



this issue

Dean's Update **P.1**

Awards & Recognition **P.2**

Interest in Science | Updates **P.3**

Research Spotlight | Open PRAIRIE **P.4**

Monthly Photo Series: Books **P.5**

Celebrating Work Anniversaries

for

July 2020

Thank you for all your hard work & dedication!

- Bruce Bleakley – 29 years
- Yang Yen – 24 years
- Stephanie Jensen - 18 years
- Melody Jewell – 17 years
- Sharon Ellens – 14 years
- Karly Ackermann – 5 years
- Nicholas Butzin – 3 years

Past Newsletters

All the CNS newsletters have been uploaded for accessibility. You can view any past issue here: <https://bit.ly/CNSnewsletters>

Updates from Dean Charlene Wolf-Hall

What great weather we have had in July. I hope you have enjoyed the sunshine.

Fall semester is fast approaching. It is certainly a complex pandemic time for planning how we can best support students, faculty, and staff and keep everyone healthy. Embrace what lessons we learn from this experience.

What a remarkable time we are in. NASA just launched the first round-trip mission to Mars. 51 years ago, we landed on the moon. Days like this make we wonder what our students will be experiencing in 10-20 years.

I hope you are enjoying these newsletters. This month we highlight the changes and proposed changes moving through for academic programs (see page 3). If you have any questions about these changes and proposals, please let Dr. Matt Miller, Associate Dean for Academics for the college know.

We are also expanding our updates on research efforts in the college. If there is more that you would like to see about research in the college, please let Dr. Radhey Kaushik, Associate Dean for Research in the college know. We are especially hoping to spark some new ideas for interdisciplinary research in the college.

Much like the NASA round-trip mission to mars, we are doing things that have not been done before. Thanks to you all for continuing your efforts to make our college adaptable, inclusive, and successful as we enter another remarkable academic year.



Science@SDState



**SOUTH DAKOTA
STATE UNIVERSITY**

College of Natural Sciences

Awards & Recognition

CENTER FOR THE ENHANCEMENT OF TEACHING AND LEARNING

The Center for the Enhancement of Teaching and Learning (CETL) recently wrapped up this summer's SDSU Course Enhancement Institute (CEI). CETL director Kevin Sackreiter wrote, "I can say that every one of these faculty members were passionate about supporting their students this fall (and always) and were highly engaged throughout the entire 11-week process. This investment in our faculty and students has already had a dynamic impact on SDSU."

Faculty from the College of Natural Sciences who participated:

- **Anne-Marie Hoskinson** (Biology & Microbiology)
- **Dapeng Li** (Geography & Geospatial Sciences)
- **Jessica Mediger** (Biology & Microbiology)
- **Kimberly Johnson Maier** (Geography & Geospatial Sciences)
- **Larry Browning** (Physics)
- **Mandy Orth** (Biology & Microbiology)
- **Sara Madsen** (Chemistry & Biochemistry)

"The passion and dedication once again shown by our faculty this summer is what makes SDSU a premiere teaching institution," Sackreiter said.

The Academic Ranking of World Universities group recently released the annual Global Ranking of Academic Subjects (GRAS) list, compiled by the ShanghaiRanking Consultancy. Remote Sensing at SDSU was ranked at #14 on the list, moving up from spot #42 only three years ago.

Congratulations to everyone in the

Geography & Geospatial Sciences Department and thank you for all your excellent work!

To see the full ranking list, [click here](#).



**ACADEMIC
RANKING OF
WORLD
UNIVERSITIES**

Grants Awarded within CNS, February – May 2020

- **Bruce Millett, co-PI** | Geography & Geospatial Sciences | Feeding South Dakota | Feeding South Dakota: Mapping and Storytelling
- **Ruanbao Zhou, PI** | Biology & Microbiology | Governor's Office of Economic Development | Genetic Engineering Cyanobacteria for Biosolar Production of Biodegradable Rubber
- **Xiaoyang Zhang, PI** | Geography & Geospatial Sciences | State of Maryland / National Aeronautics and Space Administration | Effectiveness and monitoring of large-scale carbon-loss mitigation activities in Indonesia's peatlands
- **Xiaoyang Zhang, PI** | Geography & Geospatial Sciences | National Oceanic and Atmospheric Administration | Development of A Unified Multi-Scale Biomass Burning Emissions Product for Aerosol Predictions

Recognizing Awarded Grants

Beginning in this month's issue, we will recognize grants awarded within CNS, starting with information backdated to when the newsletter began! Expect a slight delay in the reporting timeframe.

Where did your interest in science begin?

Sara Madsen, Ph.D.

Chemistry & Biochemistry Department

Camp Fire Girls and 4-H taught me how to tinker with determination in the real world. While growing up in central Washington, my involvement in these organizations led me to the home economics department at Central Washington University, not my superior downhill skiing. However, while contemplating the pocket design of a garment, I was more interested in the non-stick substance on the iron that was not going to break my heart as I lifted the iron off the fabric. After all, the next quarter, I walked over to the

chemistry department and started my chemistry major with Chem 101. After graduating from Central Washington University with my B. S. in Chemistry, I worked for Chemical Processors in Seattle, Washington, which was a hazardous waste treatment and storage facility. I managed the polychlorinated biphenyl program but after a year, I obtained a technician position in the research division for Georgia Pacific Corporation in Tacoma, Washington. Getting my Ph. D. in chemistry was never a thought in my mind growing up. But as my tinkering with determination began to mature, my Dad bought me new tires and

changed the oil in the Ford Taurus I had been driving which took me to the University of Wyoming. Earning my Ph. D. in chemistry led me to complete two postdoctoral experiences at the University of Michigan in biomedical engineering and Los Alamos National Lab in biosensor design. Following the postdoctoral experience, I taught at Truman State University (post Kane, the professional wrestler) in a two-year assistant professor appointment. Gratefully, I came to Sioux Falls, SD to teach for SDSU at USDSU which then became South Dakota Public Universities and Research Center-University Center.

SD Graduate & Nobel Prize Winner Honored

The late Ernest O. Lawrence, a 1922 USD graduate and pioneering nuclear scientist, will have part of a federal highway in South Dakota named after him.

Lawrence grew up in Canton, SD before receiving his bachelor's in Chemistry at USD, master's in Physics at the University of Minnesota, and Ph.D in Physics at Yale. He went on to help invent the cyclotron and receive a Nobel award for Physics.

His story is just one of many highlighting how important the natural sciences are to South Dakota and the world!

[Click to read the full story.](#)

Updates on Academic Programs: Changes & Proposals

New Programs / Intent to Plan for the College of Natural Sciences

<i>Program</i>	<i>Unique Feature</i>
Professional Science Master's (PSM)	Intent to plan: upper Great Plains gap for STEM and business-trained workforce members
Geography (B.A.)	Online BA; increase accessibility for students who are looking to pursue their education and are place bound
Geographic Information Sciences (B.S.)	Online BS; flexibility of program

New Course / Revised Course Requests

<i>Course Title</i>	<i>Course Name</i>	<i>Change</i>
GEOG / PUBH 440-540	Health Geography	New unique course
GEOG 471/571	Introduction to GIS Programming	New unique course
GEOG 379/HIST 379	Environmental History of the US	Change numbering to 409 and list as 509
BIOL 235 – 235L	Intro to Biotechnology & Lab	Authority to offer common course
CHEM 120	Elementary Organic Chemistry	Minor modification; credit change request
CHEM 490	Seminar	Minor modification; x9x series

Substantive Program Modifications

<i>Program</i>	<i>Requested Changes</i>
Biology (B.S.)	Total credits required within the discipline; Total credits of supportive course work; Total credits of elective course work
Biology (B.S.) – Secondary Education	Total credits required within the discipline; Total credits of supportive course work; Total credits of elective course work; Existing Specialization
Biotechnology (B.S.)	Total credits required within the discipline; Total credits of elective course work
Human Biology (B.S.)	Total credits required within the discipline; Total credits of elective course work; Other: Academic Requirements
Microbiology (B.S.)	Total credits required within the discipline; Total credits of elective course work
Community and Regional Planning (B.S.)	Total credits required within the discipline; Total credits of elective course work
Geography (B.A., B.S.)	Total credits of supportive course work; Total credits of elective course work; Add B.A. Degree for Existing Major

Research Spotlight – Dr. Robert McTaggart

Dr. Robert McTaggart is SDSU's nuclear and particle physicist. Currently there are two areas of research that he pursues. The first is the irradiation of materials and devices.

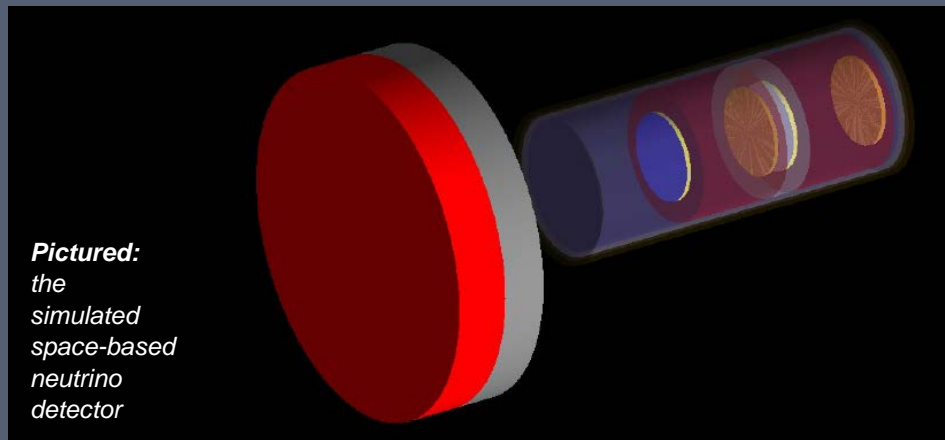
"Many of these items have potential use in a space environment, a nuclear facility, a hospital, an industrial pretreatment, or they are used in the human body after they are sterilized by radiation. In any event, their efficacy and strength after a radiation exposure is of interest."

Current research in collaboration with the Jerome J. Lohr College of Engineering includes the irradiation of solar panels, the irradiation of carbon used in supercapacitors, and the response of 3D-printed plastics to irradiation.

The other research area is the development of a space-based neutrino detector, funded by a NASA grant in collaboration with Wichita State University.

His primary role is the simulation of neutrino events and the galactic background noise that the detector must deal with. "This is the real discovery

channel – like science. Putting a detector closer to the Sun increases the neutrino flux, and it will allow orbits away from the plane of the ecliptic. The neutrinos and their energies tell us something about how the Sun works." A broader impact of this research is the simulated assay of elements in the soil using free cosmic rays.

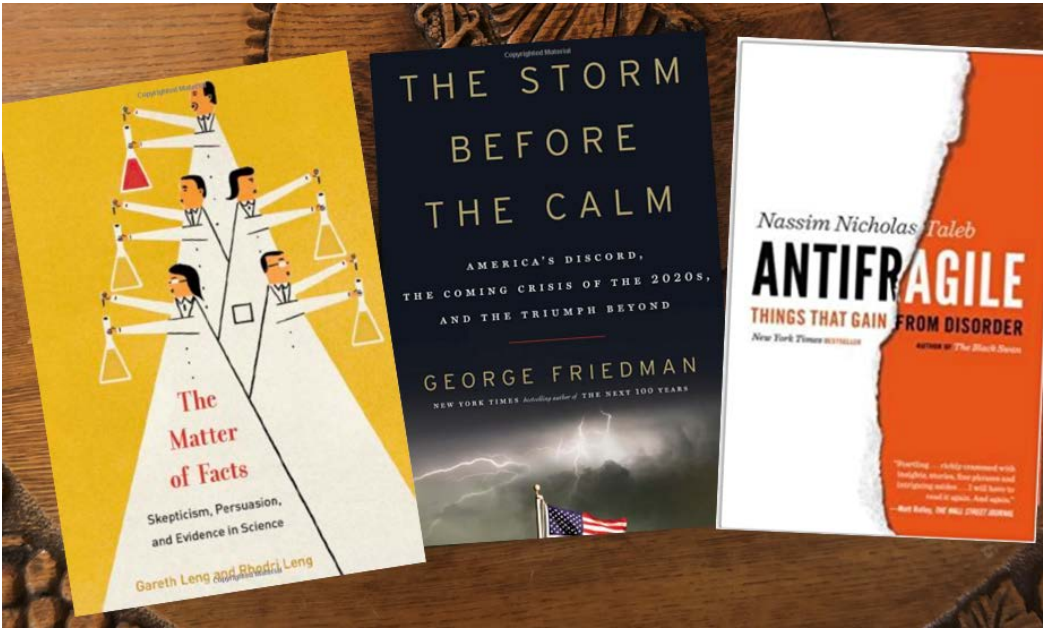


Open PRAIRIE data for June 2020

The Open Public Research Access Institutional Repository and Information Exchange (Open PRAIRIE, for short) tracks our CNS publications throughout the year, showing where and when articles were opened all around the world. *The Relationship Between Recollection, Knowledge Transfer, and Student Attitudes Towards Chemistry* was the most frequently downloaded piece last month at 245 downloads. This dissertation is by past Ph.D student Oluwatobi Odeleye, who was an advisee of Dr. Matt Miller.



Monthly Photo Series: Summer Reading

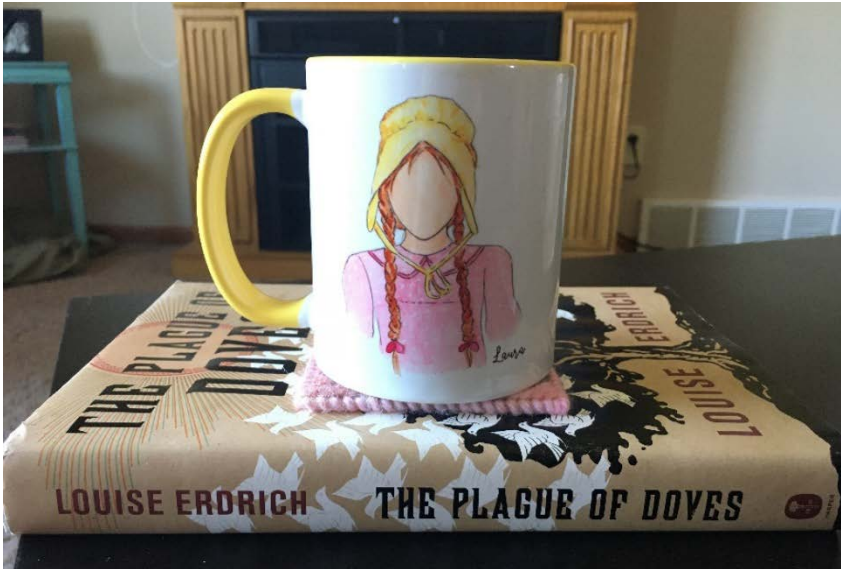


← Volker Brözel, *Biology & Microbiology*

Left to right: 1) Tracing the practice of the philosophy of science using the evolution of neurophysiology as a science. For all those who worship the hypothesis.

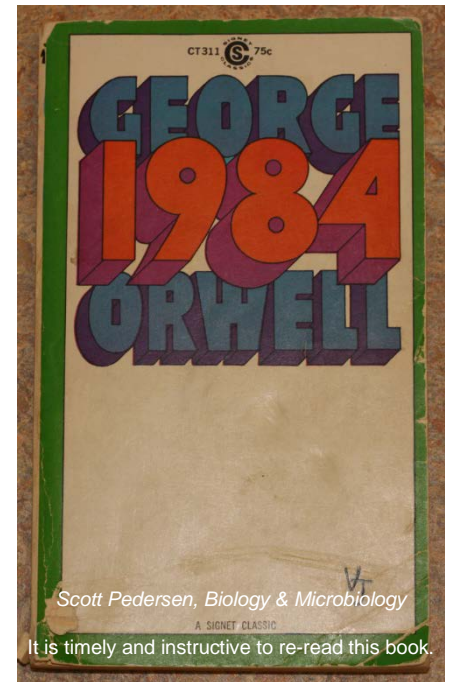
2) A 30,000 foot view of cycles in US politics, government and the socioeconomic reality. Highly recommended for all who, like me have never understood how this country ticks.

3) Things that Gain from Disorder: A challenging perspective on the need for pressure and damage for sustained health. Recommended if you're hoping to see a silver lining in the current state of things.



← Kim Johnson Maier, *Geography & Geospatial Sciences*

I read *The Plague of Doves* by Louise Erdrich during quarantine & now it is one of my favorites! Reading for fun would not be complete without my Laura Ingalls Wilder mug! 😊



← Scott Pedersen, *Biology & Microbiology*

It is timely and instructive to re-read this book.

Charlene Wolf-Hall →

Natural Sciences

These are what I am reading in my hammock this summer.

