

Henry “Hank” Yochum

Department of Physics
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Education

Ph.D., Physics, Wake Forest University, Winston-Salem, NC, 1999
B.S., Physics, cum laude, College of Charleston, Charleston, SC, 1994

Professional Experience

The Citadel, Charleston, SC

2020-current Professor and Department Head, Department of Physics, The Citadel
Lead academic department with enrollment of ~800 students/year. Established strategic initiatives for the department. Developed and initiated recruiting plan to increase interest in physics, revised BS in Physics curriculum to increase coursework in applied physics, initiated assessment of student learning to align with department mission.

Sweet Briar College, Sweet Briar, VA

2018-2020 Associate Dean of Academic Affairs and Professor, The Margaret Jones Wyllie '45 Engineering Program

Responsibilities include chairing Assessment Committee, the Honors Program, implementation of new grant program to support student projects, support for travel courses, and continued engagement with engineering program growth strategies.

2017-2018 Chair of Faculty Executive Committee, Director and Professor, The Margaret Jones Wyllie '45 Engineering Program

Elected leader of the steering committee of the faculty and represented faculty with college administration. Collaborated with faculty and administration on several new college-wide initiatives, including initial design of new general education program and academic calendar change from 15 week semesters to 3 week/12 week/12 week/3 week sessions

2007-2017 Director and Professor (2012-2017), Associate Professor (2007-2012), The Margaret Jones Wyllie '45 Engineering Program

Led engineering program through two successful ABET accreditation cycles, 2011 (initial) and 2017.

Led Explore Engineering outreach efforts with more than 500 high school women attending an event, ~10% enrolling at Sweet Briar. Events stress creativity, design, and hands-on activities. Raised funds to support program from industry and private donors.

Worked closely with Wyllie family and development office to secure \$3 million gift for the Engineering Program, this was the first named academic program at the college.

Initiated Sweet Briar Engineers Week Banquet, bringing more than 200 engineering and business leaders to campus each year.

Led effort to remodel engineering lab facilities, creating new lab and teaching spaces

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2006-2007 Sabbatical at Virginia Tech University, Department of Physics, Nanostructured Optical Devices Group, and Associate Professor, Sweet Briar College

2002-2006 Chair, Department of Physics and Engineering, Assistant Professor
Associate Director of Honors Program (2003-2006), Sweet Briar College

Led the Summer Honors Research Program, an on-campus student-faculty research program that supports teams across all disciplines.

Lucent Technologies/OFS Specialty Photonics, Somerset, NJ

2001-2002 Member of Technical Staff, Optical Amplifier Development Group

Experience with fiber optic characterization techniques, computational modeling and physics of optical amplifiers (EDFAs), and optical amplifier measurement techniques.

Sweet Briar College, Sweet Briar, VA

1999-2001 Visiting Assistant Professor, Department of Physics

Selected Funded External Proposals

Awarded over \$2.5 million in externally funded projects from private foundations, state and federal government since 2002.

Research in Photonics and Condensed Matter Physics

Leake, K. (Principal), Yochum, H. M. (Co-Principal), Palmetto Academy Grant, South Carolina Space Grant, \$15,000, May 31, 2023 to August 8, 2023, Sub-millimeter sized patterning via laser modification of layer-by-layer ionic self-assembly process

Leake, K. (Principal), Yochum, H. M. (Co-Principal), Palmetto Academy Grant, South Carolina Space Grant, \$15,000, May 28, 2022 to August 4, 2022, Patterning via laser modification of layer-by-layer ionic self-assembly

Leake, K. (Principal), Yochum, H. M. (Co-Principal), Samuel Freeman Trust, \$50,000, May 24 2022, Characterization of Nanoscale Structures for Optical Device Applications

Leake, K. (Principal), Yochum, H. M. (Co-Principal), Palmetto Academy Grant, South Carolina Space Grant, \$15,000, May 28, 2021 to August 4, 2021, Novel Modified Layer-by-Layer Ionic Self-Assembly for 3D control

Engineering Program Development, Student Recruitment and Retention

Principal Investigator on Awarded NSF S-STEM grant, Attracting, Recruiting, and Supporting Students in an Innovative Engineering Program at a Women’s College, (\$563,000) with Co-PIs Scott Pierce, Bethany Brinkman, and Stephen Wassell, 2009-2014

Principal Investigator (replacement) on Awarded NSF-Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) Grant, Increasing the Representation of Women in STEM via a New Interdisciplinary Engineering Program at a Liberal Arts Women’s College, (\$406,332), with former PI Kurt Schulz and Co-PI Scott Hyman, 2005-2009

Science Education Outreach and Research

Co-Project Director on Awarded No Child Left Behind, State Council of Higher Education for Virginia (SCHEV) grant, *Developing Experts and Advocates of Inquiry Teaching*, (\$116,515), July 2010 with co-project director J. Granger

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Selected Teaching Experience at The Citadel and at Sweet Briar College

Physics Courses:

Physics by Inquiry
Introduction to Physics
Make Smart Tech (Tech and Innovation)
General Physics I & II
Introductory Physics Laboratory I & II
Intermediate Physics Lab
Electronics (with lab)
Modern Physics/Physical Chemistry
Optics
Quantum Mechanics I & II
Math Methods for Engineers & Physicists
Advanced Physics Lab

Engineering Courses:

Exploring Engineering Design (summer college course for high school students)
Statics and Strength of Materials
Electrical Circuits (with lab)
Technology and Society- A Global Perspective
Technology and Society- A Regional Perspective
Mechatronics (with lab)
Systems Modeling and Controls
Capstone Design I, II, & III

Graduate Courses for Pre-service and In-service

Teachers:

Introduction to Inquiry
Understanding Inquiry Instruction

Book

Instrumental Analysis, Rob Granger, Hank Yochum, Jill Granger, Karl Sienerth; Oxford University Press, 2016.

Selected Publications (last 10 years)

1. Three-dimensional control of layer by layer thin films via laser modification, Kaelyn Leake, Jose Martinez, Alexander Stensland and Hank Yochum, (2022) *Nanotechnology* 33 305302
2. Layer by layer thin film fabrication with in-process laser patterning, Kaelyn Leake, Alexandria Carter, and Hank Yochum, Proc. SPIE 12202, Nanoengineering: Fabrication, Properties, Optics, Thin Films, and Devices XIX, 1220203 (3 October 2022)
3. Development of an Autonomous Agricultural Vehicle to Measure Soil Respiration, Haley Finegan, Seth Jaffe, Angela Leon, Kim Lytle, Edward Morgan, Charlotte Greene, Anne Meyer, Bethany Brinkman, Stephan De Wekker, Hank Yochum, Nicola Bezzo, Gregory C. Lewin, Proceedings of 2019 IEEE Systems and Information Engineering Design Symposium
4. Evaluation of Lesson Study Based Teacher Professional Development Model for Inquiry Teaching in STEM, Jill Granger, Arlene Vinion-Dubiel, Hank Yochum, James Alouf, and Tim Loboschefski, submitted to Virginia Mathematics Teachers, June 2016
5. Tried and True: Measuring Static Electricity: A Classroom Investigation to Understand the Triboelectric Series, Science Scope, Carrie Perry, Jill Nelson Granger, Arlene Vinion-Dubiel, and Hank Yochum, National Science Teachers Association, Vol.39, No.7, 2016
6. Virginia Standards of Learning Data as a Means of Measuring Classroom Impact in a Teacher Professional Development Project, Turina Lewis, Tim Loboschefski, Arlene Vinion-Dubiel, Hank Yochum, James Alouf, & Jill N. Granger, Journal of Virginia Science Education, Volume 10 Number 1, 2015.
7. Green Colouring Electrochromic Devices of Water-Soluble Polythiophene, V. Jain, H.M. Yochum, R. Montazami, J.R. Heflin, Nanomaterials and Energy, Volume 3 Issue NME6, 2014.

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8. Long-distance collaboration, international perspective, and social responsibility through a shared interdisciplinary engineering design course, J. Prosis and H. Yochum, *Proceedings of the 2014 ASEE Annual Conference*
9. Electromagnetic Induction- An Inquiry Approach, Hank Yochum, A. Vinion-Dubiel, J. Granger, T. Maass, S. Mayhew, and L. Lindsay, Science and Children, October 13, 2013

Selected Administrative and Academic Service at The Citadel

Executive Committee Member, Near Center for Climate Studies, 2020 - present
Search Committee Member, Executive Director of Academic Affairs and Academic Services, 2021
Ad Hoc General Education Committee, appointed, 2021 – present
Campus director, SC Space Grant, appointed, 2021 - present

Selected Administrative and Academic Service at Sweet Briar College

Assessment Committee, appointed Chair, 2018-2019
Student Advancement Committee, appointed Chair, 2018-2020
Eligibility Committee, appointed, 2018-current
Faculty Executive Committee, elected Chair, 2017-2018, Budget sub-committee Chair, 2014-2015, Summer 2015
Academic Planning Committee, elected, 2011-2012
Personnel Committee, elected, 2008-2011, Chair for 2010-2011
Recruiting and Rebranding Working Group, 2015-2016
Educational Programs of the Board Committee, elected, 2007-2009, 2010-2012
First year advisor and major advisor, 2010-2011, 2013-2017, 2019-2020
Chair, Engineering faculty search committee, 2010, 2015
Engineering faculty search committee, 2004, 2005, 2007
President’s Search Committee, elected, 2008-2009
Member of Admissions Committee, appointed, 2007-2009, 2016-2017
Educational Programs of the Board Committee, elected, 2007-2009, 2010-2012
Chair, Search Committee for Faculty Grants Officer, appointed, 2003

Selected Awards and Service Outside

- Board Member, Innovate Lynchburg- the Regional Technology Council for Central Virginia, 2018-2020
- 2016 Affiliate Program in BRAID (Building, Retaining, And Inclusion for Diversity), a partnership between the Anita Borg Institute and Harvey Mudd College
- Reviewer for CUR Posters on the Hill (2014, Physics Division and 2015 Engineering Division)
- Abstract and Paper Reviewer for ASEE National Conference (2014, 2018, 2019, 2020, 2021)
- Member of team selected for 2011 “Programs that Work” for Inquiry Approaches to STEM: Professional Development from the Virginia Mathematics and Science Coalition
- Sweet Briar engineering program awarded Richmond Joint Engineers’ Council (RJEC) award for outstanding achievement in advancing the study and practice of engineering for the development of the program and the success of its first graduates
- Elected Councilor for CUR (Council on Undergraduate Research) Division of Physics and Astronomy, 2007- 2013, member of CUR finance committee 2005-2008
- Physics and Astronomy Editor and article reviewer for CUR Quarterly 2008-2013
- Selected member of Project Kaleidoscope (PKAL) Faculty for the 21st Century class of 2004

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Selected Presentations

- Informal Science for High School Students Over Video Conference, H. Yochum and K.D. Leake, AAPT Summer Meeting, Virtual (2021).
- Initial fabrication of optical waveguide structures using laser engraving and layer-by-layer self-assembly, Griselda Vasquez Ramirez, Maggie Groetsch, Kaelyn Leake and Hank Yochum, Mid-Atlantic Conference on Undergraduate Scholarship, Oct. 2019
- Automated Process for Fabricating Patterned Layer-by-Layer Structures, Rylee Runyon, Lacey Tucker, Mid-Atlantic Conference on Undergraduate Scholarship, Oct. 2018
- Design and build a low cost of an automated system to fabricate polymer thin films, Rylee Runyon, Clara Rogers, Kaelyn Leake, and Hank Yochum, Mid-Atlantic Conference on Undergraduate Scholarship, Oct. 2017
- Assessing a low cost automated system to fabricate polymer thin films, Clara Rogers, Rylee Runyon, Kaelyn Leake, and Hank Yochum, Mid-Atlantic Conference on Undergraduate Scholarship, Oct. 2017
- Developing a Technique to Fabricate Three-Dimensional Layer by Layer Polymer Structures, Katy Drews, Mid-Atlantic Conference on Undergraduate Scholarship, Oct. 2015
- Engaging women with engineering- experiences with high school and college students, TechEdge 2014, Region 2000 Technology Council, Lynchburg, VA, Oct. 2014
- Identifying Quality Inquiry-Based STEM Lessons, Jill Granger, Arlene Vinion-Dubiel, and Hank Yochum, Virginia Association of Science Teachers, Nov. 2013.
- Central Virginia collaborative for developing STEM lessons to improve learning in grades 4 and 5, J. Granger, H. Yochum, A. Vinion-Dubiel, and J. Alouf, Virginia Science Education Leadership Association Meeting, Nov. 2012.

Professional Society Memberships

American Physical Society (APS)

American Association of Physics Teachers (AAPT)