Chester Ivan Ismay

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Education

2013 **Ph.D. in Statistics**, Arizona State University
Advisor: Randall Eubank
Thesis: *Testing Independence of Parallel Pseudorandom Streams: Incorporating the Data's Multivariate Nature*

2008 **M.S. in Statistics** (with highest honors), Northern Arizona University
Emphasis: Actuarial Science

2006 **B.S. in Mathematics** (with honors), South Dakota School of Mines & Technology
Minor: Computer Science

Professional Appointments

Visiting Assistant Professor of Mathematics

Mathematics Department, Reed College, Portland, OR, 2016 -

Instructional Technologist for Quantitative Applications

Computing & Information Services, Reed College, Portland, OR, 2015 -

Statistical Consultant

Milliman IntelliScript, Milliman, Brookfield, WI, 2014

Business Analytics Consultant

Advanced Analytics, Promontory Growth and Innovation, LLC., Washington, DC, 2014

Tenure-Track Assistant Professor of Statistics

Department of Mathematical Sciences, Ripon College, Ripon, WI, 2013 - 2015

Excess and Surplus Actuarial Analyst

Scottsdale Insurance Company, Scottsdale, AZ, 2009-2010

Teaching Experience

Visiting Assistant Professor - Reed College

Mathematics Department, 2013-2015

- Mathematics 141 - Introduction to Probability and Statistics (1 section + 3 labs Spring 2016)

Assistant Professor - Ripon College

Department of Mathematical Sciences, 2013-2015

- MTH 120 - Elementary Statistics (2 sections Fall 2013, 2 sections Spring 2014, 1 section Fall 2014, 2 sections Spring 2015)
- MTH 220 - Data Analysis (1 section Fall 2014)
- MTH 331 - Probability (1 section Fall 2013, 1 section Fall 2014)
- MTH 390 - Undergraduate Research (2 students Fall 2014, 2 students Spring 2015)
- MTH/CSC 501 - Senior Seminar (1 student Fall 2014)

- MTH/CSC 502 - Senior Seminar (1 student Spring 2016)
- MTH 432 - Mathematical Statistics (1 section Spring 2015)
- CSC 211 - Computer Science I (1 section Spring 2014)
- CSC 212 - Computer Science II (1 section Fall 2015) [Co-taught]
- IDS 150 - Fisk: Race and Diversity in the 21st Century (1 section Fall 2014) [Co-taught]

Teaching Assistant - Arizona State University

School of Mathematical and Statistical Sciences, 2010-2012

- STP 231 - Statistics for the Biosciences (1 section Spring 2011, 1 section Spring 2012)
- STP 226 - Elements of Statistics (1 section Fall 2010, 1 section Fall 2011)

Teaching Assistant - Northern Arizona University

Department of Mathematics and Statistics, 2006-2008

- STA 270 - Applied Statistics (1 section Fall 2007, 1 section Spring 2008)
- MAT 114 - Quantitative Reasoning (1 section Fall 2006, 2 sections Spring 2007)

Instructor - Northern Arizona University

Four Corners Upward Bound, Summer 2007

- Preparation for Mathematics Portion of ACT Exam (3 sections)

Recitation Leader - South Dakota School of Mines & Technology

Department of Mathematics and Computer Science, 2003-2006

- Trigonometry (1 section Fall 2003, 1 section Spring 2004, 1 section Fall 2004, 1 section Spring 2005)
- College Algebra (1 section Fall 2005, 1 section Spring 2006)

Teaching Interests

- Applied Statistics
- Introduction to Statistics
- Data Analysis
- Business Statistics
- Probability
- Mathematical Statistics
- Statistics for the Biosciences
- Statistics in Current Events
- Statistical Computing
- Statistics in Sports

Research Interests

- Applied statistics
- Statistical computing with R and C++
- Analysis of biological/genetic data using statistical methods
- Statistics education
  - Investigating the effect of computer simulations in providing students with opportunities to construct a mature understanding of fundamental statistical ideas
  - Developing individual and group projects and in-class activities that actively engage students in developing statistical literacy
  - Evaluating the effect of inquiry-based instructional methods in statistics education
  - Supporting pre-service secondary mathematics teachers in developing an understanding of statistics that allows them to convey meaning while teaching statistics concepts
- Improving public awareness and knowledge of statistics
- Analysis of sports data using Bayesian and nonparametric methods

Publications

Manuscripts in Submission

- Ismay, C. (2015) Using Parallel Computing and Recursion to Calculate a Probability Tree from a Lottery Game. *The American Statistician*, *Statistical Computing and Graphics section*.

Manuscripts in Preparation

- Bray, A. and **Ismay, C.** Lowering the Barrier for Reproducible Research. To be submitted to the *Journal of Statistics Education*.
- McDonald, S. (undergraduate), Soich, L. (undergraduate), and **Ismay, C.** A Three-Dimensional Shading and Integration Tool Built as a Shiny Applet Using R. To be submitted to *CHANCE*.
- Messerschmidt, C. (undergraduate), Khan, M., and **Ismay, C.** Understanding Climate Change's Impact on Shifts in Arrival Times of Birds in Wisconsin. To be submitted to *BIOS*.
- Soich, L. (undergraduate) and **Ismay, C.** A Probability Distribution Viewer and Probability Calculator Applet. To be submitted to *The American Statistician*, *Teacher's Corner section*.

Book Reviews

- Book Review of The Art of Data Analysis: How to Answer Almost Any Question Using Basic Statistics. The American Statistician, May 2015, Vol. 69, No. 2.

Conference Proceedings

- McShane, J. M., Mlsna, P., Maynard, J., **Ismay, C.**, and Brown, S. (2008) How prepared mathematically are entry level engineering students? *Proceedings of the 2008 Annual Conference & Exposition of the National Society for Engineering Education*.

Published Abstracts

- Soich, L. and **Ismay, C.** (2015) A Modified Team-Based Learning Approach to a First Semester Mathematical Statistics Course. *Abstracts of Papers Presented to the American Mathematical Society*, 36(1), 334.
- Ismay, C. (2014) Increasing Communication and Problem-Solving Skills in a Liberal Arts Probability Course. *Abstracts of Papers Presented to the American Mathematical Society*, 35(1), 526.
- Ismay, C. (2013) Testing Independence of Parallel Pseudorandom Streams: Incorporating the Data's Multivariate Nature. *Abstracts of Papers Presented to the American Mathematical Society*, 34(1), 493.
- McShane, J. M., Mlsna, P., Maynard, J., **Ismay, C.**, and Brown, S. (2008) Mathematics Skills Assessment and Training in Freshman Engineering Courses. *Abstracts of Papers Presented at MathFest 2008*, 52.

Presentations

Conference Presentations

- *A Modified Team-Based Learning Approach to a First Semester Mathematical Statistics Course* (with Logan Soich). Joint Mathematics Meetings. San Antonio, TX. January 11, 2015.

- *A Smorgasbord of Ideas in Leading a Probability Course*. Project NExT Wisconsin Fall Conference. Baraboo, WI. October 4-5, 2014.
- *Teaching Introductory Statistics Using Simulation in a Flipped Classroom Environment*. Mathematical Association of America Wisconsin Section Meeting. Whitewater, WI. April 4-5, 2014.
- *Increasing Communication and Problem-Solving Skills in a Liberal Arts Probability Course*. Joint Mathematics Meetings. Baltimore, MD. January 15-18, 2014.
- *A Multivariate Extension for* `TestU01`. Joint Mathematics Meetings. San Diego, CA. January 9-12, 2013.
- *Mathematics Skills Assessment and Training in Freshman Engineering Courses* (with Maynard, J., and Brown, S.). American Society of Engineering Education. Pittsburgh, PA. June 22-25, 2008.
- *Which NFL Team is Best? Using Mathematics to Provide An Answer*. Rocky Mountain Section of the Mathematical Association of America. Mesa State College (now Colorado Mesa University), Grand Junction, CO. April 14-15, 2006.

Invited Talks

- *New Ideas in Teaching and Assessment in Introductory Statistics*. Indiana University Department of Statistics, Teaching Colloquium. Bloomington, IN. March 24, 2015.
- *Calculating Probabilities for a Lottery Game using Recursion and Parallel Computing*. Indiana University Department of Statistics, Department Colloquium. Bloomington, IN. March 23, 2015.
- *Using Parallel Computing and Recursion to Compute a Probability Tree for a Lottery Game*. University of Wisconsin - Stevens Point, Department of Mathematical Sciences Colloquium. Stevens Point, WI. January 29, 2015.
- *New Ways to Compute a Probability Tree for a Lottery Game*. Northern Arizona University Department of Mathematics and Statistics Colloquium. Flagstaff, AZ. September 30, 2014.
- *Random Numbers: Their Importance and Rules for (Almost) Creating Them*. Friday Afternoon Mathematics Undergraduate Seminar. Northern Arizona University, Flagstaff, AZ. October 19, 2012.
- *Ranking Methods: Determining the Best NFL Team Using Several Mathematical Techniques*. Math and Computer Science Colloquium. South Dakota School of Mines & Technology, Rapid City, SD. April 26, 2006.

Campus Talks

- *Practical Applications for iClickers, Google Apps, and Google Classroom*. Ripon College, Workshop. Ripon, WI. April 28, 2015.
- *New Ideas in Undergraduate Research: Developing Probability Curriculum Materials and Interactive Applets*. Ripon College, Brown Bag Lunch Series. Ripon, WI. April 16, 2015.
- *Show me the data!* TED Talks and Tea Event. Ripon College, Ripon, WI. September 11, 2014.
- *No More Strange Assumptions or Ugly Formulas: How the Introductory Statistics Curriculum Is Changing to Increase Student Enjoyment and Understanding.* Brown Bag Lunch Series. Ripon College, Ripon, WI. March 6, 2014.
- *One Way That Math, Computer Science, and Statistics Can Be Used to Predict NFL Game Outcomes*. Math and Computer Science Colloquium. Ripon College, Ripon, WI. November 15, 2013.

Honors and Awards

- Harnessing Big Data: Planning for Collaborative Courses in Data Science, Faculty Career Enhancement Grant, $5500, Associated Colleges of the Midwest, 2014-2015
- Project NExT Fellow, Mathematical Association of America and American Statistical Association, 2014-
- United States of America Department of Education Graduate Assistance in Areas of National Need Research Fellowship, Spring 2013
- Arizona State University Block Grant Research Fellowship, Summer 2012
- Northern Arizona University Master of Science Graduate With Highest Honors, 2008
- Northern Arizona University Department of Mathematics and Statistics Graduate Student Scholar of the Year, 2007-2008
- South Dakota School of Mines and Technology *Cum Laude* Graduate, 2006
- South Dakota School of Mines and Technology Mathematics Senior of the Year, 2005-2006

Non-teaching Academic Experience

Graduate Statistical Consultant - Arizona State University

School of Mathematical and Statistical Sciences, Fall 2012

Graduate Statistical Consultant - Northern Arizona University

Department of Mathematics and Statistics, Spring 2008

Teaching Assistant/Grader - Arizona State University

School of Mathematical and Statistical Sciences, 2011-2012

- STP 226 - Elements of Statistics (online) (1 section Spring 2012)
- STP 420 - Introductory Applied Statistics (1 section Fall 2011)

Research Assistant - Arizona State University

School of Mathematical and Statistical Sciences, Summer 2011, Summer 2012, Spring 2013

Data Analyst/Tutor - Northern Arizona University

Training Intuition in Math for Engineering Success (TIMES) Grant, Mathematics and Engineering Departments, 2007-2008

Laboratory Assistant - South Dakota School of Mines & Technology

Department of Computer Engineering, 2002-2003

- CENG 244 - Introduction to Digital Systems (2 sections Fall 2002, 2 sections Spring 2003)

Service

Service to Profession

- Director, Wisconsin Chapter of the American Statistical Association, 2014-2015
- Member, Project NExT Mathematical Association of America Wisconsin Chapter, 2014-2015
- Chair of Planning Committee for Spring 2015 Meeting, Mathematical Association of America Wisconsin Section
- Mentee, American Statistical Association Applied Statistics Program

Textbook Manuscript Reviews

- Kokoska, S. (2013) *Introductory Statistics: A Problem-Solving Approach*, 2nd ed. New York: W. H. Freeman.
- Bruce. P. (2013) *Stats: Data and Analytics*. New York: John Wiley & Sons, Inc.

College Service

- Academic Advisor to 9 students (1 senior, 1 junior, 3 sophomores, 4 freshmen), Ripon College
- Senior thesis advisor for Logan Soich (2014-2015), Ripon College
- Runner-up, Mr. Ripon Comedy Pageant, Ripon College
- Co-chair of Planning Committee, Ripon College Scholars' Week, Ripon College
- Co-chair of Planning Committee, Senior Scholarship Showcase, Ripon College
- Member of Planning Committee, Martin Luther King Junior Week, Ripon College
- Data Analyst, Senior Scholarship Showcase, Ripon College
- Consultant and Data Analyst, Center for Social Responsibility, Ripon College
- Case Study Judge, Hazing Prevention Week, Ripon College
- Auditor, Miss Ripon Pageant 2013, Ripon College
- Mentor, Actuarial Exam P/1 Preparation, Ripon College
- Mentor, Actuarial Exam FM/2 Preparation, Ripon College

Departmental Service

- Department Liaison to Information Technology Services, Ripon College
- Faculty Advisor, Math Club Homecoming Events Planning, Ripon College
- Co-organizer, SMURF (Statistics and Mathematics Undergraduate Research Forum), Ripon College
- Co-advisor, Math Club, Ripon College
- Colloquium Planner and Coordinator, Ripon College

Related Professional Skills

Programming Languages

- C++
- Git/GitHub
- OpenMP application programming interface
- Python
- R (including knitr/LaTeX, shiny, R Markdown, and Sweave)
- SQL
- VBA for Microsoft Excel

Mathematical/Statistical Software Packages

- JMP
- Maple
- Mathematica
- Minitab
- RStudio
- SAS
- SPSS
- Stata

Organizational Involvement

Membership

- American Statistical Association
- American Mathematical Society
- Association for Computing Machinery
- The Bernoulli Society for Mathematical Statistics and Probability
- Institute of Mathematical Statistics
- The International Association for Statistical Education
- The International Association for Statistical Computing
- Mathematical Association of America