Curriculum Vitae

Bradley Moser

22 Hartford Terrace, New Hartford, NY 13413

(207) 205-9918 bmoser@hamilton.edu

EDUCATION

University of Connecticut, Storrs, CT
Ph.D. in Physics, May 2010
Earned the Graduate Certificate in College Instruction
Thesis: *Controlled Excitation of the Molecular Hydrogen Ion via Intense Laser Pulses*, Advisor: George N. Gibson

University of Delaware, Newark, DE
M.S. in Physics, August 2004
Thesis: *Holographic Fabrication of Photonic Crystals with a Nd:YAG Laser*, Advisor: George H. Watson

Lebanon Valley College, Annville, PA
B.S. in Physics with a minor in Mathematics, May 2001
Graduated *Magna Cum Laude*

TEACHING EXPERIENCE

Hamilton College, Clinton, NY
Assistant Professor of Instruction, Aug. 2019 – present
- Taught the lecture course for Introductory Physics II for Pre-Meds. Taught the following laboratories: Intro Physics I and II for Physics majors, Intro Physics II for Pre-Meds, Quantum Mechanics
- Responsible for setting up demos for the department, setting-up/tearing-down lab, and lab development.

University of New England, College of Graduate and Professional Studies, Portland, ME
Online Adjunct Instructor, Jan. 2017 – present
- Online instructor for General Physics I in the Science Prerequisites for Health Professions program

Deerfield Academy, Deerfield, MA
Physics Teacher, Aug. 2018 – June 2019
- Taught AP Physics C: Mechanics, AP Physics C: Electricity & Magnetism, AP Physics 1. Coached JV girls' volleyball and JV boys' tennis. Served as an associate dorm parent.

University of New England, Biddeford, ME
Associate Lecturer, Aug. 2016 – May 2018
Assistant Lecturer, Aug. 2010 – May 2016
- Taught General Physics I & II, University Physics I & II, Medical Physics, Revolutions of 20th Century Physics, and Biophysics: Structure and Motion.
- Initiated, developed and implemented a minor program in Biophysics.
- Committee chair for the Academic Curriculum Committee and Core Curriculum Committee, 2014-2016
- Core Assessment Coordinator for the Advanced Studies component of the Core Curriculum, 2015-2016
- Interim Chair for the Department of Chemistry and Physics, 2017-2018
- Assessment coordinator for physics curriculum, 2010-2018
- Advisor to the UNE Mellow Meditators, a mindfulness meditation club; 2017-2018

University of Connecticut, Storrs, CT
Physics Lecturer, Jan. 2008 – Dec. 2008
- Taught Introductory of Physics II for pre-meds and Introductory Physics II for engineers

ACHIEVEMENTS

- Excellence in Academic Advising Award, University of New England, 2018
- Nominated (3x) for Debra J. Summers Award for Teaching Excellence, University of New England Biddeford, ME, 2011, 2012, 2018
- Outstanding Teaching Assistant of the Year, American Association of Physics Teachers, 2009
- Marshall J. Walker Outstanding Teaching Assistant Award, Physics Department, University of Connecticut, Storrs, CT, 2008

UNIVERSITY, TEACHING, AND COMMUNITY SERVICES

At Hamilton College:

- Mindfulness Advisory Group; August 2019-present

At the University of New England:

- Dept. of Chemistry and Physics **Interim Assistant Chair**; January-May 2018.
- Dept. of Chemistry and Physics Search Committee Chair, Spring 2018 and Spring 2016.
- Dept. of Chemistry and Physics Retention and Promotion Committee for three candidates; Sept. 2017.
- CAS Sabbatical Review Committee; September 2017-May 2018.
- CAS Academic Curriculum Committee; September 2013-May 2016.
    - Served as **Co-Chair**; September 2014-May 2016.
- CAS Core Curriculum Committee; January 2015-May 2016.
    - Served as **Chair** during this duration.
- CAS Core Assessment Coordinator for Advanced Studies courses; August 2015-May 2016.
- Core Working Group, an elected committee charged with proposing a new bi-college core curriculum; March-December 2014.
    - Served as **Co-Chair**; March-May 2014.
- Co-advisor to the UNE Mellow Meditators, a mindfulness meditation club; January 2017 - present
    - Additionally, led previous meditation groups on the UNE campus; January-May 2014, September 2011-May 2012.
- Assistant advisor to the UNE Math Club; August 2014 – May 2016.
- Judge for Student Research Symposium, UNE; May 2013-2016.

EDUCATION OUTREACH & RESEARCH EXPERIENCE

Physics Alive (Podcast) Nov. 2020 – present

I host a podcast called Physics Alive where I spark new life into the physics classroom. I speak with researchers and textbook authors on the frontiers of physics education, life science and health professionals who use physics on an everyday basis, designers and engineers who learn from the natural world, teachers who employ innovative and active learning styles, and students who want the most out of their education.

http://www.physicsalive.com

Physics Education Research (PER), University of New England, Biddeford, ME Aug. 2010 – May 2018

The Physics group at the University of New England converted all physics classes to studio format and Modeling Instruction for the Fall 2010 semester. Since that time, former colleague Jamie Vesenka and I worked together to improve teaching methods and derive classroom content that was relevant for students in the life sciences. Projects that have been presented at conferences include:

- Teaching Poiseuille First: Call for a Fluid Dynamics Paradigm Shift
- Fluid Dynamics of the Cardiovascular System for Introductory Physics
- A Kinesthetic Circulatory System Model for teaching fluid dynamics
- Non-traditional Modern Physics course for the life sciences
- Responding to student performance on PER validated assessments

Sabbatical Research Appt., Physics Department, Portland State University, Portland, OR Jan. 2017 - June 2017

Worked with Ralf Widenhorn, Associate Professor of Physics. He is supported by NSF IUSE grant *Multimedia Modules for Physics Instruction in a Flipped Classroom Course for Pre-Health and Life Science Majors* (DUE-1431447). General purpose of visit was to develop more curricular content for physics instruction of pre-health and life science students. The work focused on creating multimedia modules for mechanics and fluids. The sabbatical appointment presented an opportunity to gain new curriculum design and education research skills in flipped classroom pedagogy construction, including assessment design, video and interview writing and editing, and online tool development.

Additionally, the PSU group developed a suit of lab activities for pre-health and life science students through the earlier NSF TUES grant *Physics in Medicine: Active Learning Tools for Undergraduate Physics Courses Developed in a Joint Collaboration of STEM Scientists and Medical Experts.* Moser had an opportunity to learn these labs and bring them to UNE for use in the Introductory Physics course and Medical Physics course. Moser also worked with Widenhorn to develop new lab activities for fluid dynamics and ultrasound.

I-RISE Scholar, Physics Department, Seattle Pacific University, Seattle, WA Aug. 3-21, 2013

Selected from a pool of candidates to participate in the Interdisciplinary Research Institute on STEM Education. Scholars from diverse backgrounds gathered to observe, document, and reflect on an instructional setting rich enough to support many interests. The objectives for I-RISE included:

- To facilitate scholars crossing disciplinary boundaries in the acquirement skills and knowledge
- To support STEM education research scholars in looking at a shared, richly featured data set
- To immerse scholars in observing the dynamics of learner-centered, small-group activities and engaging in supported reflection on and analysis of what they observe
- To provide a brief sabbatical-like opportunity for researchers to engage deeply with the detailed work of another project, rather than only through research papers and presentations

SELECTED CONFERENCE POSTERS AND TALKS

B. Moser, *invited* talk: *Back to School: Physicists Learning the Life Sciences for IPLS*, and contributed talk: *Physics Alive: Sharing Education Insights and Research through a Podcast*, American Association of Physics Teachers Winter Meeting, Portland, OR. January 9-12, 2021.

B. Moser, talk: *Fluid Dynamics of the Cardiovascular System for Introductory Physics*, American Association of Physics Teachers Winter Meeting, San Diego, CA. January 6-9, 2018.

B. Moser, talk: *Teach Poiseuille First: Call for a Fluid Dynamics Paradigm Shift***,** American Association of Physics Teachers Summer Meeting, Sacramento, CA. July 16-20, 2016.

B. Moser and R. Macey poster: *Quantitative Exploration of the Gauss Gun and its Chemistry Connection***,** American Association of Physics Teachers Summer Meeting, Sacramento, CA. July 16-20, 2016.

J. Vesenka, **B. Moser**, and D. Grimm, poster: *Teaching Diffusion Using a Beach Ball***,** American Association of Physics Teachers Summer Meeting, Sacramento, CA. July 16-20, 2016.

B. Moser, talk: *Making Sense of Y-Intercepts in Introductory Laboratories,* American Association of Physics Teachers Winter Meeting, San Diego, CA. January 3-6, 2015.

B. Moser and J. Vesenka, poster: *Studio Physics: No Student Left Unnoticed*, New England Faculty Development Consortium Winter Meeting, Worcester, MA. Nov. 16, 2012.

J. Tenny, **B. Moser**, P. Bilotta, J. Vesenka, and M. Lawrence, poster: *Utilizing the Motion Analysis Lab to Incorporate Biological Applications into Introductory Physics*, Gordon Research Conference: The Complex Intersection of Biology and Physics, South Hadley, MA. June 8-13, 2014.

K. Barker, **B. Moser**, S. Johnson, D. Burchsted, talk: Course Portfolios: A Tool for Developing Reflective Faculty and Community, New England Faculty Development Consortium Spring Meeting, Westford, MA. May 21, 2010.

SELECTED PUBLICATIONS

B. Moser, *Teach Poiseuille First – A Call for a Paradigm Shift in Fluid Dynamics Education*, The Physics Teacher, 59, page (Fall 2021).

T. Allen, A. Chally, **B. Moser**, R. Widenhorn, *Sound Propagation, Reflection, and Its Relevance to Ultrasound Imaging*, The Physics teacher, 57, 134 (2019). doi: 10.1119/1.5092466

E. Whitmore, J. Vesenka, D. Grimm, **B. Moser**, and R. Lindell, *A kinesthetic circulatory system model for teaching fluid dynamics,* 2015 Physics Education Research Conference Proceedings, p. 359. (doi:10.1119/perc.2015.pr.085)

B. Moser and J. Vesenka, *Studio Physics: No Student Left Unnoticed*, NEFDC Exchange, Vol. 36 No. 5, Spring 2013.

B. Moser and G. N. Gibson, *Ultraslow Dissociation of the H_2^+ Molecular Ion via Two-color Ultrafast Laser Pulses*, Phys. Rev. A, Rapid Comm. 80, 041402(R) (2009).

SELECTED TALKS AND WORKSHOPS

- *Remodeling the Physics Classroom,* Presented all-day workshop for the University of Connecticut Early College Experience teacher professional development day; April 13, 2016.
- *Gravitational Waves and News from Out of this World,* Invited guest on MPBN's interactive radio program "Maine Calling"; March 1, 2016.
- *Reflections on General Education Reform*, Invited report to share lessons learned from the Academic Impressions Conference on Reforming Your General Education Curriculum, College of Arts and Sciences Faculty Assembly; March 12, 2014.
- *Modeling Instruction in Science*, New England Faculty Development Consortium Winter Meeting, Worcester, MA. November 15, 2013.

SELECTED PROFESSIONAL DEVELOPMENT

- Attended multiple American Association of Physics Teachers meetings
  - 2021 Winter Meeting, virtual — January 9-12, 2021
  - 2018 Winter Meeting, San Diego, CA — January 6-9, 2018
  - 2017 Summer Meeting, Sacramento, CA — July 16-20, 2016.
  - 2015 Winter Meeting, San Diego, CA — January 3-6, 2015
  - 2013 Summer Meeting, Portland, OR — July 13-17, 2013
  - 2012 Winter Meeting, Orlando, CA — Feb. 4-8, 2012
  - 2011 Winter Meeting, Jacksonville, FL — Jan. 9-12, 2011
- Center for the Enrichment of Teaching and Learning, Biddeford, ME — May 16, 2016
  All-day workshop: "Critical Thinking Unmasked: How to infuse It into a Disciplined -Based Course" with Dr. Linda Nilson."
- Academic Impressions Conference: Reforming Your General Education Curriculum, Chicago, IL — Jan. 29-31, 2014
- New England Faculty Development Consortium 2013 Fall Meeting, Worcester, MA — Nov. 15, 2013
  Contributed workshop: *Modeling Instruction in Science*
- Lilly International Conference on College Teaching, Miami, OH — Nov. 15-18, 2012
- Physics Modeling Workshop, Kennebunk, ME — July 26 – Aug. 6, 2010
- Northeastern Educational Research Association annual conference, Rocky Hill, CT — Oct. 21-23, 2009
- Summer Institute in College Instruction, Institute for Teaching and Learning, University of Connecticut, Storrs, CT — May 11-12, 2009
- *Problem Based Learning: From Problems to Ideas through Communication*, University of Delaware, Newark, DE — Jan. 21-23, 2004
- *Introduction to Problem Based Learning and Problem Writing*, University of Delaware, Newark, DE — Jan. 13-14, 2003

ADDITIONAL SKILLS AND INTERESTS

- meditation • yoga • hiking • podcasting • tennis • birding • snowshoeing • developing board games •

REFERENCES

- Dr. James Vesenka, Department of Chemistry & Physics
  University of New England, Biddeford, ME; jvesenka@une.edu, (207) 602-2560
- Dr. Stephen Fox, Department of Chemistry & Physics (former Chair)
  University of New England, Biddeford, ME; sfox4@une.edu, (207) 602-2317
- Dr. Ralf Widenhorn, Department of Physics
  Portland State University, Portland, OR; ralfw@pdx.edu, (503) 725-3898
- Dr. Michael Cripps, Department of English (Chair)
  University of New England, Biddeford, ME; mcripps@une.edu, (207) 602-2908
- Barbara Fortier, M.S., Director of the Science Prerequisites for Health Professions online program
  University of New England, Portland, ME; bfortier1@une.edu, (207) 221-4829
- Carolina Artacho Guerra, Physics Teacher
  Phillips Academy, Andover, MA; artacho@knoxartacho.org, (860) 287-5060
  Former Lab Manager at the University of Connecticut while I was a graduate student.