 students	PSU	Spring 1995

Departmental and University Service

- Society of Physics Students (SPS)/ΣΠΣ Honor Society faculty advisor 1996-Present
  - SPS Outstanding Chapter Award 2019-2020
    This is the *highest* level of distinction given to chapters and is received by less than 15% of top chapters annually, with just 96 of 844 chapters so honored this year.
  - SPS Distinguished Chapter Award 2018-2019
- Member SMU Physics Department Undergraduate Committee 1995-present
- Member Advisory Committee to Evaluate Dossiers for Promotion to Senior Lecturer I, Professor Brian Zoltowski (Chemistry), Chair Fall 2024
- Member Physics Administrative Specialist I search committee 2025
- Member Physics Administrative Specialist I search committee 2024
- Member Physics Coordinator II search committee 2023
- Member Graduate Core Proficiency Exam Committee 2022
- Member Science Pillar Committee for University Curriculum, Professor Pia Vogel (Biology), Chair. 2010-2012
- SMU Guildhall Digital Gaming Workshop presenter, "Critical Thinking and Student Learning" 9 January 2004
- Center for Teaching Excellence Academy Forum Panel "Quantitative Teaching and the Mathematically Challenged" 20 November 2003
- Teaching Effectiveness Symposium break out session leader August 2003
- Creator SMU Physics undergraduate recruitment brochure 2000
- Creator and maintainer of the SMU Physics Preprints web page
  http://www.physics.smu.edu/web/research/preprints/ 2000-Present
- "A Century of Physics" poster display, Fondren Science Building halls, permanent exhibit since 1999
- Author SMU Physics introductory laboratory manuals 1999-Present
- Lecture demonstration equipment developer/organizer 1999-Present

  President's Partners Grant for developing demos June 1999
- GRE Physics subject test preparation 1998-Present
- Physics graduate student candidacy examination author and archivist 1996-Present
- Creator and maintainer of the SMU Physics Courses web page
  http://www.physics.smu.edu/∼web/courses/ 1996-Present
- Editor, Department of Energy annual report, theoretical task 1995-Present

Community Outreach

- Co-Director annual Dallas Regional Science and Engineering Fair
  Dallas, Texas Fall 2000 - 2017
- Creator of the Dallas Morning News-Toyota Regional Science and Engineering Fair web page http://DallasScienceFair.org
- Member SMU Regional Science Fair Committee January 2003 - 2017
- Member Texas State Science Fair Regional Directors' Committee 2000 - 2017
- Member TEXAN cosmic ray shower detection project linking 1400 high schools and universities via internet to collect data and foster student interest in science
- SMU QuarkNet project organizer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2009
- SMU QuarkNet project organizer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2008

- SMU QuarkNet project organizer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2007
- SMU QuarkNet project organizer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2006
- SMU QuarkNet project organizer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2005
- SMU QuarkNet project organizer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2004
- Member Skyline Advanced Science Cluster Advisory Board - the DISD high school academic science program, reference Sylvia Pickrell Fall 2003 - present
- Physics Circus - Entertaining Demonstrations in Physics - presented to QuarkNet high school teachers
  SMU 16 July 2024
- Physics Circus - Entertaining Demonstrations in Physics - presented to 150 students from Trinity Basin Prep in Oak Cliff, reference Kimberly Konkel, SMU Recruiting,
  SMU 17 December 2015
- Physics Circus - presented to North Texas MENSA, reference Karen Brack,
  Radisson Dallas East Hotel 29 November 2008
- Physics Circus - presented to SI PUENTES (Yes you can), reference Katie Josephson,
  Southern Methodist University 15 November 2008
- Physics Circus - presented at Bridges to Teaching Symposium, reference Janet Butler,
  Harold Wendell Lang Middle School in Dallas 9 August 2008
- Physics Circus presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Bahar Ravandi,
  Southern Methodist University 23 February 2008
- Physics Circus presented to Bryan Adams High School reference Mark McGaugh,
  Southern Methodist University 27 October 2007
- Physics Circus presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Kelly Aylsworth,
  Southern Methodist University 31 March 2007
- Physics Circus presented to Cambridge School of Dallas,
  Southern Methodist University 10 October 2006
- Physics Circus presented to SMU-Engineering Texas BEST Robotics Competition, reference Sandy de Britain,
  Southern Methodist University 2 December 2005
- Physics Circus - presented to North Richland Hills LDS Ward, reference K.C. Peterson, 8 October 2005
- Physics Circus - presented to the Dallas Independent School District Summer Science Camp,
  Southern Methodist University 16 June 2005
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Nathalie Raad,
  Southern Methodist University 2 April 2005
- Physics Circus - presented to the Dallas Concilio of Hispanic Service Organizations, reference Susanna Felix-Diaz 214-818-0481x105, Southern Methodist University 20 November 2004
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Nathalie Raad,
  Southern Methodist University 3 April 2004
- Physics Circus - presented to the Winston School, reference Dr. Lehman Marks,
  Southern Methodist University 22 March 2004

- Physics Circus - presented at SMU Family Weekend, Southern Methodist University 3 October 2003
- Dallas Independent School District Summer Science Camp Lecturer, SMU Summer 2003
- SMU QuarkNet project lecturer - high school students, teachers and physicists collaborating on physics research, http://www.physics.smu.edu/ olness/qnet/, http://quarknet.fnal.gov/ Summer 2003
- Physics Circus - presented to Brady Center Summer School, reference Sarah Thomas, Southern Methodist University 17 July 2003
- Physics Circus - presented to Nacogdoches High School students, reference Chaurcley Cook, Southern Methodist University 25 April 2003
- Physics Circus - presented two shows to the Dallas Science Fair winners, reference Elizabeth Liser, Southern Methodist University 23 April 2003
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Kawai Wong, Southern Methodist University 22 February 2003
- Exxon-Mobil Texas Science and Engineering Fair Regional Directors Meeting University of Texas at Arlington 1 February 2003
- Donated two hours of science/mathematics tutoring to the Dallas Area Beta Sigma Phi charity auction, reference Shirley Melton 1 February 2003
- Proposed a new physics course: The Scientific Method (Debunking Pseudoscience) to be taught every semester beginning in 2003. This course will teach students to distinguish good science from junk science such as alternative medicine, intelligent design creationism, and others. Enrollment has been at seating capacity for all three semesters.
- Member of the MAD Scientist Network, an online service that increases science literacy in the general public, http://www.madsci.org February 2001 - present
- Physics Circus - presented to the Winston School, reference Dr. Lehman Marks, Southern Methodist University 6 December 2002
- Physics Circus - presented to Frisco High School, reference Anthony Chavez, Southern Methodist University 12 Novemer 2002
- Physics Circus - presented to SMU retired faculty, reference Professor Jeff Chalk, Southern Methodist University 8 October 2002
- Exxon-Mobil Texas Science and Engineering Fair Regional Directors Meeting University of Texas at Arlington 7 September 2002
- Dallas Independent School District Summer Science Camp, SMU Summer 2002
- SMU QuarkNet project lecturer - high school students, teachers and physicists collaborating on physics research Summer 2002
- Donated two hours of science/mathematics tutoring to the Dallas Area Beta Sigma Phi charity auction, reference Shirley Melton 2 February 2002
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Julie Gonzalez, Southern Methodist University 19 January 2002
- Physics Circus - presented to El Centro College TexPREP Program, reference Pat Spikes, Southern Methodist University 29 October 2001
- Physics Circus - presented to the Winston School, reference Dr. Lehman Marks, Southern Methodist University 16 October 2001
- Physics Circus - presented to El Centro College TexPREP Program (middle school students), reference Ms. McKinney and Ms. Baker, Southern Methodist University 6 July 2001
- SMU QuarkNet project lecturer - high school students, teachers and physicists collaborating on physics research Summer 2001
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Julie Gonzalez, Southern Methodist University 24 March 2001

- Physics Circus - presented to the Winston School, reference Dr. Lehman Marks, Southern Methodist University 7 December 2000
- Physics Circus - presented to the Dallas Concilio of Hispanic Service Organizations, reference Linda Coria, Southern Methodist University 18 November 2000
- Grand Prize Judge - 43rd annual Dallas Morning News-Toyota Regional Science and Engineering Fair, Dallas, Texas 11 March 2000
- States of Matter (and Liquid Nitrogen Ice Cream) - presented to Brinker Elementary School 5th Grade, reference Eva Carrell, Plano, Texas 26 October 1999
- Member of SETI@home - the project that analyzes radio telescope data using millions of internet-connected computers in the world's largest supercomputer, http://setiathome.berkeley.edu since September 1999
- Grand Prize Judge - 42nd annual Dallas Morning News-Toyota Regional Science and Engineering Fair, Dallas, Texas 20 March 1999
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Shalini Nair and Elena Miranda, Southern Methodist University 20 February 1999
- Physics Circus - presented to El Centro College TexPREP Program (middle school students), reference Helen Pillifant, Southern Methodist University 2 July 1998
- Physics Circus - presented to Women in Science and Engineering (WISE) Mentoring Program for Dallas Area Middle School Girls, reference Cari Oliver Southern Methodist University 21 February 1998
- Physics Circus - presented to the American Association of University Women, reference Victoria Coburn, Dallas, Texas 5 October 1996
- Physics Circus - presented to North Texas PREP Program (high school students) Southern Methodist University 7 July 1996

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