

Mathematics, Biology, and Statistics Departments
Indiana University
Bloomington, Indiana 47405

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Education

Ph.D., Mathematics, University of Virginia, May 1992.

Thesis Advisor: Loren Pitt.

Dissertation: "Escape Rates for a Conditioned 2-Dimensional Brownian Motion and Recurrence Results for Analytic Zygmund Functions with Applications."

B.A., Mathematics, Emory University, May 1986. Graduated with Highest Honors.

Honor Thesis: "Periods of Continuous and Discontinuous One Dimensional Maps."

Experience

Chair, Department of Mathematics, Indiana University, July 2014 - present

Professor, Indiana University, July 2010 - present

Primary Appointment: Department of Mathematics

Adjunct Appointments: Department of Biology and Department of Statistics

Associate Professor, Indiana University, September 2002 - June 2010

Assistant Professor, University of Oregon, September 1994 - June 2002

Dunham Jackson Assistant Professor, University of Minnesota, Sept. 1995 - June 1996

Research Assistant Professor, Purdue University, August 1992 - May 1994

Center for Talented Youth Instructor, Johns Hopkins University, Summer 1992

Graduate Instructor, University of Virginia, June 1987 - May 1992

Intern Programmer, Trust Company Bank, Summers 1983 - 1985

Grants

- NSF Grant: Statistical Problems in Phylogenetics, 2012-2016, \$200,000, sole PI
- Simons Foundation Collaboration Grant for Mathematicians, 2011-2013, \$14,000, sole PI
- NSF FIBR Grant: Causes and Consequences of Recombination, 2003-08, \$5,000,627, PI: Michael Lynch, Co-PIs: Mirian Zolan, Carla Caceres, Curtis Lively, Elizabeth Housworth
- NSF Grant: Modeling Recombination, 2003-06, \$120,143, funded in equal amounts from the Statistics Program in DMS and the Eukaryotic Genetics Program in MCB, sole PI
- NSF Interdisciplinary Grant in the Mathematical Sciences: Probability and Statistics in Ecology and Evolution, 2000-01, \$100,000, sole PI
- NSF Faculty Early Career Development Award: Isoperimetric-Type Inequalities Arising from the Study of Brownian Motion in Domains Normalized by their Inradius, 1995-97, \$51,000, sole PI

Awards

- Indiana University Faculty Colloquium for Excellence in Teaching member, 2014
- Trustees' Teaching Award, Indiana University, 2010
- Evans-Hall Lectureship Award, Emory University, 2010
- G.T. Whyburn Fellowship recipient, 1986-1987
- Phi Beta Kappa, 1985

Administration

As Chair, I oversee a department with an approximately \$11 million budget, approximately 40 tenure-stream faculty members, 9-12 lecturers, 12-15 Zorn postdoctoral scholars, and 2-8 teaching visitors each year. I supervise the efforts of an Undergraduate Director who oversees 300-400 mathematics majors and a Graduate Director who supervises approximately 120 graduate students. I supervise the scheduling of over 200 departmental courses by the Assistant to the Chair. I made improvements to the scheduling process so that, to the greatest extent possible, our postdoctoral instructors teach two sections of the same course in semesters when they teach two courses. This maximizes their time for research. I have handled 12 tenure and promotion cases in the department and a number of nominations for internal and external awards. I oversee the departmental advancement efforts, ensuring annual publication of the departmental newsletter and working with donors to the department. My accomplishments include: creative and diverse faculty recruitment; increasing the diversity of seminar and colloquium speakers in the department; creating a K-12 outreach program, Bloomington Math Circle, and a linked service learning course for our undergraduates; implementing active learning activities in a number of our general education courses; revising departmental governance documents including tenure and promotion criteria; numerous bureaucratic efficiencies including moving to a secure-print printer, using a shared computer file system for departmental administrative documents, reconfiguring staff duties for efficiency and fairness, and creating a fully online, secure departmental balloting system; and solving numerous crises as they arise calmly and efficiently. My management style is creative, reflective, and cooperative, with attention to detail but an eye for the big picture. I served on the Panel of Chairs which advised the Dean of the College on issues surrounding the fiscal contraction within the College and which served as the College's Strategic Planning Oversight Committee.

My experience outside the department includes serving on the College Tenure Committee and on the Budgetary Affairs Committee of the Bloomington Faculty Council since 2011. I served as co-Chair of the Budgetary Affairs Committee from 2015-2017, attending almost all annual meetings between the Provost and the units she manages. Additionally, I served on the campus review committee for its Responsibility Center Management budgeting system and brought a faculty and departmental chair perspective to those discussions. I also served as chair of the Mathematical Modeling subcommittee of the Campus General Education Committee when general education on the Bloomington campus was formed and was responsible for overseeing the drafting of the language, learning outcomes, and assessment of that general education requirement. I served as Parliamentarian of the Bloomington Faculty Council in 2017-18 and shepherded numerous constitutional revisions through the Council to bring the faculty constitution in line with current practice.

Research

For the past 15 years, my research has focused on an eclectic set interdisciplinary problems, mainly in biology, but also in physics and economics. With Frank Stahl, I created a mathematical model for crossover interference, which seems to describe well the biological outcome of meiosis. I proved the statistical identifiability of the theoretical version of a very popular model for phylogenetic reconstruction from sequence data, providing an elementary correction to an existing proof in the literature which contained an error that was casting doubt on whether computer software programs could be working correctly. More recently, my attention has turned towards understanding the problem of bootstrapping in phylogenetics, along with the application of wavelet analysis to economic time series data.

Publications

1. Anderson, J. M., **Elizabeth Housworth**, and L. D. Pitt. 1992. The Spectral Theory of Multiplication Operators and Recurrence Properties for Nondifferentiable Functions in the Zygmund Class Λ_a^* *Mathematika* **39**: 136–151. MR 93h:30050.
2. **Housworth, Elizabeth**. 1994. Escape Rate for 2-dimensional Brownian Motion Conditioned to be Transient with Applications to Zygmund Functions. *Transactions of the American Mathematical Society* **343**: 843–852. MR 94h:60120.
3. **Housworth, Elizabeth**. 1995. Packing Measure Analysis of Harmonic Measure. *Journal of the London Mathematical Society* **52**: 529–533. MR 96h:30043.
4. Bañuelos, Rodrigo and **Elizabeth Housworth**. 1995. An Isoperimetric-Type Inequality for Integrals of Green’s Functions. *Michigan Mathematics Journal* **42**: 603–611. MR 96j:30038.
5. DeBlassie, R. Dante, David Hobson, **Elizabeth Housworth**, and Ellen Toby. 1996. Escape Rates for Transient Reflecting Brownian Motion in Wedges and Cones. *Stochastics and Stochastic Reports* **57**: 199–211. MR 98c:60103.
6. Bañuelos, Rodrigo, Tom Carroll, and **Elizabeth Housworth**. 1998. Inradius and Integral Means for Green’s Functions and Conformal Mappings. *Proceedings of the American Mathematical Society* **126**: 577–585. MR 98g:30016.
7. **Housworth, Elizabeth** and Qi-Man Shao. 2000. On Central Limit Theorems for Shrunk Random Variables. *Proceedings of the American Mathematical Society* **128**: 261–7267. MR 2000c:60021.
8. **Housworth, Elizabeth A.**, Jason Mezey, James Cheverud, and Gunter Wagner. 2001. The Test Distribution of Modularity Statistics: A Correction and a Clarification. *Genetics* **158**: 1381.
9. **Housworth, Elizabeth A.** and Emilia P. Martins. 2001. Random Sampling of Constrained Phylogenies: Conducting Phylogenetic Analyses When the Phylogeny is Partially Known. *Systematic Biology* **50**: 628–639.
10. Martins, Emilia P., Jose Alexandre F. Diniz-Filho, and **Elizabeth A. Housworth**. 2002. Adaptive Constraints and the Phylogenetic Comparative Method: A Computer Simulation Test. *Evolution* **56**: 1–13.

11. Copenhaver, Greg P., **Elizabeth Housworth**, and Franklin Stahl. 2002. Crossover Interference in Arabidopsis. *Genetics* **160**: 1631–1639.
12. **Housworth, Elizabeth A.** and John Postlethwait. 2002. Measures of Synteny Conservation Between Species Pairs. *Genetics* **162**: 441–448.
13. Martins, Emilia P. and **Elizabeth A. Housworth**. 2002. Phylogeny Shape and the Phylogenetic Comparative Method. *Systematic Biology* **51**: 873–880.
14. **Housworth, Elizabeth A.**, Franklin W. Stahl. 2003. Crossover Interference in Humans. *The American Journal of Human Genetics* **73**: 188–197.
15. **Housworth, Elizabeth A.**, Emilia P. Martins, and Michael Lynch. 2004. The Phylogenetic Mixed Model. *The American Naturalist* **163**: 84–96.
16. Malkova, Anna, Johanna Swanson, Miriam German, **Elizabeth A. Housworth**, Franklin W. Stahl, and James E. Haber. 2004. Gene Conversion and Crossing-over along the 405-kb Left Arm of *Saccharomyces cerevisiae* Chromosome VII. *Genetics* **168**: 35–48.
17. Lam, Sandy, Sarah R. Horn, Sarah J. Radford, **Elizabeth A. Housworth**, Franklin W. Stahl and Gregory P. Copenhaver. 2005. Crossover Interference on NOR bearing Chromosomes in Arabidopsis. *Genetics* **170**: 807–812.
18. Viswanath, Lalitha and **Elizabeth Ann Housworth**. 2005. InterferenceAnalyzer: Tools for the Analysis and Simulation of Multilocus Genetic Data. *BMC Bioinformatics* **6**: 297.
19. Martins, Emilia P., Terry J. Ord, James Slaven, J. L. Wright, and **Elizabeth A. Housworth**. 2006. Individual, Sex, Seasonal, and Temporal Variation in the Amount of Sagebrush Lizard Scent-marks. *Journal of Chemical Ecology* **32**: 881–893.
20. Nakazato, Takuya, Min-Kyung Jung, **Elizabeth A. Housworth**, Loren H. Rieseberg, and Gerald J. Gastony. 2006. Genetic Map-based Analysis of Genome Structure in the Homosporous Fern, *Ceratopteris richardii*. *Genetics* **173**: 1585–1597.
21. Nakazato, Takuya, Min-Kyung Jung, **Elizabeth A. Housworth**, Loren H. Rieseberg, and Gerald J. Gastony. 2007. A Genome-wide Study of Reproductive Barriers between Allopatric Populations of a Homosporous Fern, *Ceratopteris richardii*. *Genetics* **177**: 1141–1150.
22. Stahl, Franklin W. and **Elizabeth Housworth**. 2009. Methods for Analysis of Crossover Interference in *S. cerevisiae*. *Methods in Molecular Biology*. Humana Press. Scott Keeney (editor). **557**: 35–53.
23. **Housworth, Elizabeth A.** and Franklin W. Stahl. 2009. Is There Variation in Crossover Interference Levels on Individual Chromosomes from Human Males? *Genetics* **183**: 403–405.
24. Nakazato, Takuya and **Elizabeth A. Housworth**. 2011. Spatial Genetics of Wild Tomato Species: Ecological Divergence and Hybridization. *American Journal of Botany* **98**: 88–98.
25. Chai, Juanjuan and **Elizabeth A. Housworth**. 2011. On the Number of Binary Characters Needed to Recover a Phylogeny Using Maximum Parsimony. *Bulletin of Mathematical Biology* **73**: 1398–1411.

26. Chai, Juanjuan and **Elizabeth A. Housworth**. 2011. On Rogers's Proof of Identifiability for the GTR + Γ + I Model. *Systematic Biology* **60**:713–718.
27. Nakazato, Takuya, Robert A. Franklin, Burton C. Kirk, and **Elizabeth Housworth**. 2012. Population Structure, Demographic History, and Evolutionary Patterns of a Green-fruited Tomato, *Solanum Peruvianum*, Revealed by Spatial Genetics Analyses. *American Journal of Botany* **99**:1207–1216.
28. H. Yan, **E. A. Housworth**, H.O. Meyer, G. Visser, E. Weisman, and J. C. Long. 2014. Absolute Measurement of Thermal Noise in a Resonant Short-range Force Experiment. *Classical and Quantum Gravity* **31**: 205007.
29. Ottolini, Christian S., Louise J. Newnham, Antonio Capalbo, Senthilkumar A. Natesan, Hrishikesh A. Joshi, Danilo Cimadomo, Darren K. Griffin, Karen Sage, Michael C. Summers, Alan R. Thornhill, **Elizabeth Housworth**, Alex D Herbert, Laura Rienzi, Filippo M. Ubaldi, Alan H. Handyside, and Eva R. Hoffmann. 2015. Genome-wide Maps of Recombination and Chromosome Segregation in Human Oocytes and Embryos Show Selection for Maternal Recombination Rates. *Nature Genetics* **47**:727–735.
30. Fuentes, Jesulado A., **Elizabeth A. Housworth**, Ashley Weber, Emilia P. Martins. 2016. Phylogenetic ANCOVA: Estimating Changes in Evolutionary Rates as well as Relationships between Traits. *The American Naturalist* **188**:615–627.
31. Hoeksema, Jason D., James D. Bever, Sounak Chakraborty, V. Bala Chaudhary, Monique Gardes, Catherine A. Gehring, Miranda M. Hart, **Elizabeth Ann Housworth**, Wittaya Kaonongbua, John N. Klironomos, Marc Lajeunesse, James Meadow, Brook G. Milligan, Bridget J. Piculell, Anne Pringle, Megan A. Rúa, James Umbanhowar, Wolfgang Vichtbauer, Yen-Wen Wang, Gail W. T. Wilson, Peter C. Zee. 2018. Evolutionary History of Plant Hosts and Fungal Symbionts Predicts the Strength of Mycorrhizal Mutualism. *Communications Biology* **1**:216.

Invited Lectures

- Bellarmine University Women in Science, October 19, 2017
- Carleton Summer Math Program for Women, June 26, 2014
- DOOM 2013, New Zealand, February 6, 2013
- The 16th Evolutionary Biology Meeting in Marseilles, France, September 21, 2012
- SIAM Discrete Mathematics Meeting, Discrete Mathematical Biology Special Section, June 15, 2010
- SIAM Discrete Mathematics Meeting, Discrete Mathematical Biology Special Section, June 15, 2010
- Evans-Hall Lecture, Mathematics Department, Emory University, April 27, 2010
- University of Georgia Institute of Bioinformatics, Genetics, and Microbiology Joint Seminar, April 26, 2010
- Ohio State University Mathematical Bioscience Institute Seminar, April 20, 2010
- University of Kentucky Statistics Department Seminar, March 8, 2010
- Washington University Mathematics Department Colloquium, February 6, 2004
- IMA/RECOMB Satellite Workshop on Comparative Genomics, Institute for Mathematics and its Applications, University of Minnesota, October 23, 2003

- Stat Day talk, Department of Medical and Molecular Genetics, Indiana University School of Medicine, April 11, 2003
- AMS Regional Meeting, Bloomington, Indiana, Special Session on Weak Dependence in Probability and Statistics, April 4, 2003
- VIGRE Interdisciplinary Colloquium, Cornell University, March 28, 2003
- University of North Carolina Bioinformatics Seminar, January 14, 2002
- Washington University Biology Department Seminar, November 29, 2001
- Washington University Mathematics Department Colloquium, November 28, 2001
- Fred Hutchinson Cancer Research Center New Perspectives on Basic Science Seminar, November 19, 2001
- Indiana University Mathematics Colloquium, September 14, 2001
- Indiana University Ecology, Evolution, and Behavior Brown-Bag Lunch Lecture, September 11, 2001
- Oregon State University Statistics Colloquium, November 20, 2000
- South West Probability Seminar, University of Bristol, U.K., April 23, 1999
- Carleton College Summer Colloquium for Undergraduate Women, June 30, 1998
- Northwest Probability Seminar, March 1, 1997
- St. Olaf College Mathematics Colloquium, September 28, 1995
- Oregon State University Mathematics Colloquium, May 11, 1995
- AMS Regional Meeting, Chicago, Illinois, Special Session on Harmonic Analysis and Probability, March 24, 1995
- University of Wisconsin Probability Seminar, March 23, 1995
- Oregon State University Probability Seminar, February 16, 1995
- Reed College Undergraduate Talk, February 2, 1995
- AMS Regional Meeting, Richmond, Virginia, Special Session on Stochastic Processes, November 12, 1994
- University of Illinois Analysis Seminar, April 19, 1994
- University of Oregon Mathematics Colloquium, April 1, 1994
- AMS Regional Meeting, Manhattan, Kansas, Special Session on Harmonic Analysis and Probability, March 25, 1994
- Middlebury College Mathematics Colloquium, March 8, 1994
- Wabash Extramural Modern Analysis Seminar, February 5, 1994
- Michigan State Statistics Colloquium, January 27, 1994
- Texas A&M University, July 8, 1993
- Association for Women in Mathematics Workshop, January 12, 1993
- University of Louisville Mathematics Colloquium, October 23, 1992

Students Supervised

- Chen Xu, IUB Mathematics PhD Student, graduated May, 2018, co-Advisor Todd Walker
- Ruiyu Yang, IUB Mathematics PhD Student, graduated December, 2017, co-Advisor Predrag Radivojac; first position: JPMorgan Chase & Co.
- Kees McGahan, IUB Mathematics REU Student, Summer 2016
- Frederick Robinson, IUB Mathematics REU Student, Summer 2011
- Garrett Proffitt, IUB Mathematics Honors Thesis

- Juanjuan Chai, IUB Mathematics PhD Student, graduated May 2011;
first position: postdoc at NIMBioS
- Dwueng Chwuan Jhwueng, IUB Mathematics PhD Student, graduated September 2010;
first position: postdoc at NIMBioS
- John Brown, IUB Mathematics REU Student, Summer 2009
- Min-Kyung Jung, IUB Mathematics PhD Student, graduated September 2008;
first position: biostatistician at the New York College of Osteopathic Medicine
- Chris Durden, IUB Mathematics REU Student, Summer 2006
- Lalitha Viswanath, IUB Informatics Masters Student, graduated September 2005

Student Thesis Committees

- Logan Cole, Indiana University Biology Ph.D. program
- Jesualdo Fuentes Gonzales, Indiana University Biology Ph.D. program, graduated 2018
- Tala Monroe, Indiana University Astronomy Ph.D. Program, graduated 2011
- Wittaya Kaonongbua, Indiana University Biology Ph.D. Program, graduated 2011
- Kevin Croxall, Indiana University Astronomy Ph.D. Program, graduated 2009
- Cuauhciuatl Vital, Indiana University Biology Ph.D. Program, graduated 2009
- Jocelyn Holden, Indiana University Education Ph.D. Program, graduated 2009
- Jesse Crawford, Indiana University Mathematics Ph.D. Program, graduated 2008
- Saeid Yasamin, Indiana University Mathematics Ph. D. Program, graduated 2008
- Aaron Richardson, Indiana University Biology Ph.D. Program, graduated 2007
- Desiree Allen, Indiana University Biology Ph.D., graduated 2006
- Adam Timar, Indiana University Mathematics Ph.D., graduated 2006
- Darcy Hannibal, University of Oregon Anthropology Master's program
- David Smith, University of Oregon Economics Ph.D., graduated 1997

Interdisciplinary Participation

Member of the NSF sponsored Evolution, Development, and Genomics Integrative Graduate Education Research and Training faculty, 2001-2009.

Indiana University Classes

I teach courses for both the Mathematics and Biology departments. Recently, my course for Biology has been listed through the Department of Statistics.

- Finite Mathematics, Math M118 (S07, 59 students)
- Finite and Consumer Mathematics, Math V118 (S12, 30 students)
- Service Learning in Mathematics, Math X170 (also taught as Y398 and Y201) (F14, 2 students; S15, 5 students; F15 1 student)
- Calculus I, Math M211 (F05, 53 students)
- Calculus II, Math M212 (S06, 40 students)
- Honors Multivariable Calculus, Math S311 (F07, 7 students)
- Introduction to Probability and Statistics, Math M365 (F03, 35 students; F06, 11 students)

- Internship, Math Y398 (Math Circle Service Learning Course - F14, 2 students; S15, 5 students)
- Mathematical Modeling, Math M447 (F08, 34 students)
- Introduction to Probability, Honors Section, Math M463/S463 (F08, 8 students; F10, 13 students; F12, 10 students; F13, 21 students; F15, 15 students; F16, 19 students)
- Introduction to Mathematical Statistics, Math M466 (S09, 24 students)
- Advanced Statistical Techniques I, Math M467 (F02, 6 students; F03, 26 students; F04, 25 students; F06 jointly as Z620, Biostatistics, 23 students)
- Advanced Statistical Techniques II, Math M468 (S05, 8 students)
- Stochastic Processes, Math M560 (S11, 12 students)
- Probability, Math M563 (F11, 16 students)
- Probability, Math M564 (S12, 7 students)
- Advanced Topics in Probability and Statistics, Math M761 (S06, 8 students)
- Computational Genetics, Biol Z620 (S03, 18 students)
- Modeling, Biol Z620 (F04, 7 students)
- Phylogenetics, Biol Z620 (F05, 15 students; F11, 16 students; F13, 5 students)
- Biostatistics, Biol Z620 (F08, 23 students; F10, 20 students; F12, 26 students)
- Biometry, Stat S481&681 (F17, 14 students)
- Reading course in Microarray Data Analysis for Min-Kyung Jung, Fall, 2004
- Reading course from Stat Labs by Nolan and Speed for Patrick O'Neill, Fall, 2004
- Reading course in The Mathematics of Sequence Alignments and BLAST Searches for Ying Ding, Spring, 2005
- Reading course in Coalecscents and Phylogenetics for Dwueng Chwuan Jhwueng and Juanjuan Chai, Spring, 2007
- Reading course in Algebraic Statistics for Dwueng Chwuan Jhwueng, Juanjuan Chai, Saeid Yasamin, and Shantia Yarahmadian, Summer, 2008
- 8-week Microbiology Rotation in Microarray Analyses for Rongye Lai, Spring, 2009
- Reading course in Bootstrapping for Guanglu Zhu, Fall, 2011
- Reading course in Networks for Guanlyu Zhu, Ruiyu Yang, and Chen Xu, Spring 2014

University of Oregon Classes

- Probabilistic Models in Biology, Biology 410/510 (W01, 9 students)
- Introduction to Methods of Probability and Statistics, Math 243 (W95, 100 students; W97, 70 students; F99, 84 students)
- Calculus I for Biology, Math 246 (F01, 33 students)
- Calculus II for Biology, Math 247 (W02, 30 students)
- Calculus III, Math 253 (F97, 25 students)
- Elementary Analysis, Math 315 (S98, 26 students; S99, 16 students)
- A reading course in Understanding Statistics for Lesa Jacobsen, Ph.D. student, Music (W00)
- Statistical Methods I, Math 425/525 (F94, 28 students; F97, 28 students; F98, 18 students)
- A reading course in Statistical Methods II (2 credits) for Martha Griffith (F98)
- Statistical Methods II, Math 426/526 (W98, 14 students; W02, 15 students)
- Multivariate Statistical Methods, Math 427/527 (S98, 7 students; S99, 6 students; S02, 6 students)

- A reading course in Multivariate Statistical Methods (Math 427/527) for Deborah Johnson, Laura Jones, Jerry Mohr, and Lee Riley, (S95)
- Mathematical Modeling, Math 455/555 (W99, 22 students)
- Introduction to Mathematical Methods of Statistics I, Math 461/561 (W95, 16 students; F96, 25 students)
- Introduction to Mathematical Methods of Statistics II, Math 462/562 (S95, 7 students; W97, 10 students)
- Mathematical Statistics I, Math 464/564 (F94, 12 students; F99, 12 students)
- A reading course in Mathematical Statistics I, Math 564, for Barbara Bull, (F 98)
- Mathematical Statistics II, Math 465/565 (W00, 8 students)
- Mathematical Statistics III, Math 466/566 (S00, 6 students)
- A reading course in Stochastic Processes (at the 500 level) for Greg Cook (W97, S97)
- A reading course in Real Analysis for Jessica Sklar (at the 600-level) (F98)
- A topics course in Probability and Analysis, Math 607 (W99, 6 students)
- Theory of Probability, Math 671 (F96, 2 students; F01, 4 students)
- Theory of Probability, Math 673 (S02, 3 students)

University of Minnesota Classes

- Introduction to Analysis I, Math 5612 (F95, 22 students)
- Introduction to Analysis II, Math 5613 (W96, 17 students)
- Introduction to Analysis III, Math 5614 (S96, 12 students)

Purdue University Classes

- Calculus and Analytic Geometry I, MA 173 (F93, 39 students)
- Calculus and Analytic Geometry II, MA 174 (S94, 31 students)
- Multivariate Calculus, MA 261 (F92 - 2 sections with 36 and 38 students)
- Differential Equations with Linear Algebra, MA 262 (S93, 40 students; S94, 42 students)
- Graduate Principles of Real Analysis, MA 598a (F93, 29 students)

Professional Service

- External review committee for the Department of Mathematics of the University of Iowa, Spring, 2019
- External review committee for the Department of Mathematics of Harvard University, April, 2017
- External reviewer for tenure cases at Stony Brook and Oregon State
- NSF Panel, March, 2013
- NSF Panel, December, 2009
- Statistical Reviewer for *The Plant Cell*, 2009-2013
- NSF Panel, June, 2008
- NSF Panel, March, 2002
- Organizer for a Probability Session at the August, 1997 Joint IMS/ASA meeting in Anaheim

- Reviewed for NSF (for both mathematics and biology grant proposals), *American Naturalist*, *Annals of Applied Probability*, *Bioinformatics*, *Bulletin of the Mathematical Biology*, *Evolution*, *Evolutionary Ecology*, *Genetics*, *Journal of Mathematical Biology*, *Mathematical Reviews*, *PLOS Genetics*, and *Systematic Biology*
- Reviewed books, manuscripts, and book proposals for Society for Industrial and Applied Mathematics, Addison-Wesley, Duxbury Press, and W. H. Freeman and Company Publishers

Indiana University Service

- Resident Fellow for the Hutton Honors College, Fall 2017-present
- Bloomington Faculty Council member, Fall 2016-Spring 2018
 - Executive Committee of the Bloomington Faculty Council, Fall 2016, 2017-18
 - Parliamentarian of the Bloomington Faculty Council, 2017-18
- Campus RCM Review Committee, Spring 2017
- College Panel of Chairs, Summer 2016-Spring 2017
- College Tenure Committee, Fall 2012-Spring 2014
- Statewide General Education Quantitative Reasoning Committee, Fall 2012
- Bloomington Faculty Council Budgetary Affairs Committee, Fall 2011-present
 - co-Chair of the Budgetary Affairs Committee, Fall, 2015-Spring, 2017
- Wells Scholars Program (reviewed 25 files), Fall 2011
- Dean's Science Research Advisory Board, Fall 2009-Spring 2010
- Committee to plan an Interdisciplinary Program in Systems Biology, Fall 2008
- College Undergraduate Education Committee, Fall 2008-Spring 2011
- Task Force on Support for Quantitative Research, 2007-2008
- Campus General Education Committee, 2006 - 2009 and
 - Chair of the Mathematical Modeling Subcommittee, 2006 - 2009
- Statistics Department Search Committee, Spring 2006 - 2008
- Statistics Department Formation Committee (Commitment to Excellence Initiative), 2005
- Chair, Postdoctoral Statistician Search, Center for Genomics and Bioinformatics, 2005
- Biocomplexity Search Committee (Commitment to Excellence Initiative), 2003-5

Mathematics Department Service

- Department Chair, 2014 - present
- Chair of the Outreach Committee, 2014 - 2015
- Lecturer's Committee, 2010 - 2012
- Internal General Education Committee, 2008-2009
- Undergraduate Mathematics Club Talks, 02/06/2008, 11/05/2008, and 12/05/2012
- Research Experiences for Undergraduates Talks, 06/22/2011, 06/12/2012, 06/28/2013, 06/09/2016
- Personnel Committee, 2014 - present
- Salaries Committee, 2006 - 2008, 2014 - present
- Chair's Advisory Committee, 2006 - 2007
- WEB pages Committee, 2007 - 2008, Fall 2009
- Library Committee, 2004 - 2005, 2012-2013

- Postdoctoral Teaching Mentor, 2004 - 2007
- Junior Faculty Teaching Mentor, 2012 - present
- Colloquium Course, Math 599 instructor, Fall 2005

Consulting

- For numerous students and colleagues on an informal basis
- For Steve and Greg Brown (sons of an emeritus mathematics department faculty member) concerning the statistical analysis of some microarray data. I facilitated a meeting between them and the Center for Genomics and Bioinformatics which resulted in a contract for that Center worth approximately \$20,000, 2007
- For Jim Harris regarding betting strategies for Roulette. This consultation led to a \$500 contribution to the IUB Undergraduate Mathematics Club, 2006
- For Daniel Donato drafting a re-analysis and re-evaluation of his work and responding to criticisms of his work by Congressman Baird, 2006
- For the environmental engineering firm Brown and Caldwell recommending statistical methodology for a study of primary clarifiers in waste water treatment facilities, 2001
- For Dr. Leland Gilson, the State of Oregon Archaeologist, creating graphical models for population growth with periodic tsunami events causing sudden die-offs, 2000
- For Dorena Tree Improvement Center, United States Forest Service, providing advice on randomizations and survival analyses, 1997-2001
- For Doss Bradford, a Ph.D. student in Education at Oregon State University, helping him with logistic regression in SAS, 1999
- For Dr. John Hunts, designing an experiment to see if laser surgery causes less bruising and swelling around the eyes in eyelid surgery than does surgery with a cold steel scalpel, 1998-9
- For Dr. D. Jackson, Sacred Heart Hospital's Fetal Diagnostic Center, concerning the prediction of Down syndrome from the ratio of fetal femur length to biparietal diameter from ultrasound pictures, 1995

Software

- InterferenceAnalyzer: <http://mypage.iu.edu/~ehouswor/InterferenceAnalyzer>
- Excel Macros for conducting interference analyses and designing experiment to assess interference models, available from my Indiana homepage: <http://mypage.iu.edu/~ehouswor/>

Public Relations

- Interviewed by the Oregonian newspaper about the Powerball Jackpot, August 24, 2001
- Interviewed by KMTR TV about the Powerball Jackpot, August 23, 2001
- Interviewed by KVAL TV about a women's network pyramid scheme, 2000
- Interviewed by KVAL TV about the Powerball Jackpot, 1998

K-12 Outreach and Community Service

- Provided home-cooked meals approximately once every 2 months for 5-75 people associated with Thriving Connections, a local group that connects leaders struggling to overcome poverty with allies in the community
- Donated Math IXL to Templeton Elementary to give students math practice, 2017-18
- Math & Science Night at McCormick's Creek Elementary School, March 14, 2014
- Discussant. Panel Forum, Physics-Astronomy-Mathematics Open House, October 26, 2013
- Math & Science Night at McCormick's Creek Elementary School, March 21, 2013
- Math & Science Night at McCormick's Creek Elementary School, March 15, 2012
- Chess Coach for The Prep School Academy in Bloomington, weekly, 2011-12

Memberships

- Institute of Mathematical Statistics
- American Statistical Association
- The Genetics Society of America
- Society for Industrial and Applied Mathematics
- Mathematical Association of America
- Association for Women in Mathematics