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EDUCATION

Ph.D. in Mathematics   Aug 2020
Michigan State University, East Lansing
> Dissertation title: "Projective Euler characteristic over weakly ramified Galois covers"
> Advisor: Dr. Georgois Pappas

B.S. in Mathematics   2013
State University of New York at Stony Brook, Stony Brook

B.S. in Business and Statistics, dual degree   2010
Sungkyunkwan University, Seoul

HONORS AND AWARDS

TA Award for Excellence in Teaching   2018
Department of Mathematics, Michigan State University
> Awarded to 5 out of about 100 graduate TAs in the department for high performance in teaching and contributing calculus curriculum designs.

Dissertation Completion Fellowship   2018
Department of Mathematics, Michigan State University

TEACHING

For 16 semesters of teaching at MSU, I have been involved in a wide range of college mathematics curriculums: all levels of calculus, calculus for non-engineering majors, calculus for AP students, differential equations, introduction to formal mathematical proofs, and more proto-type calculus courses using technology in education.

Every teaching history listed below shares the common duty of designing course syllabus, developing, proctoring and grading assessments such as quizzes, exams, web assignments (WebWork), holding office hours, and tutoring general students at Math Learning Center. The instructor role indicates giving lectures and taking full charge of a class, whereas the teaching assistant role indicates leading recitation sessions of multiple classes.

Survey of Calculus I   SS14, FS14
Instructor
- Single-variable calculus for **non-engineering majors**.
- Topics: limits, continuous functions, derivatives, integrals and their applications using calculators, the fundamental theorem of calculus.

Calculus I   US14

Instructor
- Single-variable calculus for engineering majors.
- Topics: limits, continuous functions, derivatives, integrals and their applications, the fundamental theorem of calculus.

Calculus II   FS15, SS19

Teaching Assistant
- Single-variable calculus for engineering majors.
- Topics: applications of the integral, methods of integration, improper integrals, polar coordinates, parametric curves, sequences and series, convergence of power series.
- Led two computer-mediated pilot lab sessions of 60 students in SS19, assisted students to run lab assignments using **MATLAB** and provided weekly feedback to course supervisors.
- The above lab sessions were observed and recorded by a Ph.D. candidate in the math education department multiple times for showing relatively better integration of technology in education compared to other pilot sessions.

Calculus III   FS13, US15, US16, FS17, US19

Instructor & Teaching Assistant
- Multi-variable calculus for engineering majors.
- Topics: vectors in space, functions of several variables, partial differentiation, multiple integrals, line and surface integrals, Green's and Stoke's theorem, Divergence theorem.
- Had high school **AP students** in FS13
- Instructor (US15, US16, US19), Teaching Assistant (FS13, FS17)

Calculus IV   SS15, SS16, SS18, US18

Instructor & Teaching Assistant
- **Differential equations** for engineering majors.
- Topics: first and second order differential equations, higher order linear equations, Laplace transformations, system of first-order linear equations, introduction to partial differential equations, Fourier series.
- Led computer-mediated pilot lab sessions in SS18, assisted students to run lab assignments using **MathStudio** visualizing solutions to differential equations.
- Participated in the **curriculum development** by providing feedbacks from the field experience every week to the course supervisors.
- TA Award for Excellence in Teaching in SS18.

Transitions   FS16, SS17

Instructor & Teaching Assistant
- Introduction to **proof-based** mathematics for mathematics majors.
- Topics: basic logic, set theory, integers, natural numbers and induction, basic number theory, real numbers, limits, sequences and series.

- Managed **Piazza** online forums for classroom discussions.
- Had weekly meetings with the course supervisor and other teaching fellows and documented the classroom experience for the **curriculum development** purpose as the course was still under development at the moment.

OTHER UNIVERSITY SERVICES AND MENTORING

Tutor at Math Learning Center   2013 - 2019
- Helped students visiting MLC learning math and solving problems by listening to their progress and providing tailored, student-focused 1-1 explanation.

Lead TA at Math Learning Center   2015
- General management to keep MLC functioning during semesters such as constantly checking tutor/student population ratio, monitoring changes in different rooms of MLC for better tutoring environment, mentoring new tutors, and occasionally helping difficult mathematical problems that the general MLC tutors are not usually suited for such as advanced topics in differential equations, proof-based mathematics, or problems from other engineering majors.
- Monitored new graduate TAs in their recitation class to assist their improvement by giving feedback and sharing opinion.
- Held the department-level open review sessions before each exam which constitute proctoring a practice exam and giving a review/Q&A session to about 200 audiences.

RESEARCH

Doctoral Researcher   2020
Department of Mathematics, Michigan State University
- Defined weakly ramified Galois cover of curves over the integers and the projective Euler characteristic of equivariant sheaves on it, and showed that such sheaves canonically exist on weakly ramified covers, generalizing the work of T. Chinburg, B. Köck, B. Erez, and E. Noether.

Industrial Mathematics Researcher   2019
Michigan State University and QED Environmental Systems
- Data analyst role in "Predictive Modeling of Shipping Weights and Cost", designing and building a shipping cost model based on the company sales history data.
- Joint project of MSU Industrial Mathematics Program and QED Environmental Systems.

NON-ACADEMIC PROFESSIONAL EXPERIENCE

Data Analyst Internship   2009
ECRA Group
- Assisted analyzing K-12 education data to find correlations in student achievement in different subjects and performance indicators for consulting local educators.

OTHER NON-ACADEMIC COMMUNITY SERVICES

Hair donations for children under cancer treatment   2008, 2013, 2018
Hi-Mo, Seoul

Military Service   2005 - 2007
Republic of Korea Air Force, Seoul

LANGUAGES

Korean: Fluent
English: Proficient

TECHNICAL SKILLS

Programming languages: Python, C++, JavaScript, MATLAB, Octave, R
Media/Visualization: HTML, Processing, SDL, Unity, DaVinci Resolve, GIMP
Other: SPSS, SAS, Windows, Mac OS, Linux