

BIOGRAPHICAL SKETCH FOR PRISCILLA W. LAWS

a. Professional Preparation

Reed College	Physics w/Mathematics Minor B.A. (1961)
Bryn Mawr College	Experimental Nuclear Physics M.A. (1963)
Bryn Mawr College	Theoretical Nuclear Physics Ph.D. (1966)

b. Appointments

Research Professor of Physics, Dickinson College, 2002-Present
Professor of Physics, Dickinson College, 1979-2002
Chairman, Department of Physics and Astronomy, 1982-83
Associate Professor of Physics, Dickinson College, 1970-79
Assistant Professor of Physics, Dickinson College, 1965-70
Senior Technical Aide, Type II Superconductor Research, Bell Laboratories, 1962 (Summer)

c. Selected Publications

- “Syringe Thermodynamics: The Many Uses of a Glass Syringe”, D. Jackson and P. Laws, *Am. J. Phys.* 74 (1), February 2006.
- “A Unit on Oscillations, Determinism and Chaos for Introductory Physics Students”, *Am. J. Phys.* 72 (4), April 2004.
- Workshop Physics Activity Guide 2nd Ed.*, Modules 1-4 w/ Appendices (John Wiley & Sons, New York, 2004), 855 pp.
- RealTime Physics Active Learning Laboratories*, Modules in: *Mechanics; Heat & Temperature; Electric Circuits; and Light & Optics* co-authored w/ D. Sokoloff and R. Thornton, (John Wiley & Sons, New York, 2nd Ed. 2004)
- Understanding Physics* (1st Ed.), K. Cummings, P. Laws, E.F. Redish, P. Cooney (John Wiley & Sons, Inc., 2004)
- Explorations in Physics: An Activity-Based Approach to Understanding the World*, D. Jackson, P. Laws, S. Franklin, (John Wiley & Sons, Inc., 2003)
- “Exploring the greenhouse effect through physics-oriented activities,” K. Browne and P. Laws, *Physics Education* 38(2), March 2003
- “Reforming Science and Mathematics Teaching,” P. Laws and N. Baxter-Hastings, *Change* 34(5), Sept/Oct 2002
- “Women’s Responses to an Activity-Based Introductory Physics Program,” *The Journal of Physics Education Research, Am. J. Phys. Supplement.* 65, July 1999
- “New approaches to science and mathematics teaching at liberal arts colleges,” *Daedalus*, 128(1), Winter 1999
- “Using Digital Video Analysis in Introductory Mechanics Projects,” P. Laws, and “Star Wars and Gravitational Constants,” R. Doherty, J. Rembert, N. Boice, P. Laws, *The Physics Teacher*, Vol. 36, May 1998
- “A New Order for Mechanics,” J. Wilson, Ed. *Proceedings of the Conference on Introductory Physics Course*, (Wiley, 1997) pp. 125-136
- “Millikan Lecture 1996: Promoting Active Learning Based on Physics Education Research in Introductory Physics Courses” *Am. J. Phys.* 65 (1), January 1997
- “Kinesthesia-1: A One-Dimensional Kinesthetic Apparatus to Teach Mechanics,” H. Pfister and P. Laws, *The Physics Teacher*, Vol. 33, April 1995

"Calculus-Based Physics Without Lectures," *Physics Today*, Vol. 44, No. 12, December 1991 *The X-Ray Information Book* (Farrar, Straus and Giroux, New York, 1983). 154 pp.

d. Synergistic Activities

1. *Curriculum Development and Text Authoring*: Authored or co-authored activity-based curricular materials for introductory physics teaching published by John Wiley & Sons. These include: *Understanding Physics* a calc-based text (w/ K.Cummings, E.F Redish & P.J. Cooney); *Workshop Physics Activity Guide* for calculus-based courses; *RealTime Physics* (w/ D. Sokoloff & R. Thornton) for introductory laboratories; *Explorations in Physics* for non-science majors (w/ D. Jackson & S. Franklin).
2. *Faculty and Teacher Training*: Between 1988-2005 taught workshops with collaborators to over 3500 undergraduate physics instructors and high school teachers in the US and in 11 foreign countries (sponsored by AAPT, NSF, FIPSE, UNESCO, NATO, the DANA Foundation and individual institutions). Workshops varied in length from 1/2-day to 3-weeks. Served as Principal Investigator for the NSF sponsored *Activity Based Physics High School Teacher Institute* program (ESI 98-19626).
3. *Computer Software and Hardware Development*: Participated in the development of computer tools that enhance the ability of introductory physics students to collect, visualize, analyze, and model real data. These include the design of specifications for: (1) the *Universal Laboratory Interface* or ULI (w/R. Thornton) distributed by Vernier Software; (2) *WPTools*—an Excel Macro to facilitate graphing, fitting, and modeling of data (w/P. Cooney and G. Braught) distributed at <http://physics.dickinson.edu>; and (3) *VideoPoint*—a digital video analysis tool distributed by PASCO scientific and Vernier Software & Technology.
4. *Apparatus Development*: P. Laws has collaborated with colleagues at Dickinson College (including H. Pfister and R. Boyle) and engineers at PASCO scientific in the development and testing of new apparatus for physics teaching. This new apparatus includes: (1) using a charged bifilar pendulum bob and prod along with digital video analysis to verify Coulomb's Law; (2) using aluminum foil between the pages of a book to explore how capacitance depends on plate area and spacing; (3) a simple heat engine using a medical syringe; (4) Faraday's Law apparatus; and (5) the design of carts for kinesthetic mechanics experiments.

e. Collaborators & Other Affiliations

(i) Collaborators:

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| 1. Kerry Browne, Dickinson College Maryland | 7. Edward F. Redish, U. of |
| 2. Patrick Cooney, Millersville U | 8. David Sokoloff, U. of Oregon |
| 3. Karen Cummings, So. Connecticut State | 9. Edwin Taylor, MIT |
| 4. Scott Franklin, RIT College | 10. Robert Teese, Muskingum |
| 5. Nancy Baxter Hastings, Dickinson | 11. Ronald Thornton, Tufts U. |
| 6. David Jackson, Dickinson College | 12. Maxine Willis, Gettysburg Area HS |

(ii) Graduate Advisor: John R. Pruet, Professor Emeritus, Bryn Mawr College

(iii) Postgraduate-Scholar Sponsor: David Jackson (Dickinson College) 1995-1997; Scott Franklin (Rochester Institute of Technology) 1998-2000; Kerry Browne (Dickinson College) 2001-2004

f. Awards and Honors (Partial List)

- International Commission on Physics Education (ICPE) 2008 Medal for distinguished contributions to Physics Education with far reaching international impact
- Voted by members of the AAPT as one of the 75 most influential physics researchers or educators in the past 75 years (for AAPT's 75th anniversary in 2006)
- Elected as a Fellow of APS in 2003 for numerous contributions to physics education and the development of data collecting computer tools and methods to use them efficiently
- Recipient of AAPT's 1996 Robert A. Millikan Award for notable and creative contributions to physics teaching (silver medal and \$4,000).
- Winner of \$500 award w/ M. Luetzelschwab in the 1996 Computers in Physics Contest for Innovative Software in Physics Education for the development of the *VideoPoint*[®] digital video analysis software.
- Recipient with R. Thornton (Tufts University) of a 1993 Charles A. Dana Award for Pioneering Achievement in Education for the development of the Workshop Physics curriculum (silver medal and \$50,000).