Mathematics Education Research Projects.

By Drs. Ryan and Jennifer Harrison

This past fall, Math 373 (Issues in Secondary Mathematics) was offered for the second time since being added as a component of the Comprehensive Mathematics Teaching major. A component of this course was a research project designed to give our education majors an opportunity to explore a topic of interest to develop a research/position paper. Many of these explorations have turned into presentations that are planned for next week’s CERCA events.

Brenna Hughes and Jack Marchiafava took on the issue of social justice in mathematics teaching and learning. They explored the concept of ‘tracking’, or the intentional placement of children into specific courses based on ability or performance on some assessment measure. Research findings indicated that tracking tends to disproportionately favor white, wealthy, and male characteristics over all others. Their talk explores many of the root causes of this problem, the ways in which it effects today’s society, and how we as a nation can move forward to level the playing field.

Breahan Lynch and Courtney Patri’s exploration focused on how to integrate technology into the mathematics classroom. Reviewed literature examined ‘technology-enhanced pedagogical content knowledge’ (TEPCK), and effective ways for teachers to integrate technology within their classrooms in a way that is beneficial for student learning and comprehension. Research indicated that courses (such as our own Math 451) preparing future teachers should provide knowledge about how to incorporate technology into specific mathematics topics and provide content specific technologies to be used within the classroom to help promote effective implementation of technology practices.

Cassie Sechtig and Nicole Bouzek sought to compare the current goals of the Common Core State Standards for Mathematics (CCSSM) to historical curricular changes, specifically the ‘New Math’ era movement of the 1950’s-1970’s. Their comparison demonstrated similarities that could help predict some of the challenges the CCSSM movement faces in today’s polarized social and political arenas. Their analysis suggested that if the CCSSM movement does not effectively provide professional development to support the goals of the CCSSM, it is likely that the CCSSM movement will struggle to overcome obstacles similar to those in the past that led to the rejection of the New Math.

Taylor Saunders and Auna Nelson explored how teachers influence students’ beliefs and attitudes about mathematics. The project examined why many of today’s students dislike mathematics. Some of the most commonly discussed variables in the research literature included teachers’ underlying stereotypes towards groups of students, misunderstood concepts, inconsistent teaching strategies, and relevance of content to students’ lives. Teachers’ increased awareness of these factors is an important step toward improving society’s attitude toward mathematics.

Each group is slated to give an oral presentation at CERCA on Wednesday, May 3. Brenna and Jack are presenting with two other groups of students from 9-9:50am in the Menominee Room. Breahan, Courtney, Cassie, Nicole, Taylor, and Auna are presenting in a joint session from 10-10:50am in the Menominee Room. We wish them all good luck with their talks!

Fun with Factors.

1. Find all integers $n$ such that $\frac{n}{20-n}$ is the square of an integer.

2. Suppose that $a$ and $b$ are digits, not both 9 and not both 0 and that the repeating decimal $0.ab$ is expressed as a fraction in lowest terms. How many different denominators are possible?

Math Retreat Excitement.

On Monday, May 1, 2017, the faculty, staff and students of the UWEC Department of Mathematics will celebrate the 26th Annual Mathematics Retreat.

- 8:00-12:40, HHH – Talks and presentations by UWEC students and faculty
- 2:00-3:15, CEN 1614 – Ninth annual Andrew J. Balas Lecture: Probability without Calculation by Dr. Peter Winkler, Dartmouth University.
- 3:30-4:20, CEN 1614 – Mathematics Competition!
Scholarships and Awards.

Congratulations to this year’s recipients of the following scholarships and awards designated for students pursuing math majors or minors! Thanks to the generosity of many folks, mathematics students now have several new scholarships that were awarded for the first time this year. All math majors and minors are encouraged to look at the requirements of these scholarships and submit an application next year; specific details can be found on the Math Department’s website under the Explore Opportunities menu item.

- Clara Lambrecht and Jonah Amundsen for the Don and Leatrice Mathison Scholarship (New for 2017)
- Abraham Dickenson for the Mark Stecklein Scholarship (New for 2017)
- Kalli Larson for the Shyam Chadha Memorial Scholarship (New for 2017)
- Roman Miller for the Milliman Actuarial Scholarship (New for 2017)
- Courtney Patri for the Walter M. Reid Multi-Disciplinary Scholarship (New for 2017)
- Emily Gullerud and Claire Arneson for the David and Marilyn Karlgaard Scholarship
- Amanda Zais for the Stan and Yvonne Hillestad Scholarship
- McKenzie Scanlan for the Philip Zivnuska Scholarship
- Claudia DeValk for the Marshall Wick Scholarship
- Grant Keane for the John Krajewski Memorial Scholarship
- Conner Goeben for the Lawrence and Dorothy Wahlstrom Scholarship
- Amanda Zais for the Charles B. Brown Math Education Scholarship
- Lillian Cook and Ryan Frank for the Travelers Actuarial Scholarship
- Megan Gjerde for the Outstanding Achievement in Mathematics by a Junior Student which is awarded to a student of junior standing who has exhibited outstanding academic achievement.

- Nellie Brushaber (LA), Sara DeBrabander (Ed), and Carissa Varick (AS) for the Outstanding Achievement in Mathematics by a Senior Student which is awarded to students in each emphasis who have exhibited outstanding academic achievement and leadership in mathematics related activities. The recipients will each receive a book and have their names placed on a plaque across the hall from the Mathematics Department office.

- Dr. Chris Ahrendt was the recipient of the Karlgaard Faculty Award for his many accomplishments in applied mathematics.

Class Schedule for Fall 2017.

Registration for next term is ongoing. The current offerings of upper division math courses for next semester are listed below. (The details of meeting time, instructor, etc. can be found on CampS.) Look through the list and get excited about the math courses you will be taking this coming semester!

312 - Differential Equations & Linear Algebra
313 - Digital Signal Processing
314 - Discrete Mathematics
316 - Intro to Real Analysis
324 - Linear Algebra & Matrix Theory
330 - Modern Geometry
345 - Intro to Probability and Statistics
346 - Intro to Probability
347 - Math Statistics
373 - Issues in Secondary Mathematics
380 - Research Methods
425 - Abstract Algebra I
441 - Linear Regression Analysis
443 - Experiment Design
450 - Foundations of Actuarial Science
470 - Math Models for Financial Economics

Math 313: Digital Signal Processing.

Dr. James Walker

This course focuses on Fourier series, Fourier transforms, and FFTs, and how they are used to analyze and process digital signals. We concentrate on digital audio: how to remove noise, how audio compression works, how to extract the underlying frequencies in musical sound so that the sound can be analyzed and modified. How Matlab is used in DSP will be discussed, which is especially important for students in dual-degree engineering, as well as students who will pursue other applied fields. To see some live examples of DSP, check out my Math Retreat talk: “The paradox of the Missing Fundamental,” on May 1 at 10 am in HHH 308.