

MINNESOTA STATE UNIVERSITY, MANKATO

COLLEGE OF SCIENCE, ENGINEERING & TECHNOLOGY

March Newsletter

Welcome to the first edition of the College of Science, Engineering, and Technology Newsletter! Every month we will be celebrating the accomplishments of our students, faculty, and staff within the college.

Upcoming Events

March 18

Women In STEM- Speed Networking Night 6:00-8:00 p.m.

The College of Science, Engineering, and Technology, Women's Center, and the Career Development Center will host an opportunity for student attendees to connect with local professionals in all areas of STEM. Please encourage your students to participate. All are welcome! Registration <u>cset.mnsu.edu/wis</u> or reach out to Liz Steinborn- Gourley at:elizabeth.steinborn-gourley@mnsu.edu

Creating Health Equity:

Social Justice & The Social Determinants of Health

Wednesday, March 24, 2021 8:30 AM - 4:30 PM CST Virtual Conference





March 24

Health and Biomedical Sciences Summit 8:30-4:30p.m.

The annual Health and Biomedical Science Summit, hosted by the Colleges of Allied Health and Nursing, and Social and Behavioral Sciences, will feature a keynote address along with presentations throughout the day. To register and for more information, <u>click here.</u>



March 24 Richard Schmitz Agriculture Series

Hosted by: The College of Business

3:30-5:00p.m.

Register <u>HERE!</u>

March 26

The Engineering Machine Design Contest, hosted by the Minnesota State Engineering Center of Excellence, is an opportunity for teams of 3-10 students to design and build a complex machine using everyday objects with the guidance of a coach. There are two divisions that compete, grades 5-8 (Junior Division) and grades 9-12 (Senior Division). For more information visit the website <u>here</u> or contact Joann Jaqua at: joann.jaqua@mnsu.edu





April is Research Month!

Minnesota State University Mankato will be celebrating the research accomplishments of our students and faculty. Presentations will be given throughout the month. All may attend! For a listing of CSET Presentations, click here.

Department News

Automotive & Manufacturing Engineering Technology



The Automotive Engineering Formula Racing Team (Formula SAE) will have their race this year May 5-8 in Brooklyn Michigan. Approximately 80 teams will be competing from all over the world. Formula SAE challenges students to conceive, design, fabricate and compete with small formula-style racing cars. Teams spend 9-12 months designing, building, and preparing their vehicles for competition.

Biological Sciences

Biology faculty members along with a graduate student, Cai Tao, presented virtually at the Society for Integrative and Comparative Biology which is based in Washington, DC.

The research presented included:

Tao, C.Y. and Cohen, R.E. 2021. A breeding-like transition occurs prior to changes in environmental conditions in a lizard species.

Cohen, R.E., Land, A.M., Martensen, B.F., Sharlin, D.S., and Smith, B.A. 2021. Transforming the undergraduate curriculum – Engaging first-year students in authentic research experiences.

RISEbio

Report provided by Dr. Allison Land

The second cohort of RISEbio students presented their research projects at the end of the Fall semester (Dec 2020) online! We normally would have hosted an in-person



poster session to present the research projects, but the online format (Padlet to host the posters and Zoom to present them) worked great as a way to share our knowledge with each other and other interested parties. In fact, it allowed individuals not in Mankato to attend without travelling, such as high school teachers and mentors. The RISEbio faculty are proud of the hard work students have put in on their research projects and congratulate them on a job well done!



Biochemistry, Chemistry & Geology

Report provided by Dr. John Thoemke

On February 26, three recent graduates of the department joined an alumni panel that met with this year's Chem 281 class. Abdikadir Mohamed (B.S. Chemistry, ACS; 2015) is currently a scientist in the research division at Ecolab (Eagan, MN). Hanix Daniel (B.S. Biochemistry; 2019) is a research associate in a Cornell University-affiliated laboratory (New York City). Samantha Weston (B.S. Chemistry, ACS; 2019) is the technical director for UC Laboratories (Janesville, MN). Abdi and Sam were able join in person, while Hanix joined via Zoom.

"Biochemistry and Chemistry Professional Foundations" (Chemistry 281) is a recent addition to our curriculum, addressing topics related to working as a professional in these fields, especially regarding scientific ethics, communication, and chemical safety.

The panelists addressed a wide range of questions that the Chem 281 students had submitted ahead of time; all from the perspective of their experiences in the workplace.

Computer Information Science

New Program Highlight! Health Informatics

Health Informatics is a new program that has been gaining momentum in the CIS Department. Students in this program are able to combine their passion for healthcare with data science! Health Informatics aims to study aspects of data acquisition, storage, and retrieval relating to the use of health information. There is currently an undergraduate and graduate program offered. This is a great major for students who have a passion for healthcare but are uncertain of what path they would like to go. Visit the website <u>here</u> or contact Dr. Sarah Kruse, Program Coordinator, at sarah.kruse@mnsu.edu for more information.

Construction Management

Intelligent.com recently ranked the Construction Management Program #7 out of 50 schools and universities across the nation for the best construction management programs. To learn more, <u>click here</u>.



Electrical & Computer Engineering Technology

Research Highlight Title of Research Project: Pedaling Efficiency Interface

Completed by: Electrical Engineering students, Rebecca Horak and Cole Parkins

Summary

The goal was to create a device that will instruct the amateur bicyclist when to shift their gears up or down to maintain a constant pedaling speed.

How will this make an impact?

Hopefully, this relatively inexpensive and easy-toinstall device will help people to better enjoy their recreational bike rides by teaching the user how to reduce unnecessary straining against the pedals.







Integrated Engineering

Senior Integrated Engineering student, Andres Campbell is leading a team of students who are building a launchpad soon to be used for NASA's upcoming missions to the moon. Click <u>here</u> to watch KEYC's News Feature!

Mathematics and Statistics

Faculty Feature: Dr. Iresha Premarathna Hometown: Kandy, Sri Lanka

How long have you been at MSU? Three and a half years

Courses taught: Graduate and undergraduate level statistics courses. Regression Analysis, Design and Analysis of

Experiments, Statistical Foundations of Data Science and Big Data Analytics, Concepts of Probability and Statistics, Introduction to Programming in SAS, Elementary Statistics

Who inspires you?

In my life, many people inspire me at different times. Overall, I would say my teachers and my family- my parents, husband, and sometimes, my daughters inspire me in various aspects of my life.

Hobbies?

I used to have many. But now my family is my hobby.

Words of advice for students? Take responsibility for yourself.



Mechanical and Civil Engineering

Faculty Research Highlight Dr.Basak Bektas, Civil Engineering

Title of Research: Quantifying Benefits of Bridge Maintenance – MnDOT (starts in July 2021)

Summary

There is imminent research need to quantify the impact of bridge preservation based on actual data sets for state DOTs. The proposed research will review and assess the maintenance history data collected by MnDOT, integrate it with relevant historic bridge conditions, and analyze it by incorporating relevant bridge characteristics.

How will this research make an impact?

One of the research products will be decision trees that would be used by planners, designers, bridge engineers, and public works managers to guide the selection of cost-effective bridge maintenance actions. The decision trees will include guidance on the ideal timing and frequency of these treatments, as guided by the data analyses. Research findings are anticipated to improve bridge preservation decisions in Minnesota and lead to more cost-efficient decisions.

Physics and Astronomy

Astronomy professor, Dr. Michael Rutkowski was awarded as PI ~90k\$ forCENSUS-2175: Constraining Extinction with NUV Spectroscopy of UV-bright Star-forming galaxies-via the 2175-Angstrom bump. This grant, funded by NASA/STScI is now currently supporting three students in the department identifying and classification of dust features in high redshift star-forming galaxies. Rutkowski supported two Minnesota State Mankato students and one Macalaster student in continuing research with the UVCANDELS and



the LZLCS programs PI'd by IPAC/CalTech and Williams College respectively. In 2020, these efforts resulted in multiple awards at Minnesota State Mankato and international conferences — the first time ever for Minnesota State Mankato students. Work is now ongoing in conjunction with the URC to build a first-of-its-kind public outreach component of the program via social media.

Physics undergraduate, Mohamed Zakariya will present his research work done with Dr. Analía "Yanil" Dall'Asén at the following conferences, held virtually this year:

APS (American Physical Society) March Meeting 2021, March 15-19, 2021 NCUR (National Conferences on Undergraduate Research)2021, April 12-14, 2021 MSU-Mankato URS (Undergraduate Research Symposium) 2021, April 15, 2021

Title: "Studying thermal effects of laser excitation power on carbonaceous meteorites by Raman spectroscopy".

Authors: Mohamed Zakariya, Conan Bock, Rohil Kayastha, Analía G. Dall'Asén.

The Water Resources Center

Report provided by Kendra Daby

The Water Resources Center(WRC) continues to perform long-term water monitoring projects in the region. Ben Von Korff leads our <u>Watershed Pollutant Load Monitoring Network</u> water quality sampling effort and the regional Mt. Simon groundwater monitoring. Ben is also collaborating with Bryce Hoppie and graduate student Owen Lott on a Harmful Algae Bloom (HAB) research project at Bass Lake, Faribault County. We have just started working with the City of Sleepy Eye in collaboration with Dr. Bryce Hoppie monitoring Sleepy Eye Lake in order to better understand sediment dynamics in this small watershed.

In terms of planning and policy, we continue to work on regional and statewide watershed projects. We are engaging citizens and working with conservation partners in the Le Sueur River Watershed, focusing on water storage and soil health initiatives. In order to improve information flow and connect researchers with soil health leaders, we are convening a regional network of soil health stakeholders. We are developing a Bass Lake Management Plan with Faribault SWCD and a local citizen group. As a follow-up to the <u>Water Storage Forum</u>, we are creating a virtual tour of water storage practices in the region. Kimberly Musser had the opportunity to present regional stakeholder feedback at the <u>Minnesota Ag-Urban Partnership Forum</u> and research findings at the <u>Minnesota Water Resources Conference</u>. She serves on numerous statewide and regional advisory boards and committees and helps to provide regional input on statewide program and policy development.

We are fortunate to have both undergraduate and graduate students sharing their diverse talents while collaborating on applied projects. They have been able to gain applied experience with research, data analysis, GIS mapping and modeling, water monitoring, technical writing, website, newsletter, and video production as well as watershed planning, policy development, and community engagement.

Important Dates

- March 23- Summer Registration opens
- March 24- Deadline for departments to submit scholarship decisions
- April 1- Fall registration opens
- April 14-Withdrawal deadline

Share your updates and good news!

Want to share the good news happening in your area for the April edition? Email your update by April 1st to Emily Frederick, Director of Marketing and Communications at: emily.frederick@mnsu.edu.

