

Richard Porter

617-373-5888 (phone)
r.porter@neu.edu (e-mail)

Education

Yale University, 1967-1971, Ph.D. (Math) Thesis directed by W.S. Massey.
Lafayette College, 1963-1967, B.S. (Math) with Honors.

Employment and Positions

Professor, Northeastern University, 1986–Present

Senior Research Fellow, the Center for Work and Learning, Northeastern University, Sept. 2003–Present

Special Assistant on Experiential Education to the Dean of the College of Arts and Sciences, Northeastern University, Sept. 2003–Present

Vice President and Dean of Cooperative Education, Northeastern University, Oct. 2001–Sept. 2003

Acting Vice President of the Division of Cooperative Education, Northeastern University, Sept. 1998–Sept. 2001

Chair, Department of Mathematics, Northeastern University, 1993–Sept. 1998

Associate Professor, Northeastern University, 1979-1986

Assistant Professor, Northeastern University, 1975-1979

Assistant Professor, Wilkes College, 1974-1975

J.D. Tamarkin Instructor, Brown University, 1971-1974

Teaching Assistant, Yale University, 1967-1971

Experience

In his roles in cooperative education, Professor Porter oversaw the departments of Cooperative Education, International Cooperative Education, and Career Services. In 2003, U.S. News & World Report ranked Northeastern University number one in the country for programs that combine classroom learning with real-world experience. In addition, Northeastern's Career Services was top ranked by Kaplan/Newsweek's "Unofficial, Insider's Guide to the 320 Most Interesting Colleges and Universities," 2003 edition.

Professor Porter has 25 years experience in mathematics research, teaching and writing. He is the author of a graduate text on Fibre Bundles, two college mathematics texts published by DC Health and Company, two HiMap modules published by the Consortium for Mathematics and its Applications, and more than 20 research papers. Professor Porter's research combines geometry, combinatorics, and analysis to obtain algorithms for the integer cohomology of nilmanifolds and invariants of links in 3-space. He has supervised Ph.D. theses in the area of link invariants. Professor Porter has given invited lectures

on his research throughout the country and Europe. He has been visiting professor at the Université des Sciences et Techniques de Lille, France and the University of Sussex England.

Professor Porter is a leader in curriculum reform. From the fall of 1989 to becoming Department Chair in 1993, Professor Porter headed the mathematics faculty group creating new text and computer lab materials for freshman calculus courses taken by students in science, engineering, and computer science. He was co-principal investigator on a grant for the Math Excel mentor Lab funded by the National Science Foundation, the Northrup Corporation, and the University. In the Excel lab students work together in small groups under the supervision of more advanced students (mentors) specially trained to help students by asking leading questions and suggesting lines of attack without giving away answers.

Professor Porter has given invited lectures on curriculum reform at national meetings of the Mathematical Association of America and at Institutes sponsored by the College Board for Advanced placement Teachers. He has taught in Northeastern University's Summer Institute for Minority High School Students. Professor Porter received funding from the National Science Foundation to direct three two-week workshops to acquaint undergraduate professors with new curricula ideas of mathematical modeling, geometry, and statistics.

Professor Porter helped develop a two quarter sequence in combinatorics and calculus for business majors. He co-authored the text for this sequence and a text for a core course (MTH 1101) in basic mathematics. Professor Porter helped develop and was the first teacher of an undergraduate course in combinatorics (MTH U433). This course is now required of all mathematics majors. He has taught graduate courses in complexity theory and algebraic topology.

Professor Porter received the University Excellence in Teaching Award in June of 1990.

Visiting Positions

Visiting Professor at the Université des Sciences et Technologies de Lille, France, 1982 and 1989

Visiting Professor at the University of Sussex, England, 1982 and 1989.

Selected Conferences and Lectures

Reflection in Action on Co-op—the Next Learning Breakthrough, 2006 CEIA Annual Conference and Cooperative Education Centennial Celebration, April 2006 (with Joe Raelin, Len Glick, Kate McLaughlin, and Jim Stellar)

The Debate on Intentional Work-Integrated Learning, World Conference on Cooperative Education, World Association of Cooperative Education, Boston, June 2005 (with M. Hill, J. Raelin, S. Setta, and J. Stellar)

A Debate on Intentional Learning, Association of American Colleges and Universities, Educating Intentional Learners: New Connections for Academic and Student Affairs,

Philadelphia, November 2004, paper available at

www.aacu.org/meetings/educating/programresources.cfm

(with Michael A. Baer, Joseph A. Raelin, Susan Setta, and James R. Stellar)

An Assessment of Intergated Learning of Cooperative and Academic Education, World Association for Cooperative Education 2004 International Symposium on Work Integrated Learning, Trollhatten, Sweden, June 2004, (presentation with M. Hil and D. Qualters).

Survey of Leading Service-Learning, Internship, and Co-op Programs: Preliminary Report, Board of Trustees, National Commission for Cooperative Education, February 2004.

Assessing Outcomes: An Institution-Wide, Research Agenda, Understanding Practice-Oriented Education, Northeastern University, April 2001 (with Mark Putnam, Neal Fogg, and Arthur Gallagher).

National Commission for Cooperative Education, winter meetings, 1999–2004

Annual Meeting of the Scottish Council for Development and Industry, March 2000 and 2001

Integer cohomology rings of nilmanifolds and Lie algebras, Special session on Cohomology of Groups and Geometric Topology, American Mathematical Society Meeting, October 1995.

Polynomial cochains on nilmanifolds, Joint Mathematics Meetings, Louisville, Kentucky, January 1990.

A spectral sequence for the integer cohomology of nilpotent groups without torsion, International Conference on Algebraic Methods in Homotopy, Université des Sciences et Techniques de Lille, France, June 19, 1989.

Freie Universitat Berlin, series of talks on Tame Homotopy and Nilmanifolds, June 8–13, 1989.

Models for nilmanifolds, International Conference on Rational Homotopy Theory, Cesky Sternberk, Czechoslovakia, May 30, 1989.

Geometry of curves in the plane via stable unfolding, University of Sussex, Colloquium lecture, May 12, 1989.

Tame DeRham theory and its applications, Conference on Algebraic Models for Homotopy, Max Planck Institut Für Mathematik, Bonn, 1986.

Refereeing

Review proposals for the National Science Foundation and the Natural Sciences and Engineering Research Council of Canada. Write reviews for the Math Reviews. Referee papers for journals including Topology, Commentarii Math Helv., and the Canadian Journal of Mathematics.

Selected Activities

Martha's Vineyard Summer Institute on Experiential Education, Program Director, 2005 and 2006

Organizing Committee for the 14th World Congress of the World Association for Cooperative Education held in June of 2005.

Organizing Committee for the Third International Conference on Practice-Oriented Education held in June of 2005.

Co-Organizer of the Mathematics Association of America, meeting of the northeast section, fall 1993.

Invited talks at the College Board Advanced Placement Institutes, A report on calculus reform (March 1990). Problems for student investigation (March 1991), Graphics Calculator Workshop (March 1992), and Combining graphics and numerical explorations with pencil and paper investigations (March 1993).

Teacher of mathematics at Northeastern's Summer Institute for Minority High School Students, summers 1987-1990.

Calculus revision at Northeastern University presented by invitation at the special session "What is happening with calculus revision?" (John Kenelly and Thomas Tucker, organizers), National Joint Meetings of the American Mathematical Society and the Mathematical Association of America, January 1989.

Conduct mathematics review sessions for the Engineer in Training Program for the Massachusetts Society of Professional Engineers and for Northeastern University's School of Continuing Education, 1983-1998.

Courses Taught

Algebraic topology, algorithms and complexity theory (graduate), discrete mathematics (for computer science majors), combinatorics (for mathematics majors), regular and honors sections of calculus, mathematics for graduate students in Information Systems and in Computer Science, mathematics for Economics and Business, and applications of algebra.

Selected Committees

Chair of the Selection Committee for the Northeastern University Practice-Oriented Education Awards, Spring 2006

International Education Task Force, 2001

Cooperative Education and Career Services Semester Transition Committee, Co-Chair, 2000-2001

Semester Transition Steering Committee, 2000-2001

Faculty Senate, 1995-2001

Faculty Senate Agenda Committee, 1997-1998

College of Arts and Sciences Experiential Education Committee, 1996-1998

Chair of the Search Committee for Dean of the College of Arts and Sciences, 1997–1998

Mathematics Publications

1. *Defining systems and the functor $DTor$* , Ph.D. Thesis, Yale Univ., 1971.
2. *An H -space with finite dimensional homology whose loop space has torsion*, Proc. Amer. Math. Soc., **37** (1973), 291–292.
3. Characteristic classes and singularities of mappings, Proc. Sympos. Pure Math., vol. 27, Amer. Math. Soc., Providence, 1975, pp. 397–402.
4. *Introduction to fibre bundles*, Lecture Notes in Pure and Applied Mathematics, vol. 31, Marcel Dekker, New York, 1977.
5. *Complétion de Lazard des groupes par des formes différentielles*, C. R. Acad. Sci. Paris, Sér. I. Math. **288** (1979), 445–447 (with B. Cenk).l).
6. *Malcev's completion of a group and differential forms*, J. Differential Geom. **15** (1980), 531–542 (with B. Cenk).l).
7. *Modèles pour la théories de l'homotopie modérée*, C. R. Acad. Sci. Paris Sér. I Math. **290** (1980), 613–615 (with B. Cenk).l).
8. *Tame homotopy*, Colecao Atas (Sociedade Brasileira de Mathematica Segundo Encontro Brasileior de Topologia) **13** (1980), 1–32 (with B. Cenk).l).
9. *Milnor's $\bar{\mu}$ invariants and Massey products*, Trans. Amer. Math. Soc. **257** (1980), 39–71.
10. *Cup- i product and higher homotopies in the DeRham complex*, Publ. Mat. Univ. Autonoma Barcelona **26** (1982), 9–29 (with B. Cenk).l).
11. *Differential forms and torsion in the fundamental group*, Adv. in MATH. **48** (1983), 189–204 (with B. Cenk).l).
12. *Lazard completion of a group and free differential algebra models over subrings of the rationals*, Topology **23** (1984), 445–464 (with B. Cenk).l).
13. *DeRham theorem with cubical forms*, Pacific J. Math. **112** (1984), 35–47 (with B. Cenk).l).
14. *Algebraic categories and the homotopy theory of some CW complexes*, Astérisque **113–114** (1984), 173–178 (with B. Cenk).l).
15. *Foundations of DeRham theory*, Lecture Notes in Mathematics, Department of Mathematics, Northeastern University, Boston, 1986, 150 pages (with B. Cenk).l).
16. *Recurrence relations—counting backwards*, HiMap module 2, Consortium for Mathematics and its Application Inc., Lexington, 1986 (with M. Cozzens).

17. *Mathematics and its applications to management, life, and social sciences with finite and discrete mathematics*, DC Heath and Co., Lexington, 1986, (with M. Cozzens).
18. *Mathematics with calculus and its application to management, life, and social sciences*, DC Heath and Co., Lexington, 1986, (with M. Cozzens).
19. *Problem solving using graphs*, HiMap module 6, Consortium for Mathematics and its Applications, Lexington, 1987 (with M. Cozzens).
20. *Cohomology of nilmanifolds*, Algebraic Topology—Rational Homotopy; Proceedings (Y. Felix ed.), Lecture Notes in Math., vol. 1318, Springer-Verlag, Berlin and New York, 1988, pp. 73–86 (with B. Cenk).
21. *L'anneau de cohomology entière d'une nilvariété*, C. R. Acad. Sci. Paris Sér. I. Math. **306** (1988) (with B. Cenk).
22. *Algorithm for the Computation of the cohomology of T-groups*, (with B. Cenk); in Algebraic Topology: Homotopy and Group Cohomology (J. Aguadé, M. Castellet, and F. R. Cohen eds.), Lecture Notes in Mathematics, vol. 1509, Springer-Verlag, Berlin and New York, 1992, pp. 79-94.
23. *A spectral sequence for polynomial cochains*, Pacific Journal of Mathematics **193** (2000), 5–29 (with B. Cenk).

Experiential Education Publications

Reflection in Action on Co-op—the Next Learning Breakthrough, Proceedings of the 2006 CEIA Annual Conference and Cooperative Education Centennial Celebration, pp. 210–216, (with Joe Raelin, Len Glick, Kate McLaughlin, and Jim Stellar)

An Assessment of Intergated Learning of Cooperative and Academic Education, Journal of Cooperative Education and Internships, **39**(1) (2005), 77–85 (with M. Hill, J. Barr, J. Carr, P. Denn, D. Qualters, and J. Raelin).