

Nicholas J. Owad

Curriculum Vitae

Department of Mathematics
Gettysburg College
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EDUCATION

Ph.D. Mathematics, University of Nebraska-Lincoln August 2016
Advisors: Mark Brittenham and Susan Hermiller

M.S. Mathematics, University of Nebraska-Lincoln May 2013

B.S. Mathematics and Physics, Kutztown University of Pennsylvania May 2010
Advisor: Anke Walz

AWARDS

MCTP Fellowship Spring 2015
Fellowship funded by the UNL Mathematics Department's *Mentoring Through Critical Transition Points* grant from the National Science Foundation.

Don Miller Outstanding GTA Award 2014-2015
An award given to experienced students who demonstrate exceptional promise as a teacher.

EMPLOYMENT

Gettysburg College
Visiting Assistant Professor Fall 2016 to present

University of Nebraska-Lincoln
Graduate Teaching Assistantship Fall 2011 - Fall 2013, Fall 2014, Fall 2015
Graduate Research Assistantship Spring 2014
Supported by NSF grant DMS-1313559, P.I. Susan Hermiller

Kutztown University of Pennsylvania
Undergraduate Teaching Assistant Fall 2009
Math Tutor Fall 2008 to Spring 2010
Assistant Coordinator of the Tutoring Center Fall 2009 to Spring 2010

Schnitz Technology
Research and Development: Viability of the production of solar panels Summer 2010

RESEARCH INTERESTS

My research is primarily in topology and geometry: knot theory and dimensional topology. Specifically, I study geometric invariants of knots such as bridge number and bridge spectrum. Diagrammatic invariants also are a significant interest and I have introduced a new invariant called the straight number of a knot and I write programs in python to assist my work. I also have interests in geometric methods in group theory, 3D modeling and printing and their applications to research and visualizations of mathematical concepts.

PUBLICATIONS

A new elementary invariant: the straight number. In preparation

Bridge spectra of cables of 2-bridge knots. Ph.D. Thesis, In preparation for submission

Immersion of Surfaces. M Brown, E. Canton, B. Egg, M. Franke, C. Giusti, J. Hardin, M. Hopkins, H. Lindo, N. Owad, J. Ruiz, K. Shultis, P. Thompson, M. Walker, M. Webb. In preparation.

Self-intersecting polygons. Undergraduate senior thesis, Kutztown University of Pennsylvania, 2010.

TALKS

Invited Talks

Kutztown University Colloquim

Musings on low dimensional topology (Invitation accepted)
Kutztown University, Kutztown, PA

Fall 2016

AMS Fall Eastern Sectional

Bridge spectra of Cables of 2-bridge knots
Bowdoin College, Brunswick, ME

September 2016

AMS Central Sectional

Recent results in bridge spectra.
North Dakota State University, Fargo, ND

April 2016

Advances in Quantum and Low-Dimensional Topology 2016

3D printing for topology
University of Iowa, Iowa City, IA

March 2016

Iowa Topology Seminar

Recent results concerning bridge spectra
University of Iowa, Iowa City, IA

March 2016

Joint Mathematics Meetings

Gaps in bridge spectra
Seattle, Washington.

January 2016

Invited Talks, continued**Knots in Washington***3-D printing and knot theory*

December 2015

Recent results concerning bridge spectra (invitation accepted)

George Washington University, Washington, D.C.

MoSAIC Conference*More about conic sections than you thought possible*

November 2015

University of Nebraska-Lincoln, Lincoln, NE

LSU Virtual Topology Seminar*Recent results concerning bridge spectra*

October 2015

Louisiana State University, Baton Rouge, LA

MathFest, MAA conference*Exploring Visualizations: An Overview of a Seminar in 3D Modeling and Printing* August 2015

Washington, D.C.

Thin Manifold Conference*Straight knots*

Summer 2014

University of Iowa, Iowa City, IA

Colloquium: A Mathematics Inquiry Learning at Kutztown - Undergraduate**Research Presentation Lecture***An Exordium of Self-Intersecting Polygons*

April 2011

Kutztown University of Pennsylvania, Kutztown, PA

MathFest, MAA conference*A preview of self-intersecting polygons*

August 2010

Pittsburgh, PA

Eastern Pennsylvania and Delaware Section of the MAA*A preview of self-intersecting polygons*

Spring 2010

Elizabethtown College, Elizabethtown, PA

Moravian College Student Mathematics Conference*A preview of self-intersecting polygons*

Spring 2010

Moravian College, Bethlehem, PA

Seminar and other talks**Northeastern High School**

Fall 2016

Types of space, Parts I and II

A talk aimed at high school students to build interest in math.

All Girls All Math

Summer 2015

What is a knot and how to color one

A summer workshop in mathematics for high school girls at UNL.

UNL Groups-Semigroups-Topology Seminar*Bridge Spectra and Bridge Number, Parts I and II*

Spring 2015

Seminar and other talks, continued

UNL Groups-Semigroups-Topology Seminar <i>Making Straight knots</i>	Fall 2014
UNL Groups-Semigroups-Topology Seminar <i>(Almost) All the ways to color knots, Parts I and II</i>	Spring 2014
UNL Graduate Student Seminar <i>What everyone should know about Knot theory</i>	Spring 2014
UNL Groups-Semigroups-Topology Seminar <i>Self-intersecting Polygons</i>	Fall 2012
UNL Mathematical Literature Seminar <i>Seifert's algorithm and flat genus</i>	Summer 2012

TEACHING EXPERIENCEProfessor, Gettysburg College

<i>MATH 111: Calculus I</i> Three sections of the standard introduction to calculus class.	Fall 2016
<i>MATH 112: Calculus II</i> Two sections of the standard calculus class.	To be taught Spring 2017
<i>MATH 225: Differential Equations</i> One section of the standard Differential Equation class.	To be taught Spring 2017

Sole Instructor, University of Nebraska-Lincoln

<i>MATH 103: College Algebra and Trigonometry</i> , Instructor A 5 day a week course that is the combination of two separate courses.	Spring 2016 and Fall 2012
<i>MATH 106: Calculus I</i> , Lecturer A course in calculus, with multiple recitations run by teaching assistants.	Fall 2015
<i>MATH 300: Mathematics Matters</i> , Instructor An undergraduate course for pre-service elementary teachers	Fall 2014
<i>MATH 102: Trigonometry</i> , Course convener and instructor As convener in Spring 2013, responsibilities included writing the common syllabus, exams, finals, and coordinating the other instructors of the course.	Fall 2013 and Spring 2013

Teaching Assistant

<i>IMMERSE</i> , Bridge program to graduate school Assisted pre-graduate students in the algebra portion of this program, which included helping with small-group work, writing exercises, grading, and guiding students through a technical research paper.	Summer 2015
<i>NebraskaMATH</i>	Summer 2012, 2013, 2014

NebraskaMATH is an NSF funded program that has a main goal of improving student achievement in mathematics by deepening the understanding of mathematics for teachers in primary, middle, and secondary education.

MATH 106: Calculus I, Recitation Instructor Fall 2011 and Summer 2013

MATH 107: Calculus II, Recitation Instructor Spring 2012

Other Teaching Experience

3D Modeling and Printing Workshop, Creator and Organizer Fall 2014 - present

A workshop that I designed and teach with the goal to introduce undergraduates, graduate students, and faculty to 3D modeling and printing, with an emphasis of how it relates to math, visualizations of mathematical concepts, and how 3D printing to assist us in the classroom.

Topology Qualifying Exam Workshop, Organizer Summer 2014

I organized, designed, and ran a two-week workshop to prepare graduate students taking the Ph.D qualifying exam in topology

Undergraduate Mentor Fall 2013 - Spring 2015

Assisted in mentoring an undergraduate student in her project to create a mural of mathematics in the undergraduate math lounge.

Actively Learning Mathematics Research Action Cluster Fall 2014

Mentored three younger graduate students who were teaching for the first time.

Mathematics Resource Center, Counselor 2011 - 2016

Graduate students work as counselors for students seeking help with math.

SERVICE

MRC Reorganization Committee, Member Spring 2016

The Math Resource Center is UNL's free department run math help center. The committee was formed to evaluate its strengths and weaknesses and supply recommendations to the department on how to improve the quality of center.

MoSAIC Conference, Local Organizer November 2015

A moving conference with the goal of introducing students, faculty, and the public to the interactions between math and art.

Graduate Student Advisory Board, Member 2014 - 2016

A committee of math graduate students who act as a liaison between the department and the graduate student body.

Groups-Semigroups-Topology Seminar, Organizer 2015 -16 Academic Year

Math Day Volunteer, Bowl Moderator 2011 - 2015

A math competition held by UNL for high school students.

Job Search for Dean of College of Arts and Sciences, Student Representative Fall 2014

Committee for selecting new trigonometry book, member Spring 2013

Mathematics Stack Exchange, member Fall 2013 - present

Reputation: 3,202, as of October, 2016, in the top 10% of all users.

PROFESSIONAL DEVELOPMENT

Preparing Future Faculty, Participant Summer, Fall 2015

A course for graduate students near graduation who plan to pursue a career in academia. The focus is on developing job search materials and to act as a guide for succeeding as a new faculty member.

Job Search Seminar, Attendee Fall 2015

A seminar for graduate students in math who plan on applying in the next two years. Ran by the department chair, we discuss the job search process and review materials we plan to submit.

Professional Development Seminar, Attendee Fall 2014

A seminar that primarily was composed of panels on different topics that will help students succeed after graduate school.

American Mathematical Society, Member 2011 - present

Mathematical Associate of America, Member 2015 - present

Association for Women in Mathematics, Member 2015 - present

COMPUTER SKILLS

Programming Languages known:(moderate knowledge) Python, (some knowledge) Javascript, C++

Mathematics application: (moderate knowledge) Mathematica, SnapPy, (some knowledge) Maple, Sage

3D Modeling and Printing Software: (Highly Proficient) Rhinoceros 3D (on Mac OS and Windows), Slic3r, XYZware, Cura (Moderately Proficient) Blender, OpenSCAD, OpenJScad