Rachel Lynn
CURRICULUM VITAE

☐ (630)297-1578 | ✉ rvlynn@purdue.edu | ⌂ www.math.purdue.edu/~rvlynn | 🔗 rvlynn

Education

PhD in Mathematics *May 2021 (Expected)*
Purdue University *West Lafayette, IN*
Thesis Advisor: Bernd Ulrich, bulrich@purdue.edu

BS in Mathematics and Actuarial Science, Summa Cum Laude *May 2013*
Olivet Nazarene University *Bourbonnais, IL*
Honors Program Research Capstone Advisor: Daniel Green, dgreen@olivet.edu

Research Interests

Commutative Algebra   Rees Algebras, Normal Ideals, Integral Closures, Coefficient Ideals

Research Experience

Graduate Student Researcher *Fall 2013–Present*
Purdue University *Advisor: Bernd Ulrich*

Undergraduate Researcher *Fall 2011–Spring 2013*
Olivet Nazarene University *Advisor: Daniel Green*
Tested the effectiveness of using predator-prey models to model competitor stock prices

Summer REU Student *Summer 2011*
Valparaiso University *Advisor: Alex Capaldi*
Studied SIR models of multistrain infectious diseases

Honors & Awards

Excellence in Teaching Award *2015*
Purdue University *Six graduate students receive this award each year*

Department of Mathematics Outstanding Graduate *2013*
Olivet Nazarene University *One mathematics major receives this award each year*

Grants

Purdue Research Foundation Grant *August 2018 – August 2019*

Purdue Research Foundation Summer Research Grant *Summers 2015, 2017, 2018*

Actuarial Experience

Exam P Passed *May 2011*
Exam FM Passed *June 2012*
AON Property and Casualty Actuarial Intern, *Chicago, IL* *Summer 2012*

Instructional Experience

Purdue University (2013 – Present)

As an instructor, I encourage active learning and formative assessment of student understanding through methods such as warmup questions, think-pair-share, group work, and full-class discussion. I have been the instructor of record for each listed course.

Mathematics for Elementary Educators I (MA 137) Instructor *Fall 2020, Spring 2020*
Course covers counting systems, operations on numbers, fractions, and number theory · Transitioned course content and objectives to asynchronous remote learning experience during COVID-19 · Developed video lessons and discussion boards which encouraged active learning and maintained communication between students · Wrote and graded quizzes · Provided input on exam writing and graded exams

Calculus I (MA 161) Online Instructor *Summer 2020*
Flipped classroom setup utilizing synchronous group work · Facilitated five 40-minute group work Zoom sessions per week · Co-wrote online exams

Mathematics for Elementary Educators II (MA 138) Instructor *Fall 2019*
Course covers algebraic functions, probability, and statistics · Updated syllabus to reflect learning objectives · Wrote and graded quizzes · Provided input on exam writing and graded exams

Applied Calculus I (MA 16010) Instructor *Spring 2018, Fall 2017*
Course covers limits, derivatives, and basic integration · Developed and presented lectures · Wrote and graded quizzes · Wrote exam questions

Calculus II IMPACT (MA 162) IMPACT Recitation Instructor *Spring 2017, Spring 2015*
Flipped classroom course · Taught two recitation sessions and facilitated 75 minute group work session each week

Calculus I IMPACT (MA 161) IMPACT Recitation Instructor *Fall 2016*
Flipped classroom course · Taught two recitation sessions and facilitated 75 minute group work session each week

Multivariate Calculus (MA 261) Instructor *Summer 2016*
Developed and presented lectures · Wrote and graded exams

Applied Calculus II (MA 16020) Instructor *Spring 2016*
Course covers the basics of integration, differential equations, multivariate calculus, and linear algebra · Developed and presented lectures

Problems in Probability (MA/STAT 250) Course Coordinator/Instructor *Fall 2015*
Course prepares students for actuarial Exam P · Revised syllabus and assignments to better reflect course learning objectives · Utilized in-class group work to improve student understanding of concepts · Wrote and graded exams

Algebra and Trigonometry I (MA 153) Instructor *Fall 2014*
Wrote and presented lectures · Wrote and graded quizzes · Created worksheets to aid comprehension

Calculus II (MA 162) Co-Instructor *Summer 2014*
Wrote and presented lectures · Wrote and graded quizzes

Calculus I (MA 161) Recitation Instructor *Spring 2014, Fall 2013*
Wrote and graded quizzes · Provided insight on homework questions

Olivet Nazarene University (2009–2012)

Math Help Room Tutor *Spring 2010 – Fall 2012*
Tutored students in courses at or below the multivariate calculus level

Undergraduate Grader *Spring 2010 – Spring 2012*
Graded for and led exam study sessions for Calculus and Linear Algebra courses

Academic Service

Association for Women in Mathematics Purdue Chapter *Fall 2014 – Present*
- President, 2018–2019 academic year
- Organize events with minority speakers
- Create social events for women in the department
- Facilitate mentoring program for prospective graduate students and current graduate students
- Collaborate with female students from other colleges and universities to foster ideas and growth

Graduate Representative *Summer 2016 – Spring 2017*
- Elected by graduate students
- Planned research day for graduate students
- Organized events for prospective and incoming students
- Oversaw social events and town halls for graduate students
- Advocated for graduate students to administrators

Calculus Committee *Spring 2018*
- Helped transition department to new online homework system for Linear Algebra and Differential Equations courses
- Critiqued problems and course material
- Communicated and collaborated with other members of committee

Math Resource Room Committee *Summer 2018 – Fall 2018*
- Successfully restructured TA office hours to better serve students and TAs
- Rearranged office hour space and created policies for students and instructors
- Made adjustments after implementation

Orientation Week Senior TA *August 2018*
- Four graduate students are selected by the department to help with orientation week each year
- Screened incoming teaching assistants to determine their teaching assignments

Student Commutative Algebra Seminar Co-Organizer *Fall 2017 – Spring 2018*
- Chose seminar topics and resources
- Organized speaker schedules
- Presented talks over seminar topics

Presentations and Papers

<u>Invited Talks</u>

Specialization of Coefficient Ideals *October 2020*
AMS Fall Eastern Meeting, Online Conference

Specialization of Integral Closure of Ideals *September 2020*
Purdue Commutative Algebra Seminar, Online Conference

Intentionality and Integral Closures: Pursuing Grace in Grad School *March 2019*
Olivet Nazarene University

Complexity of the Integral Closure of Rees Algebras *March 2019*
AMS Spring Southeastern Meeting, Auburn University

Predator Prey Models in Competitive Corporations *April 2013*
Scholar Week, Olivet Nazarene University

Contributed Talks

Rees Algebras and Normal Ideals   *April 2019*
Indiana Section of the MAA Spring Meeting, University of Indianapolis

Rees Algebras and Normal Ideals   *November 2018*
Graduate Research Day, Purdue University

The EE Generalized Principal Ideal Theorem   *April 2018*
Student Commutative Algebra Seminar, Purdue University

Minimal Reductions and Infinite Residue Fields   *December 2017*
Student Commutative Algebra Seminar, Purdue University

Powers and Formal Equidimensionality   *October 2017*
Student Commutative Algebra Seminar, Purdue University

Introduction to Integral Closure of Ideals   *August 2017*
Student Commutative Algebra Seminar, Purdue University

Resolutions of Monomial Ideals   *March 2017*
Student Commutative Algebra Seminar, Purdue University

Predator Prey Models in Competitive Corporations   *April 2013*
Illinois Section of the MAA Annual Meeting, Roosevelt University

Papers

Multistrain Infections in Metapopulations   *2015*
Sydney Garmer, Rachel Lynn, Dan Rossi, and Alex Capaldi, https://doi.org/10.30707/SPORA1.1Garmer,
Spora: A Journal of Biomathematics

Specialization of Integral Closure of Ideals   *In preparation*

Conferences Attended

Fall Eastern Meeting of the AMS   *October 2020*
Online Conference

Early Commutative Algebra Researchers   *June 2020*
Online Conference

Indiana Section of the Mathematical Association of America Fall Meeting   *October 2019*
Wabash, IN

Conference on Commutative Algebra and its Interaction with Algebraic Geometry   *June 2019*
Notre Dame, IN

Indiana Section of the Mathematical Association of America Spring Meeting *April 2019*
Indianapolis, IN

Spring Southeastern Sectional Meeting of the American Mathematical Society *March 2019*
Auburn, AL

Fall Central Sectional Meeting of the American Mathematical Society   *October 2018*
Ann Arbor, MI

Indiana Section of the Mathematical Association of America Fall Meeting   *October 2018*
Hanover, IN

Algebraic Geometry and its Wider Implications   *March 2018*
Chicago, IL

Spring Central Sectional Meeting of the American Mathematical Society   *March 2018*
Columbus, OH
A View Towards Algebraic Geometry   *May 2017*
Edgartown, MA
Algebra, Geometry, and Combinatorics Day   *October 2016*
West Lafayette, IN
Illinois Section of the Mathematical Association of America Annual Meeting   *April 2013*
Chicago, IL
Joint Mathematics Meetings   *January 2012*
Boston, MA

Professional Memberships

Association for Women in Mathematics   *2014 – Present*
American Mathematical Society   *2014 – Present*
Mathematical Association of America   *2018 – Present*