Aaron D. Nielsen

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Contact Information

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Education

Ph.D. Applied Mathematics	University of Colorado – Denver	2018
M.S. Statistics	Colorado State University	2014
M.S. Applied Mathematics	University of Colorado – Denver	2012
M.S. Electrical Engineering	University of Colorado – Boulder	2008
B.S. Electrical Engineering and Mathematics	Colorado State University	2007
B.A. Philosophy (in progress)	Colorado State University	(2024)

Current Position

Colorado State University, Department of Statistics 2018 –
Assistant Professor

I am currently teaching and coordinating courses in statistics and mentoring graduate teaching assistants as an assistant professor.

Recent Courses Taught

Spring 2023:	STAT 315, STAT 472, STAT 451
Fall 2022:	STAT 305, STAT 472, STAT 351
Spring 2022:	STAT 315, STAT 472, STAT 342
Fall 2021:	STAT 315, STAT 472, STAT 305
Summer 2021:	STAA 556
Spring 2021:	STAT 315, STAT 472
Fall 2020:	STAT 315, STAT 472, STAT 100
Summer 2020:	STAT 315
Spring 2020:	STAT 315, STAT 472, STAT 460, STAA 574
Fall 2019:	STAT 315, STAT 472, STAR 502
Summer 2019:	STAT 315
Spring 2019:	STAT 315, STAT 201, STAT 472, STAA 460
Fall 2018:	STAT 315, STAT 201

Recent Course Development

I am also currently coordinating the creation of an undergraduate certificate in Sports Statistics and Analytics. As a part of this effort, I have developed two foundational courses for this certificate.

STAT 351: Sports Statistics and Analytics I – an introductory course in Sports Analytics that applies and extends introductory statistical methods to analyze sports data

STAT 451: Sports Statistics and Analytics II – an advanced level course in Sports Analytics that applies methods from multivariate analysis and machine learning to analyze sports data

Teaching History

Colorado State University, Department of Statistics 2012 – 2015, 2018 –

I have taught the following undergraduate and graduate courses in statistics while as a faculty member and as a graduate student. In addition, I have served as the course coordinator and managed graduate teaching assistants for STAT 201, STAT 315, and STAT 472.

Courses Taught	Semesters Taught
STAT 100: Statistical Literacy	FA20
STAT 201: General Statistics	SP19, FA18, SM15
STAT 204: Statistics for Business Students	SM14, SP14, FA13
STAT 301: Applied Statistical Methods	SP15, FA14
STAT 305: Sampling Techniques	FA22, FA21
STAT 315: Theory and Practice of Statistics	SP23, SP22, FA21, SP21, FA20, SM20, SP20, FA19, SM19, SP19, FA18
STAT 342: Statistical Data Analysis II	SP22
STAT 351: Sports Statistics and Analytics I	FA22
STAT 451: Sports Statistics and Analytics II	SP23
STAT 460: Applied Multivariate Analysis	SP20, SP19
STAT 472: Statistical Research	SP23, FA22, SP22, FA21, SP21, FA20, SP20, FA19, SP19
STAR 502: Multivariate Analysis for Researchers	FA19
STAA 556: Statistical Consulting	SM21
STAA 574: Methods in Multivariate Analysis	SP20

University of Colorado Denver, Department of Mathematics and Statistics 2015 – 2018

I taught the following undergraduate and graduate courses in mathematics and statistics while completing a Ph.D. in Applied Mathematics. In 2016, I received the Lynn Bateman Memorial Excellence in Teaching Award.

Courses Taught	Semesters Taught
MATH 1110: College Algebra	FA17
MATH 1401: Calculus I	FA16
MATH 2411: Calculus II	SP17
MATH 3191: Applied Linear Algebra	SP18
MATH 3382: Statistical Theory	SM17
MATH 3800: Probability and Statistics for Engineers	SM18, SM17, SM16, SP16, FA15
MATH 4810: Probability	SM15
MATH 4820/5320: Mathematical Statistics	SM16

Advising Experience

Graduate and Undergraduate Advisor, Colorado State University 2018 –

Advised and mentored undergraduate and graduate students while serving as a faculty member.

Graduate Advisory Committee Member

Mantautas Rimkus	Ph.D. Statistics	*(in progress)*
Shree Sowndarya S.V.	Ph.D. Chemistry	*(in progress)*
Sara Horton	M.M. Music Therapy	*(in progress)*
Aaron Lear	M.S. Mathematics	Summer 2022

Undergraduate Honor's Committee Advisor

Ellie Martinez	B.S. Statistics	*(in progress)*
Adam Kiehl	B.S. Data Science	Spring 2022
Ethan Creagar	B.S. Data Science	Spring 2022

Undergraduate Honor's Committee Member

Boston Lee	B.S. Data Science/ B.A. Philosophy	Fall 2021

Mentoring Experience

Course Coordinator, Colorado State University 2018 –

Coordinated graduate students teaching undergraduate courses and recitations and provided feedback on their teaching methods. Courses have included STAT 201, STAT 315, STAT 472

Graduate Teaching Assistant Peer Mentor, University of Colorado Denver 2015 – 2018

Mentored first and second year graduate students on mathematics education and pedagogy. Met biweekly with students, observed their classes, and offered feedback on their methods.

Undergraduate Research Mentor, University of Colorado Denver Fall 2016

Supervised and mentored two undergraduate economics majors on an independent research project analyzing faculty/course questionnaire results. This project utilized a variety of machine learning methods and the final project was presented at the graduate student seminar series.

Departmental Service

Colorado State University, Department of Statistics

Departmental Awards Committee, Member	2021 –
Newsletter Committee, Member	2021 – 2022
GTA Evaluation and Mentoring Committee, Chair	2019 – 2021

Research Interests

Sports Analytics, Sabermetrics, Statistics and Mathematics Education

Peer-Reviewed Publications

Simon, Burton, and **Nielsen, Aaron**. "Numerical Solutions and Animations of Group Selection Dynamics." *Evolutionary Ecology Research*, 14 (2012): 757-68.

Boyd, Matthew, Weller, Zachary, and **Nielsen, Aaron**. "Playing the Odds: Defensive Positioning Strategies to Minimize Batting Average in Major League Baseball." (In submission)

Nielsen, Aaron and Simon, Burton. "Fixation Times in Group-Structured Populations." (In preparation)

Industry Experience

MacAulay-Brown, Inc., Aurora, Colorado 2009 – 2012
Engineer III

I worked as a model and simulation engineer, specifically in the area of algorithm development. This algorithm development dealt with detection and estimation applications for electronic intelligence. MATLAB and C were the primary tools for this development.

In 2009, I acquired a Top Secret/Sensitive Compartmentalized Information (TS/SCI) clearance and collaborated in multiple classified programs.

Internships

Institute for Telecommunication Sciences, Boulder, Colorado May – August 2007
Engineering Intern

Developed and maintained a MATLAB graphic user interface (GUI) to process real-time wireless communication data.

UV-B Monitoring and Research Program, Fort Collins, Colorado May – August 2006
Engineering Intern

Tested and troubleshooted Ultraviolet Multifilter Rotating Shadowband Radiometers (UV-MFRSR) for use in measuring solar irradiance.

Presentations/ Talks

Dissertation defense. University of Colorado Denver.	June 2018
100^{th} Anniversary MAA Rocky Mountain Section Conference. Pueblo, Colorado.	April 2017
Statistics Research Seminar. University of Colorado Denver.	April 2017
SIAM Front Range Student Conference. Denver, Colorado.	March 2017
Graduate Student-Led Seminar. University of Colorado Denver.	December 2016

Poster Presentations

"Analyzing FCQ Results Using Advanced Data Analytics" April 2017
Research and Creative Activities Symposium. University of Colorado Denver.

"A Survey of Recent Genetic Developments in Ant Social Polymorphism" December 2015
Topics in Statistical Genetics. University of Colorado Denver.

"A Stochastic Model of Sediment Transport" (advised undergraduate statistics majors) May 2014
Undergraduate Research Symposium. Colorado State University.

"Dual Polarization Radar Signal Processing" May 2007
Engineering Senior Design Project Poster Session. Colorado State University.

Professional Development	Best Practices in Teaching at CSU: First Four Weeks course participant	Summer 2022
	Diversity, Equity, and Inclusion Foundations (CIEP 1) course participant	Fall 2021
	Graduate Teaching Assistant Peer Mentee, University of Colorado Denver	2015 – 2016
	Critical Issues in Math Education Seminar, University of Colorado Denver	2015 – 2018
Honors and Awards	Lynn Bateman Memorial Excellence in Teaching Award	2016
	CIMS Fellowship	2013
	Williams Scholarship	2012 – 2013
	GAANN Fellowship	2007 – 2008
	Claude W. Wood Scholarship	2002 – 2006
	Colorado Distinguished Scholar	2002 – 2006
	Fort Collins High School Valedictorian	2002
Security Clearances	Top Secret / Sensitive Compartmented Information (TS-SCI) clearance	2009 – 2012
	Counterintelligence (CI) polygraph	2009
Clubs	Faculty Member, CSU Statistics Book Club	2019 –
	Faculty Advisor, CSU Men's Club Soccer	2018 –
	Co-founder and Vice President, UCD Machine Learning Club	2016 – 2018