

2015-
2016

Walter Maxwell Gibson College of Science and Engineering Annual Report



SUU

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EXECUTIVE SUMMARY 2015—2016

Summer 2016

This executive summary highlights some of the accomplishments, events, and productivity which indicate the level of competence and dedication of the faculty in the Walter Maxwell Gibson College of Science and Engineering (WMG COSE)

1. Three faculty from WMG COSE received significant honors this year. Bill Heyborne (Assistant Professor of Biology) was named Outstanding Higher Education Science Educator for 2016 by the Utah Science Teachers Association. Both Jana Lunt (Assistant Professor of Mathematics) and Nate Werner (Assistant Professor of Chemistry) were recognized as SUU Distinguished Educators by the SUU Faculty Senate.
2. Our healthcare professional acceptance successes were again strong this year. Data for the 2015-2016 academic year shows that 23 of the 27 WMG COSE applicants were accepted to medical school; 14 of 16 were accepted to PA school; 75% of dental school applicants were successful; and 83% of WMG COSE graduates who applied for pharmacy admissions were accepted. This success continues to be attributable to a dedicated faculty and student body and a working partnership between the southern Utah Area Health Education Center's (AHEC) Rural Health Scholars program, directed by Ms. Rita Osborn, and the WMG COSE. This partnership is serving the region very well, as attested to by our outstanding success in placing students in graduate healthcare programs.
3. SUU Nursing student's first attempt pass-rate on the national standardized licensure exam (NCLEX-RN) was 40/45≈89% for this academic year which compares favorably with the national rate. The success of our students is a great tribute to the patience and determination of our nursing faculty and leadership.
4. The Voyager project, which is directed by Professor Peggy Wittwer (Beverly Taylor Sorenson College of Education and Human Development), continues to reach out to public education in the region. Peggy is assisted by WMG COSE Professors Bill Heyborne and Mackay Steffensen. *Voyager* is a state of the art mobile laboratory loaded with teaching technology and able to deliver it to remote locations. Check out our website: <http://suu.edu/cose/voyager/>.
5. The education partnership between SUU and SUCCESS Academy completed its 11th year of cooperation. Of 52 seniors, 51 graduated from SUCCESS with 42 of these receiving their Associate of Science degree from SUU. SUCCESS seniors had an average ACT composite score of 27.57. SUCCESS Academy, in partnership with the Iron County School District and SUU, continues to have a lottery based on the number applications received. This is a successful collaboration and we thank Principal John Tripp and his staff for the opportunity to continue the partnership. Additional information can be found at: <http://successacademyonline.com/>.
6. The Cedar Mountain Science Camp (CMSC) continues to serve the region. Under the direction of Peggy Wittwer, Assistant Professor of Elementary Education, this joint program between the Beverly Taylor Sorenson College of Education and Human Development and the WMG COSE has provided high-quality outdoor education to 45,167 campers since 1997. This summer Professor Wittwer and her staff conducted eleven separate camp sessions and served 426 elementary students from 76 different regional towns, with 267 others turned away for lack of space. Additionally, the 6th annual *Camp Extreme* engaged 45 middle school students with rock climbing, rappelling, whitewater rafting and other skills. More information is available at: <http://suu.edu/cose/center/>.

7. The Center for Applied Research and Advanced Technology (CARAT) is established to facilitate communication and collaboration between WMG COSE and commercial enterprises. Such interaction includes technical assistance, placement of student interns, promoting student employment, and dissemination of current developments in science, engineering, and technology. This latter aim is partially achieved by monthly CARAT seminars open to the public. See <http://suu.edu/cose/seminar.html>
8. The College was successful in obtaining numerous grants. The largest interdisciplinary grants include:
- WMG COSE continued a National Science Foundation *S-STEM* award of \$116,000/year for the years 2012-2016 to further enhance the preparation of Science, Technology, Engineering, and Math Educators at SUU. Kudos to Principal Investigator Jana R. Lunt and her team consisting of Bruce R. Howard, Matthew Roberts, John S. MacLean and Fredric R. Govedich. There were 13 new *S-STEM* scholarships awarded in 2015-2016 along with seven continuations from 2014-2015.
 - The *Utah STEM Center* award to SUU of \$190,000 entitled “Elementary STEM Partnership: Unleashing Curiosity” continues through July 2017.
 - The Utah Legislature provided \$280,000 to the *SUU STEM Education Center* at the behest of Representative Jon Stanard and our own Bill Heyborne.
 - The *Utah Cluster Acceleration Partnership* awarded SUU (Principal Investigator Richard Cozzens) \$155,089 for Computer Science, Technology, and Engineering curriculum revision and enhancement in 2015—2016.
 - More external grants are listed in the department summaries of this report.
9. The *7th Annual WMG COSE Undergraduate Research Symposium* was held on November 9, 2015 in the Hunter Conference Center. The keynote speaker was Larry Davis, a resident geologist for Bryce Canyon National Park. There were 59 poster and 23 oral presentations at this year's meeting. The abstracts and some photos are available for examination at: <http://suu.edu/cose/symposium/>.
10. WMG COSE offered numerous high school outreach events during 2015—2016, incorporating student contests, prizes, and special guests.
- Engineering Week at SUU (<http://suu.edu/cose/ie/engineeringweek/>)
 - Southern region of the Utah State Math Contest (<http://www.suu.edu/faculty/armstrong/mathcontest.php>)
 - Southern region of the Utah Science Olympiad (<http://www.utahscienceolympiad.utah.edu/>)
 - Southern Utah Science and Engineering Fair (<http://suu.edu/cose/fair/>)
 - Technology Fair (<http://suu.edu/cose/techfair/>)
 - Technology, Engineering, and Computer Science Summer Camp (<http://suu.edu/cose/summercamp.html>)
11. This has been a very productive year for College faculty. For the 2015—2016 academic year, the following data were reported:
- Refereed Scholarly Publications – 30
 - Refereed Presentations at Professional Meetings – 51
 - Books, Reports, and other Documents – 5
 - Externally Funded Grants – 16
 - Special Recognitions and Awards – 3
12. Beginning 1 July 2016, Daniel Eves and Bill Heyborne were awarded tenure with promotion to Associate Professor: Seth Armstrong, Bruce Howard, and Kim Weaver each advanced to Full Professor. Isabella Borisova was promoted to Assistant Professor, Non-Tenure Track. Kevin Tipton and Selwyn Layton finished their PhD degrees and are now Tenure Track. We note the retirements or resignations of nine WMG COSE faculty/staff and acknowledge their efforts on behalf of the College: Kimberly Congdon, Nathan Hanson, Jennifer Hargrave, Amber McConnell, John Murray, Connie Nyman, Alan Pearson, Shelley Sanderson, and Daphne Solomon. Furthermore, Nica Clark is taking a two year leave of absence to finish a terminal degree.

MESSAGE FROM THE DEAN



The Walter Maxwell Gibson College of Science and Engineering (WMG COSE) has had another great year. Our faculty is committed to the institution and its mission and our students continue to achieve academic success and leave SUU well prepared for either work or further education. Faculty members engage students in undergraduate research projects that not only lead to professional presentation, but to significant numbers of peer-reviewed publications. We are proud of our prowess in preparing students for success in healthcare professions as evidenced by our high acceptance, and first time NCLEX-RN pass rates, which are documented elsewhere in this report.

We are pleased to announce that through the generosity of Mark and Julie Svoboda, our geoscience programs will have a new home in the not too distant future. The current Dixie Leavitt Business building will undergo a significant remodel in the next couple of years, and since the SUU School of Business will be relocating to a new facility, a wing of the current Business building will be occupied by our geoscience programs giving them much needed additional space and visibility. We have long felt that our geographic location places SUU in an advantageous position for teaching/learning geoscience and this new opportunity will serve to strengthen our position.

Dr. Bill Heyborne again worked with State representatives to secure an additional \$150,000 in funding to support the SUU STEM Education Center and its initiatives. This additional funding insures that our local K-12 partners and our pre-service public school teachers will be better educated in the STEM disciplines. We express our thanks to our State Legislature and to Representative Brad Last, who worked closely with Dr. Heyborne during the last legislative session to secure this funding.

Because I feel the loss so acutely, I note the passing of Carl Frederick Lohrengel II, a fellow geoscientist, SUU faculty member, confidant, and friend (his photo is on the back cover of this document). Dr. Fred, as his students affectionately referred to him, passed away unexpectedly on December 17th, of last year. He came to SUU in 1986 from Snow College. In fact, I applied to fill his position there as a newly minted MS degree recipient, before I ever met him. I didn't get that job. He and I worked together to build a geology degree program at SUU that started under the Physical Science Composite degree "umbrella", and blossomed to a stand-alone BS in Professional Geology degree. Dr. Fred retired from the University in 2008, but through a variety of circumstances, taught as an adjunct, or a full time lecturer, every year from then, until the spring of 2015. In fact, in November of 2015, due to an unexpected faculty departure, Dr. Fred and I had agreed to his filling a full time contract in the spring of 2016. He always had the best interests of students and his colleagues as a first priority. And then things changed. There have been some noteworthy geology faculty at SUU, Parley Dalley, Lawrence Cooper, and my mentors, Richard Kennedy and Blair Maxfield. With Fred's untimely departure, only Doc Maxfield remains. I miss them all, but I particularly miss Dr. Fred. Garrett Vice, one of Dr. Fred's former students, is working to raise funds for an endowed scholarship in Dr. Fred's name. If you read this, and want to participate, please contact me.

Dean Robert L. Eves

WALTER MAXWELL GIBSON COLLEGE OF SCIENCE AND ENGINEERING

MISSION AND GOALS

Mission

The Walter Maxwell Gibson College of Science and Engineering is made up of academic programs in agriculture, biology, chemistry, computer science, engineering and technology, geography, geology, information systems, mathematics, nursing, nutrition, and interdisciplinary studies. These programs are housed in the departments of Agriculture & Nutrition Science, Biology, Computer Science & Information Systems, Engineering & Technology, Mathematics, Nursing, and Physical Science. We operate or participate in the operation of several special learning environments for students that include the Ashcroft Observatory, a GIS lab, a certified water lab, the Nakken Histology Lab, the Stokes Open Chemistry Lab, the Frehner Natural History Museum, the Cedar Mountain Science Center, the Valley Farm, the Networking and Security Lab, the Bowns Herbarium, the Leavitt Nursing Suite and the Mountain Ranch. We serve as the center of learning for the undergraduate STEM programs offered at SUU. We also serve as the resource center of scientific knowledge and expertise for southern Utah. The purpose of the Walter Maxwell Gibson College of Science and Engineering is to provide comprehensive classroom and experiential learning that emphasizes critical thinking, problem solving, decision-making, and communication in STEM. The faculty is committed to providing high-quality education, individual guidance and assistance to students, and helping them grow intellectually, professionally and personally while pursuing their academic goals.

Goals and Objectives

The observable, measurable goals of the Walter Maxwell Gibson College of Science & Engineering and the objectives by which they will be accomplished are:

1. GOAL: prepare students for graduate and professional schools.

OBJECTIVE: offer coursework and active learning experiences appropriate to the prerequisites of specified post-baccalaureate programs.

ASSESSMENT: tabulate student reportage on application/acceptance to post-baccalaureate programs.

For this academic year, we note the following:

- 85% acceptance to medical schools
- 75% acceptance to dental schools
- 88% acceptance to PA programs
- 83% acceptance to pharmacy programs

2. GOAL: prepare students for careers using their baccalaureate degree.

OBJECTIVE: offer coursework appropriate for employment related to departmental majors or minors.

ASSESSMENT: require standardized, nationally-normed tests where appropriate and student reportage of employment at baccalaureate level.

For 2015—2016, the following were reported:

- Educational Testing Service (ETS) Major Field Exams
 - Chemistry—86th percentile student average
 - Biology—65th percentile student average
 - Computer Sci—78th percentile student average
 - Math—69th percentile student average
- American Chemical Society (ACS) end-of-course exams
 - Average for all Summer 2015 sections: 71st percentile
 - Average for all Fall 2015 sections: 68th percentile
 - Average for all Spring 2016 sections: 72nd percentile
- Geology ACAT exam—76th percentile
- NCLEX national standardized nursing licensure exam
 - 100% pass rate for Fall 2015
 - 84% pass rate for Spring 2016

3. GOAL: develop skills in analysis, critical thinking, problem solving, decision-making and communication.

OBJECTIVE: offer well-planned and pedagogically sound learning exercises in courses and in research projects.

ASSESSMENT: annually examine and evaluate course syllabi, course materials, and student research experiences.

For 2015—2016

- Each syllabus was examined at the department chair level.
- Student research experiences were evaluated during local presentation of the results, including the Festival of Excellence and 7th Annual WMG COSE Research Symposium.

4. GOAL: provide hands-on experiences with state-of-the-art scientific instruments and equipment

OBJECTIVE: provide coursework and research opportunities that include opportunities to use equipment.

ASSESSMENT: inventory current, and continuously update need for future, equipment.

For 2015-16

- Engineering & Technology obtained a plastic injection molding machine and CNC vertical mill.

5. GOAL: provide highly skilled teachers and professors that are also respected scholars.

OBJECTIVE: recruiting Ph.D. - prepared faculty, reward good teaching, encourage faculty to conduct funded research and publish results, and encourage participation in professional organizations.

ASSESSMENT: annually evaluate faculty performances, teaching, scholarship, service, and collegiality using criteria and performance standards developed by departments and the college.

- All faculty members were formally evaluated by at least their chairs, peers, and/or the dean during 2015—2016.
- All new faculty hires are highly qualified, with all tenure track faculty holding terminal degrees.

6. GOAL: provide special, unique learning opportunities.

OBJECTIVE A: utilize the Valley Farm, Mountain Ranch, Cedar Mountain Science Center, SUU's Ashcroft Observatory, Water Lab, the Garth & Jerri Frehner Natural History Museum, the GIS lab, and the molecular genetics and ecology labs.

ASSESSMENT: annually evaluate the use of our specialized learning environments.

- The Valley Farm (including the new riding arena) continues to support the SUU agriculture program.
- Cedar Mountain Science Camp served 471 students in thirteen separate camps and continues to have more applicants than it can accommodate.
- The Ashcroft observatory is utilized as a teaching laboratory each semester and continues to hold community nights each Monday.
- The Water Lab continues to provide a community resource and employment and hands-on experience to SUU chemistry students.
- The Geographic Information Systems (GIS) lab is supporting coursework and completing contract work for local, state and federal agencies.
- The molecular genetics and ecology labs provide undergraduate research support

7. GOAL: maximize the utilization of our unique community and geographic resources

OBJECTIVE: foster and strengthen community and agency relationships.

ASSESSMENT: annually evaluate community and agency interaction.

- Faculty members from WMG COSE continue to serve on the cooperating association boards of Zion and Bryce Canyon national parks.
- WMG COSE continues to be a partner in the Intergovernmental Internship Cooperative (IIC) effort, which provides internship opportunities for SUU students with public land management agencies.

WALTER MAXWELL GIBSON COLLEGE OF SCIENCE AND ENGINEERING

DEPARTMENTS AND THEIR PROGRAMS

Department of Agriculture and Nutrition Science

Mission Statement

Agriculture Science

The mission of the agriculture program is to offer all students the opportunity to understand the discipline of agriculture as an applied science and a model for the principles of bioeconomics. The program is closely allied to the concept of service to the agricultural community. Recognizing the diversity of agriculture, faculty will articulate partnerships with colleagues and programs across the university campus. The agriculture program demonstrates teaching excellence by maintaining a faculty of well-educated and experienced agriculturalists. The agriculture program promotes a strong, hands-on, structured learning atmosphere and provides opportunities for independent inquiry and scholarship of application by students.

Human Nutrition

Recognizing the critical role of nutrition to all human endeavors, the mission of the nutrition program is to provide sound, science-based principles, theories and applications to students whose personal or professional interests embrace the discipline. The nutrition program at SUU prepares students for a number of related careers or entrance into a graduate program upon degree completion at SUU. Additionally, the program promotes wellness by offering a minor and support courses to compliment a variety of other disciplines, especially those related to health and human services and athletics. The program demonstrates dedication to outstanding teaching by maintaining a faculty of well educated, professionally qualified professor-practitioners.

Programs and Degrees Offered

BACHELOR DEGREES

BIS Agricultural Science & Industry (with emphases in Agribusiness, Animal Science, Plant Science, Natural Resources, and General Agriculture)

BS Human Nutrition/Allied Health

BS Human Nutrition/Pre-Dietetics

ASSOCIATE DEGREES

Agriculture: Livestock Farm Management

Agriculture: Equine Studies

MINORS

Agriculture

Human Nutrition

CERTIFICATES

Agriculture: Livestock Farm Management

Student Learning Outcomes

Agriculture Science

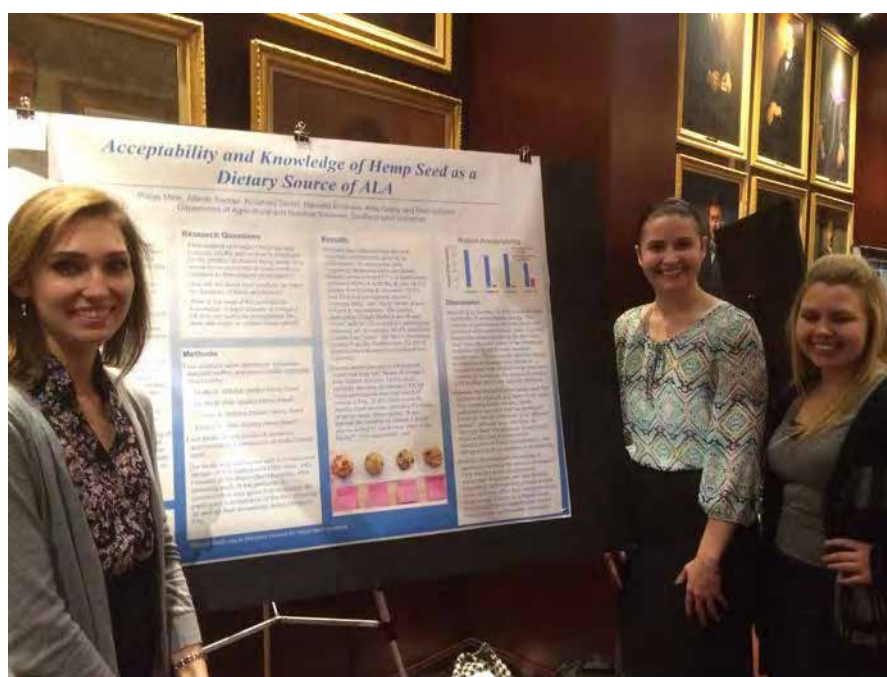
1. Students will demonstrate knowledge of scientific principles related to agriculture.
2. Students will demonstrate knowledge of agricultural industries including structure, production practices, and management principles.
3. Students will demonstrate effective application of agricultural knowledge and resources to solve problems and perform relevant activities.
4. Students will demonstrate effective communication appropriate to the discipline.

Human Nutrition

1. Students will demonstrate an understanding of nutrition, its language, history, findings, and applications.
2. Students will demonstrate effective and professional oral and written communication and use of current information technologies when communicating with individuals, groups, and the public.
3. Students will synthesize new knowledge from scientific literature; students will demonstrate their knowledge and understanding of the scientific method and reading, understanding, and critiquing peer-reviewed literature
4. Students will use appropriate tools to carry out investigations in nutrition courses.

Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Kirt M. Bussio	Professional Staff	Farm & Ranch Manager	1986
Nica Clark	Lecturer, Non-Tenure Track	Human Nutrition	2011
Chad L. Gasser	Associate Professor	Animal Science	2005
Artis P. Grady	Associate Professor	Human Nutrition	1990
Andrew Heaton	Professional Staff	Agriculture/Economics	2014
Celesta Lyman	Lecturer, Non-Tenure Track	Human Nutrition	2015
Matthew C. Schmidt	Associate Professor	Human Nutrition	2001
Randall D. Violet	Assistant Professor	Range Science	2012
Dean L. Winward	Associate Professor	Agriculture	1990
Lee G. Wood	Associate Professor, Chair	Animal Science	2000



Productivity Highlights 2015—2016

Scholarly Presentations at Professional Meetings

Barnhurst, N.; Kiesel, S.; Akans, N.; Grady A.P. "Food Safety: Knowledge vs. Practice in a College Age Population" *Food and Nutrition Conference and Expo of the Academy of Nutrition and Dietetics*, October 4 2015, Nashville TN

Gasser, C. L. "Castration Methods, Timing, and Humane Procedures" *8th Annual Cowman's Reproduction Workshop*, September 15 2015, Alton UT

Grady, A "Hydration—It's More Than Just Getting a Drink" *Utah Association of Family and Consumer Science Annual Conference*, September 19 2015, Salt Lake City UT

Schmidt, M.C.; Jorgensen, B.; Gehring, N.; Corser, G. "Childhood Food Experiences with Regard to Food Rewards and Punishments" *Food and Nutrition Conference and Expo of the Academy of Nutrition and Dietetics*, October 4 2015, Nashville TN

Schmidt, M.C.; Jonas, L.; Nelson, M. "The Effect of Education on Hydration Status of the Reserve Officers' Training Corps at SUU" *Food and Nutrition Conference and Expo of the Academy of Nutrition and Dietetics*, October 5 2015, Nashville TN

Winward, D.L. "Factors Affecting Herbicide Activity" *UT/AZ Invasive Weed Update Meeting*, December 8 2015, Orderville, UT

Winward, D.L. "Silverleaf Nightshade" *UT/AZ Invasive Weed Update Meeting*, December 8 2015, Orderville, UT

Wood, L.G. "Effectiveness of Post-Exam Review Activities as a Teaching Aid" *North American Colleges and Teachers of Agriculture Conference*, June 17 2015, Athens GA

Documents, Books, and other Publications

Schmidt, M.C.; Christiansen, S. "Nutrition 'Shokuiku' & School Lunch" *Health Southwest Utah Public Health Foundation*, Spring 2016, 12—13

Professional Memberships and Community Service

Nica Clark

- Member of:
 - *Academy of Nutrition & Dietetics*
 - *Phi Kappa Phi Honor Society*
 - *Utah Academy of Nutrition & Dietetics*
- Volunteer nutrition coordinator for:
 - *Havenwood Academy*
 - *Paiute Tribe of Utah*
 - *Utah Summer Games*

Chad L. Gasser

- Editor or Reviewer for:
 - *Journal of Animal Science*
 - *Animal Reproduction Science*
 - *NACTA Journal*
- Member of:
 - *American Society of Animal Science*
 - *North American Colleges and Teachers of Agriculture*
 - *SWATC/Circle 4 Farms Advisory Board*
- Judge or organizer for:
 - *FFA events*
 - *Iron County Farm Field Day*
 - *Southwest Junior Livestock Show*

Artis P. Grady

- Member of:
 - *Academy of Nutrition & Dietetics*
 - *AAFCS/UAFCS*
 - *Delta Kappa Gamma*
 - *FPIND*
 - *Kappa Omicron Nu Honor Society*
 - *Phi Kappa Phi Honor Society*
 - *SCAN*
 - *Utah Academy of Nutrition & Dietetics*
- Nutrition consultant for *The Spectrum/Daily News*
- Member *Head Start Health Advisory Committee*
- Public school outreach

Memberships & Service (continued)

Celesta Lyman

- Member of:
 - *Academy of Nutrition & Dietetics*
 - *Utah Academy of Nutrition & Dietetics*

Randall D. Violet

- Member of:
 - *Society for Range Management*
 - *NACTA*
 - *NAAE/UAAE*
 - *Western Society of Weed Science*
- Public school outreach

Dean L. Winward

- Member of:
 - *Iron County Cattleman's Assoc*
 - *Iron County Weed Board*
 - *NACTA*
 - *Utah Farm Bureau Federation*
 - *Utah Weed Control Association*
- *Iron County Fair* judge
- Judge for *SW Junior Livestock Show*
- *BSA* merit badge counselor
- Public school outreach

Lee G. Wood

- Member of:
 - *NACTA*
 - *Equine Science Society*
 - *NAEAA*
 - *American Society of Animal Science*
 - *American Quarter Horse Association*
 - *Iron County Cattlemen's Association*
 - *Utah Cattlemen's Association*
- Consultant to:
 - *Rafter L Cattle Company*
 - *K. Gardner Land & Cattle Company*
 - *Grass Valley Cattle Company*



Department of Biology

Mission Statement

The mission of the Department of Biology is to provide our students with personalized, participative educational experiences over a broad range of biological disciplines that promote critical thinking, effective communication and lifelong learning skills. We provide learning opportunities where students can gain the knowledge, develop integrity and acquire the empathy needed to become independent researchers in the advancement of science.

Programs and Degrees Offered

BACHELOR DEGREES:

BA/BS Biology

BA/BS Biology Education

MINOR:

Biology

Student Learning Outcomes

- A. Students will demonstrate an understanding of general knowledge of biology: its language, history, findings and applications.
- B. Students will demonstrate an understanding of the dynamics of interactions and adaptations within and among biological systems.
- C. Students will demonstrate an understanding of the methodologies of science and will synthesize new knowledge from scientific literature.
- D. Students will communicate effectively in oral, written, and other formats.
- E. Students will use appropriate tools to carry out investigations in their intended fields.



Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Angela Patino	Professional Staff	Greenhouse Specialist	2014
Helen C. Boswell	Associate Professor	Evolutionary Biology	1999
Kimberly A. Congdon	Lecturer, Non-Tenure Track	Anatomy	2014
Abigail Dominy	Visiting Assistant Professor	Herpetology	2015
Fredric R. Govedich	Associate Professor, Chair	Zoology, Entomology	2006
Jacqueline B. Grant	Assistant Professor / Museum Curator	Zoology, Botany	2012
Debra A. Hanson	Assistant Professor, Non-Tenure Track	Anatomy, Microbiology	2004
William H. Heyborne	Assistant Professor	Zoology, Herpetology	2011
Jonathan E. Karpel	Assistant Professor	Cellular/Molecular Biology	2010
Laurie A. Mauger	Assistant Professor	Genetics	2011
R. Matthew Ogburn	Assistant Professor	Botany	2014
Lindsay K. Roper	Assistant Professor	Cellular/Molecular Biology	2015
Paul J. Pillitteri	Associate Professor	Anatomy, Physiology	2005
John R. Taylor	Associate Professor	Biology Education	2002
Mary Jo Tufte	Assistant Professor, Non-Tenure Track	Anatomy, Physiology	2010
Matthew S. Weeg	Assistant Professor	Neurobiology	2011
Samuel Wells	Lecturer, Non-Tenure Track	Entomology	2015

Productivity Highlights 2015—2016

Scholarly Presentations at Professional Meetings

Gardiner, C.E.; Bain, B.A.; Govedich, F.R. "Revision of *Colossendeis colossea* Wilson, 1881 (Pycnogonida: Family Colossendeidae)" *Society for Integrative and Comparative Biology Annual Meeting*, January 4 2016, Portland OR

Grant, J.B.; Weeg, M.S.; Carlson, A.; Wallace, H.; Feng, Y.; Burian, S. "Use of Green Infrastructure to Increase Invertebrate Biodiversity in the Built Environment" *Conservation Asia 2016*, June 30 2016, Singapore

Brown, A.C., Heyborne, W.H.; Dean, E. "Evolutionary Perceptions across the Disciplines within a Religious Centered State" (poster presentation) *National Association of Biology Teachers Conference*, November 12 2015, Providence RI

Budd, K.; Spotila, J.R.; Mauger, L.A. "Preliminary Mating Analysis of American crocodiles (*Crocodylus acutus*) in Las Baulas, Santa Rosa, and Palo Verde National Parks, Guanacaste, Costa Rica" *Joint Meeting of Ichthyologists & Herpetologists*, July 17 2015, Reno, NV

McInerney, D.; Safman, P.; Jones, N.; McKnight, M.; Taylor, J.R.; Peeples, J.; Morin, M. "Moving Teaching/Learning Initiatives from Concept to Action through an Organic Curriculum" *AAC&U 2016 Annual Meeting*, January 21 2016, Washington DC

Taylor, J.R.; Gentry, B. "Introduction to new 8th Grade SEEd Standards—Shifts, Strands, and Standards" *Utah Science Teachers Association Annual Conference*. February 5 2016, Provo UT

Jensen, B.; Buck, S.; Osborne, J.; Tufte, M.J.; Weeg, M.S. "The Effects of *Umbellularia californica* Produced Terpenoids on Vascular Smooth Muscle" *10th Annual Utah Conference on Undergraduate Research*, February 19 2016, Salt Lake City UT

Scholarly Articles

Grant, J.B.; Patterson, D. "Innovative arts programs require innovative partnerships: a case study of STEAM partnering between an art museum and a natural history museum" *The Clearing House: A Journal of Educational Strategies, Issues, and Ideas* DOI 10.1080/00098655.2016.1170453

Heyborne, W.H.; Perrett, J.J. "To flip or not to flip? Analysis of a flipped classroom pedagogy in a general Biology course" *Journal of College Science Teaching* 45 (4), 31-37

Roper, L.K.; Briguglio, J.S.; Evans, C.S.; Jackson, M.B.; Chapman, E.R. "Sex-specific regulation of follicle-stimulating hormone secretion by synaptotagmin 9" *Nature Communications* 6, Article 8645, October 20 2015

Jack, C.; Taylor, J.R.; Bornemeier, A.; Van Alfen, A. "Bat surveys in Pipe Spring National Monument and ensuing interpretive programs" *Proceedings of the 12th Biennial Conference of Research on the Colorado Plateau*, Barbara E. Ralston, ed. USGS, May 20 2016, DOI: 10.3133/sir20155180

Wagstaff, H.; Maman, S.; Tufte, M.J.; Weeg, M. "The effect of *Umbellularia californica* essential oil on blood vessel diameter in frogs" *American Journal of Undergraduate Research*, 13 (1) 2016, 59-64

Documents, Books, and other Publications

Moser, W.E.; Govedich, F.R.; Ocegüera-Figueroa, A.; Richardson, D.J.; Phillips, A.J. "Subclass Hirudinida". in *Thorp and Covich's Freshwater Invertebrates Volume 2: Keys to Nearctic Fauna*. Thorp, J.H. and D.C. Rogers eds. Academic Press ISBN 9780123850287

Heyborne, W.H.; Penny, S. "Orchestra of Southern Utah Children's Jubilee and STEAM Festival Coming to Cedar City" in *View on Mesquite*, January/February 2016, 91-93

External Grants

Jacqueline B. Grant

- *iUTAH (NSF)* Green roof agriculture exhibit and outreach at the Frehner Museum, February 2015—December 2015 (\$8,224)
- *iUTAH (NSF)* “Enhancing biodiversity, water conservation, and urban agriculture through green roof infrastructure”, (with Matt Weeg, *et al.*) February 2015—December 2015 (\$15,807)

R. Matthew Ogburn (with Terri Hildebrand)

- *NPS Grand Canyon-Parashant National Monument Herbarium Imaging Project*, September 2011—June 2016 (\$25,166)

William H. Heyborne

- *Utah STEM Center* “Elementary STEM Partnership- Unleashing Curiosity” (with Edna LaMarca) January 2015—July 2017 (\$190,000)
- *Utah STEM Education Center* additional funding, July 2015—June 2016 (\$280,000)

Fredric R. Govedich (PI)

- *iUTAH (NSF)* “Water Chemistry and Microbial Community Composition and Diversity in Irrigation and Runoff Waters in Cedar City” July 2015—December 2016 (\$4,924)

Honors, Awards and Special Recognition

William H. Heyborne

- Outstanding Higher Education Science Educator Award for 2016, Utah Science Teachers Association

Professional Memberships and Community Service

Fredric R. Govedich

- Editor or reviewer for:
 - *Biodiversity Data Journal*
 - *Southwestern Naturalist*
 - *ZooKeys*
- Volunteer for:
 - *Cedar Breaks BioBlast Weekend*
 - *Boy Scouts of America*
- Public school outreach

Memberships & Service (continued)

Jacqueline A. Grant

- Member of:
 - *NSF iUTAH External Outreach Committee*
 - *Society of Conservation Biology*
- Public school outreach

William H. Heyborne

- Member and/or reviewer for:
 - *American Malacological Society*
 - *National Association of Biology Teachers*
 - *National Science Teachers Association*
 - *Society for the Study of Amphibians & Reptiles*
 - *Southwestern Naturalist*
 - *The American Biology Teacher*
 - *Utah Science Teachers Association*
- Public school outreach

Jonathan E. Karpel

- Public school outreach

Laurie A. Mauger

- Member of:
 - *Ecological Society of America*
 - *Evolution Society*
 - *Herpetologist League*
 - *IUCN Crocodile Specialist Group*
 - *Utah Academy of Sciences, Arts, & Letters*
 - *Wildlife Society*
- Reviewer for
 - *Revista de Biología Tropical*
 - *Journal of Heredity*

R. Matthew Ogburn

- Member of:
 - *American Society of Plant Taxonomists*
 - *Botanical Society of America*
- Volunteer for *Cedar Breaks National Monument*
- Public school outreach

John R. Taylor

- Public school and *NPS* outreach
- Board Member of:
 - *Utah Science Teachers Association*
 - *Zion Canyon Field Institute*
 - *Zion Natural History Association*

Mary Jo Tufte

- Public school outreach

Department of Computer Science & Information Systems

Mission Statement

The Department of Computer Science and Information Systems (CSIS) supports the mission of the University and the Walter Maxwell Gibson College of Science and Engineering by providing a high quality graduate and undergraduate education to students through certificate, associate, baccalaureate, and master degree programs.

The mission of the Department is to provide a learning-centered environment that enables students, faculty, and staff to achieve their goals and to empower our students to compete on a global level for careers in government, industry, secondary education, and acceptance to graduate school.

The Department provides programs in computer science and information systems. The curricula are rich with opportunities for students to develop a sound understanding of fundamentals as well as specialized theories, practices, and ethics that enhance their learning.

The CSIS faculty are committed to providing high-quality education, individual guidance and assistance to students, helping them to develop the attributes of critical thinking, effective communication, lifelong learning, and individual integrity while pursuing their academic goals as well as engaging in scholarly activities to enhance our classes, involve students and, to assist in the economic development of the region through partnerships with industry, inventors, and entrepreneurs.

Programs and Degrees Offered

BACHELOR DEGREES:

BS Computer Science
BS Information Systems

ASSOCIATE of APPLIED SCIENCE

General Technology with IT specialty
Information Technology
 Networking/Telecommunications Emphasis
 Information Technology Emphasis
 CS and IS Security Emphasis

MINOR:

Computer Science (non-teaching)
Computer Science Emphasis in Teacher Education
Information Systems (non-teaching)

Student Learning Outcomes

General Criteria

- A. An ability to apply knowledge of computing and mathematics appropriate to the discipline;
- B. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
- C. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;
- D. An ability to function effectively on teams to accomplish a common goal;
- E. An understanding of professional, ethical and social responsibilities;
- F. An ability to communicate effectively with a range of audiences;
- G. An ability to analyze the impact of computing on individuals, organizations, and society, including ethical, legal, security and global policy issues;
- H. Recognition of the need for, and an ability to engage in, continuing professional development;
- I. An ability to use current techniques, skills, and tools necessary for computing practice.

Computer Science Program Criteria

- J. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
- K. An ability to apply design and development principles in the construction of software systems of varying complexity.

Information Systems Program Criteria

- J. An understanding of processes that support the delivery and management of information systems within a specific application environment.

Special Accreditation



Computing
Accreditation
Commission

The CS and IS degrees at Southern Utah University are ABET accredited.

Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Nathan A. Barker	Associate Professor	Bioinformatics, Data Mining	2007
Michael J. Grady	Associate Professor	Algorithms, Computational Mathematics	2001
Cecily Heiner	Assistant Professor	AI, Machine Learning	2011
Shalini Kesar	Associate Professor	E-commerce, Information Security	2007
Laurie L. Harris	Assistant Professor, Non-Tenure Track	Computer Literacy	2010
Constance W. Nyman	Associate Professor	Computer Education	1970
Robert A. Robertson	Associate Professor, Chair	Network and Cyber-Security	2001
Nasser Tadayon	Associate Professor	Data Mining, Neural Networks	2005
Dezhi Wu	Associate Professor	Human-Computer Interface	2005



Productivity Highlights 2015—2016

Scholarly Presentations at Professional Meetings

Barker, N.A.; Harris, L. "Does Taking a Computer Application Course Correlate With Better Grades In Other General Education Courses?" *24th Annual CCSC Rocky Mountain Conference*, October 2 2015, Cedar City UT

Grady, M. "A User Friendly Environment for Teaching the RSA Encryption Algorithm" *24th Annual CCSC Rocky Mountain Conference*, October 2 2015, Cedar City UT

Kesar, S.; Harihara, S.K. "Where Does Trust fit in the Ethical Dilemma of Mobile Government: A Case Study in India?" *Ethicmp 2015*, September 8 2015, Leicester UK

Kesar, S. "Educational Experiential Learning Environment Classroom: Modifying Pedagogy for Capstone Class" *Experiential Learning Leadership Institute*, June 27 2016, Bryce Canyon UT

Wu, D.; Lin, J.; Chan, H. "Website Aesthetics Impacts User Satisfaction and Actual Use: The Role of Trust and Focused Immersion" *The Americas Conference on Information Systems (AMCIS2015)*, August 13 2015, Puerto Rico

Wu, D. "Temporal Structures Supported by Electronic Calendaring Systems" *The Americas Conference on Information Systems*, August 14 2015, Puerto Rico

Wu, D. "Introduction to Human-Computer Interaction" *World Famous Scholars to Wuhan*, June 16 2016, Wuhan China



Scholarly Articles

Kesar, S. "Including teaching ethics into pedagogy: preparing information systems students to meet global challenges of real business settings" *ACM SIGCAS Computer and Society – Special issue on Ethicmp 45 (3)*, 432-437

Reychav, I.; Wu, D. "Mobile collaborative learning: the role of individual learning in groups through text and video content delivery in tablets" *Computers in Human Behavior 50*, 520-534

Reychav, I.; Wu, D. "The role of user-centered design and usability on knowledge sharing: a school website field study" *International Journal of Knowledge and Learning 10 (1)*, 16-28

External Grants

Cecily Heiner, *et al*

- NSF Utah ECS Initiative (\$12,500)

Shalini Kesar, *et al*

- NSF Utah ECS Initiative (\$3,000)
- NCWIT Aspiration Award SEED grant (\$3,100)

Honors, Awards and Special Recognition

Dezhi Wu

- Wuhan Polytechnic University World Famous Scholars to Wuhan Award, June 2016 (\$3000)



Professional Memberships and Community Service

Nathan A. Barker

- Member of:
 - Association for Computing Machinery
 - Alpha Chi Honor Society
 - Intl Society for Computers and their Apps

Michael J. Grady

- Member of:
 - Association for Computing Machinery

Laurie Harris

- Member of:
 - Association for Career & Technical Education
 - National Center for Women and IT
 - National Business Education Association

Cecily Heiner

- Grant reviewer for Komen Foundation, Utah Affiliate
- Member of:
 - National Center for Women and IT
 - Rocky Mountain CCSC

Constance W. Nyman

- Member of:
 - Association for Career and Tech Ed
 - Business and Professional Women's Clubs
 - Intl Society for Computers and their Apps
 - Phi Kappa Phi National Honor Society
 - National Business Education Association
 - Utah Business and Comp Ed Association
 - Western Business and IT Educators

Memberships & Service (continued)

Shalini Kesar

- Editor/reviewer for:
 - Journal of Information, Communication and Ethics in Society
 - Journal of Liability and Scientific Enquiry
 - Journal of Research on Women and Gender
- Steering committee for *EthiComp 2015*
- NCWIT Aspirations Award program leader
- Public school outreach
- Member of:
 - Association for Computing Machinery
 - Association of Information Systems
 - London School of Economics Alumni Assoc
 - National Center for Women and IT
 - UK Academy for Information Systems

Robert A. Robertson

- Code Camp judge
- Member of SWATC Advisory Board

Nasser Tadayon

- Member of:
 - IEEE

Dezhi Wu

- Member of Association for Information Systems
- Reviewer for:
 - AMCIS 2016 conference
 - HCII 2016 conference
 - European Journal of Information Systems



Department of Engineering & Technology

Mission Statement

The Department of Engineering and Technology provides students with academic instruction and skill development, by professional, credentialed faculty using state of the art facilities and equipment. Furthermore, we aim to provide meaningful service to industry, government, and all communities served by the university. The mission of the department is also to provide a learning-centered environment that enables students, faculty, and staff to achieve their goals and to empower students to compete on a global level for careers in government, industry, secondary education, and acceptance to graduate school.

The curricula are rich with opportunities for students to develop a sound understanding of fundamentals as well as specialized theories, practices, and ethics that enhance their learning experience. Engineering and Technology faculty are committed to providing high-quality education, individual guidance and assistance to students, helping them to develop the attributes of critical thinking, effective communication, lifelong learning, and individual integrity while pursuing their academic goals to assist in the economic development of the region through partnerships with industry.

Programs and Degrees Offered

BACHELOR DEGREES

BA/BS in:

Construction Management

Engineering

Engineering Technology

- Arch/Civil Design Emphasis
- CAD/CAM Emphasis
- CAD/GIS Emphasis
- EET Emphasis



Engineering
Accreditation
Commission

The Engineering Bachelor Degree is ABET accredited

MINORS

Construction Technology

CAD/CAM Technology

Electronics Technology

ASSOCIATE OF APPLIED SCIENCE

Construction Technology

CAD/CAM Technology

Electronics Technology

General Technology with specialty in CT

Pre-Engineering

CERTIFICATES

Civil Design/CAD

Construction Technology

Engineering Student Learning Outcomes

- An ability to apply knowledge of mathematics, science, and engineering;
- An ability to design and conduct experiments, as well as to analyze and interpret data;
- An ability to design a system, component, or process to meet desired needs;
- An ability to function on multidisciplinary teams;
- An ability to identify, formulate, and solve engineering problems;
- An understanding of professional and ethical responsibility;
- An ability to communicate effectively;
- The broad education necessary to understand the impact of engineering solutions in a global and societal context;
- A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues;
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.



Engineering
Technology
Accreditation
Commission

The Engineering Technology Bachelor Degree with CAD/CAM or EET Emphasis is ABET accredited

Engineering Technology Student Learning Outcomes

- A. An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
- B. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
- C. An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
- D. An ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
- E. An ability to function effectively as a member or leader on a technical team;
- F. An ability to identify, analyze, and solve broadly-defined engineering technology problems;
- G. An ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature;
- H. An understanding of the need for and an ability to engage in self-directed continuing professional development;
- I. An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
- J. A knowledge of the impact of engineering technology solutions in a societal and global context; and
- K. A commitment to quality, timeliness, and continuous improvement.

Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Isabella M. Borisova	Lecturer, Non-Tenure Track	Electronics and Computer Technology	2011
Richard K. Cozzens	Professional in Residence, Non-Tenure Track	2D and 3D Design	2001
Roger A. Greener	Professional Staff	Computer Aided Manufacturing (CAM)	1990
L. Scott Hansen	Associate Professor, Chair	Technology Education	2007
Scott Munro	Associate Professor	Aerospace Engineering, Acoustics	2015
John M. Murray	Associate Professor	Electrical Engineering, Sustainable Design	2007
Matthew Roberts	Professor, Associate Chair	Civil Engineering	2014
Ali S. Siahpush	Associate Professor	Mechanical Engineering, Thermodynamics	2015
David A. Ward	Associate Professor	Electronics Technology	1985

Productivity Highlights 2015—2016

Scholarly Presentations at Professional Meetings

Cozzens, R. "Effective Web-based Engineering and Technology Curriculum for Rural High Schools" *International SEEDS Conference*, September 17 2015, Leeds UK

Roberts, M.W.; Haden, C. "Assessing Student Learning of Civil Engineering Infrastructure" *ASEE Annual Conference*, June 27 2016, New Orleans LA

Haden, C.; Parker, P.J.; Thompson, M.K.; Penn, M.R.; Hart, S.D.; Roberts, M.W. "Implementation of Infrastructure Education Courses Across Multiple Institutions" *ASEE Annual Conference*, June 27 2016, New Orleans LA

Parker, P.J.; Penn, M.R.; Roberts, M.W.; Hart, S.D.; Haden, C.; Thompson, M.K. "Crowdsourcing an Outline for a Model Introductory Infrastructure Course Using a Modified Delphi Process" *ASEE Annual Conference*, June 27 2016, New Orleans LA

Documents, Books, and other Publications

Hansen, L. S. "Autodesk Inventor 2017—A Tutorial Introduction", *SDC Publications* 2016. ISBN 978-1630570200

Scholarly Articles

Barry, B.; Roberts, M. "First 60 years of the Journal of Professional Issues in Engineering Education and Practice" *J. Prof. Issues Eng. Educ. Pract.*, DOI 10.1061/(ASCE)EI.1943-5541.0000277

McCord, D.; Crepeau, J.; Siahpush, A. "Analytical solutions to the Stefan problem with internal heat generation" *Applied Thermal Engineering* 103, 443—451

Professional Memberships and Community Service

Isabella Borisova

- Member of:
 - ASEE
 - Utah Women in Higher Education Network
- Volunteer for *Utah SkillsUSA*

Richard K. Cozzens

- Public school outreach
- Reviewer for ASEE
- Member of WSU DT Advisory Board
- Fellow for LMU Leeds Sustainability Institute

David A. Ward

- Volunteer for *Utah SkillsUSA*

Matthew Roberts

- Member/reviewer for:
 - ASEE
 - NCEES
- Associate Editor for *Journal of Professional Issues in Engineering Education and Practice*

Ali S. Siahpush

- Editor/reviewer for:
 - ASME Heat Transfer
 - Progress in Nuclear Energy
 - ASME Thermal Engineering
 - Solar Energy
 - SPA
- Board member of
 - Utah NASA Space Grant Consortia
 - Idaho NASA Space Grant Consortia

External Grants

Richard Cozzens (PI)

- Utah Cluster Acceleration Partnership STEM Career Paths to Success, July 2015—June 2016 (\$153,040)

Department of Mathematics

Mission Statement

The Department of Mathematics serves future mathematicians, math educators, scientists, business strategists and engineers. Those pursuing studies in the arts and humanities are also encouraged to study mathematics. Besides reading, no other skills are so highly valued across the breadth of professional society as those that the Department of Mathematics is responsible to teach.

The Department of Mathematics is committed to offering a well-rounded academic program that will enhance the lives of those who take its courses. The demand for mathematical knowledge and skills is high in both industry and education. In secondary schools, the two greatest shortages of qualified teachers across the nation are in mathematics and technology. Also, jobs outlook publications continually rate mathematics as one of the skills most in demand for college graduates, jobs in mathematics and actuarial science continually top lists in job satisfaction surveys

Programs and Degrees Offered

BACHELOR DEGREES

BS Mathematics:

Actuarial Science Emphasis

Pure Math Emphasis

BS Mathematics Education

MINORS

Mathematics:

Actuarial Science Emphasis

Pure Math Emphasis

Mathematics Education

Student Learning Outcomes

1. Use standard mathematical techniques to solve computational problems.
2. Demonstrate knowledge of fundamental mathematical concepts and results in the core content areas.
3. Use content knowledge to solve applied and real-world mathematical problems.
4. Communicate mathematics effectively using proper notation and terminology.
5. Use logical reasoning to construct clear and concise mathematical proofs



Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Matthew C. Adams	Lecturer, Non-Tenure Track	Math Literacy	2012
Seth G. Armstrong	Associate Professor, Chair	Partial Differential Equations	2001
Saïd Bahi	Professor	Operations Research	2001
Bryan L. Bradford	Lecturer, Non-Tenure Track	Math Literacy	2013
James P. Brandt	Associate Professor	History of Math, Math Education	2006
Sarah M. Duffin	Associate Professor	Partial Differential Equations	2004
Eric M. Freden	Associate Professor, Interim Associate Dean	Geometric Group Theory	1997
Jianlong Han	Associate Professor	Partial Differential Equations	2005
Derek W. Hein	Associate Professor	Combinatorial Design Theory	2004
Jana R. Lunt	Assistant Professor	Math Education	2010
Gretchen R. Meilstrup	Assistant Professor	Algebraic Geometry	2008
Mark H. Meilstrup	Assistant Professor	Geometric Group Theory	2011
Andrew F. Misseldine	Lecturer, Non-Tenure Track	Representation Theory	2014
Emma L. Schafer	Assistant Professor	Finite Group Theory	2012
Andreas J. Weingartner	Professor	Number Theory, Actuarial Science	1999
Cecilia L. Weingartner	Lecturer, Non-Tenure Track	Numerical Methods	2008

Productivity Highlights 2015—2016

Scholarly Presentations at Professional Meetings

Armstrong, S. “A Finite Difference Scheme for an Ising Spin System Equation with Kac Potential” *MAA Intermountain/Rocky Mountain Sections Meeting*; April 8 2016, Grand Junction CO

Bahi, S. “Random Walk Hypothesis: An Investigation of Stock Returns” *IABE 2015-Winter Conference* December 20 2015, San Francisco, CA

Freden, E. “Using Formal Languages to Solve Combinatorial Problems” *World Famous Scholars to Wuhan Lectures*, May 9-10 2016, Wuhan China

Han, J. “Numerical analysis of a Nonstandard Viscous Cahn-Hilliard system” *MAA Intermountain/Rocky Mountain Sections Meeting*; April 8 2016, Grand Junction CO

Hein, D. “A New Construction for Decompositions of λK_n into LW and OW Graphs” *MAA Intermountain/Rocky Mountain Sections Meeting*; April 8 2016, Grand Junction CO

Hein, D. “Decompositions of λK_n into Generalized Stanton-Type Graphs” *29th Midwest Conference on Combinatorics, Cryptography and Computing*; October 17 2015, Charleston SC

Misseldine, A. “Counting Schur Rings over Cyclic Groups” *AMS Western Section Meeting* April 9 2016, Salt Lake City UT

Weingartner, A. “Polynomial Analogues of some Results in Number Theory” *West Coast Number Theory Conference*, December 18 2015, Pacific Grove, CA

Honors, Awards and Special Recognition

Jana R. Lunt

- 2016 SUU Distinguished Educator

Eric Freden (PI)

- *Wuhan Polytechnic University World Famous Scholars to Wuhan Award*, May 2016 (\$3000)

Scholarly Articles

Bahi, S. “Random walk hypothesis: an investigation of the Casablanca stock returns” *International Journal of Business Research* 15 (5), 99—104

Conner, G.R.; Meilstrup, M.; Repovš, D. “The geometry and fundamental groups of solenoid complements” *Journal of Knot Theory and its Ramifications* 24 (14) 2015, DOI: 10.1142/S0218216515500698

Humphries, S.; Johnson, K.; Misseldine, A. “Commutative Schur rings of maximal dimension” *Communications in Algebra* 43 (12), 5298—5327

Humphries, S.P.; Rode (Schafer), E.L. “A class of groups determined by their 3-S-rings” *Rocky Mountain J. Math.* 45 (2), 565-581

Humphries, S.P.; Kennedy, C.; Rode (Schafer), E.L., “The total character of a finite group” *Algebra Colloquium* 22 (spec01), 775—778

Weingartner, A. “Practical numbers and the distribution of divisors” *Quarterly Journal of Mathematics* 66 (2), 743—758

Weingartner, A. “Integers with large practical component” *Publicationes Mathematicae Debrecen* 87 (3-4), 439—447

External Grants

Jana Lunt (PI) with Fred Govedich, Bruce Howard, John MacLean

- *S-STEM (NSF)* Scholarships for STEM majors, August 2012—July 2017 (\$575,000)

Eric Freden (PI)

- *Carl D. Perkins Career and Technical Education* July 2015—June 2016 (\$111,782)

Professional Memberships and Community Service

James P. Brandt

- Member of
 - *Mathematical Association of America*
 - *UAMTE*

Eric M. Freden

- Member of
 - *American Mathematical Society*
 - *Phi Beta Kappa*
- Reviewer for *MathSciNet*

Jianlong Han

- Reviewer for:
 - *J. of Discrete & Cont. Dynamical Systems*
 - *Journal of Differential Equations*

Derek W. Hein

- Reviewer for:
 - *AP Calculus Exam*
 - *JCMCC*

Jana R. Lunt

- Public school outreach

Mark H. Meilstrup

- Member of *American Mathematical Society*

Gretchen R. Meilstrup

- Member of *Mathematical Association of America*

Andrew F. Misseldine

- Member of *American Mathematical Society*

Emma L. Schafer

- Public school outreach
- Member of *Mathematical Association of America*

Andreas J. Weingartner

- Member of *American Mathematical Society*
- Reviewer for *MathSciNet*



Department of Nursing

Mission Statement

The Department of Nursing is made up of academic programs that prepare individuals for professional nursing practice. A Bachelor of Science in Nursing is recommended for students preparing for entry into nursing practice. We offer a learning-centered education that meets the requirements for a baccalaureate degree at SUU and ensures that graduates have the abilities to be successful professional nurses. The purpose of the Department of Nursing is to provide learning opportunities that engage students in a comprehensive program of classroom and experiential learning that emphasizes caring, critical thinking, problem solving, ethical decision making, and communication.

Student Learning Outcomes

- A. Students will provide quality professional nursing care based on a synthesis of theoretical and empirical knowledge from nursing, physical and social sciences, arts and humanities, and life experiences.
- B. Students will use evidence as the basis for clinically competent contemporary nursing care.
- C. Students will communicate effectively using various means in a variety of roles and settings.
- D. Students will optimize health care to diverse individuals, families, groups and communities through collaboration with interdisciplinary health care teams.
- E. Students will demonstrate intellectual curiosity, critical thinking, and motivation toward life-long learning.
- F. Students will influence the quality of nursing and health care using leadership skills, management concepts, and a knowledge of the political system.
- G. Students will be legally and ethically accountable for clinical nursing practice.
- H. Students will assume the role of generalist nurse and become responsible members of the profession

Special Accreditation



The baccalaureate program at Southern Utah University is accredited by the Commission on Collegiate Nursing Education.

Programs and Degrees Offered

BACHELOR DEGREES

- BS Nursing:
Pre-Licensure Emphasis
RN to BSN Emphasis



Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Donna De Silva	Assistant Professor, Non-Tenure Track	Pediatric Care	2015
Elizabeth A. Hatfield	Professional Staff	Nursing Lab Specialist	2002
Selwyn Layton	Assistant Professor, Non-Tenure Track	Nursing Education	2009
Donna J. A. Lister	Associate Professor, Chair	Clinical Nursing	2005
SheriDawn Neilson	Assistant Professor, Non-Tenure Track	Critical/Trauma Care	2015
Alan H. Pearson	Assistant Professor	Medical/Surgical Nursing	2005
Rebecca S. Rasmusson	Assistant Professor, Non-Tenure Track	Family Nursing	2006
Shelley R. Sanderson	Assistant Professor, Non-Tenure Track	Family Nursing	2010
Daphne A. Solomon	Assistant Professor, Non-Tenure Track	Acute Care	2013
Kevin D. Tipton	Assistant Professor, Non-Tenure Track	Geriatric Nursing	2006

Productivity Highlights 2015—2016

Scholarly Activities

Tipton, K.D. "Staff nurse perceptions of the management competencies first line nurse managers need to be successful." *PhD Dissertation* (Capella University), 2015

Scholarly Presentations at Professional Meetings

Lister, D.J.A. "This is a Great Idea: Creating a Win/Win Authentic Learning Experience for Nursing Students" *AACN 2015 Baccalaureate Education Conference*, November 20 2015, Orlando FL

Lister, D.J.A. "Current Issues in Nursing" *64th Annual Utah Student Nurse Association Conference*, February 6 2016, Orem UT

External Grants

Donna Lister and Alan Pearson

- *UCAP Grant in partnership with the University of Utah Interdisciplinary Care Management*, July 2015—June 2016 (\$16,600)



Professional Memberships and Community Service

Donna De Silva

- Member of:
 - American Association of Critical Care Nursing
 - American Association of Nurse Practitioners
 - California Association of Nurse Practitioners
 - Hospice and Palliative Nursing Association
 - International Association of Forensic Nurses
 - National League of Nursing
 - Utah Nurses Association
 - Utah Nurse Practitioners Association
- Volunteer for Canyon Creek Women's Crisis Center

Selwyn Layton

- Member of:
 - American Association of Critical Care Nursing
 - American Nurses Association
 - Emergency Nurses Association
 - National League of Nursing
 - Utah Nurses Association
- BSA leader
- Medical volunteer for Utah Summer Games

Donna J. A. Lister

- Board member of:
 - Cedar City Hospital Board
 - Southern Utah Veterans Home (Ivins UT)
- Member of:
 - Academic Leadership Committee
 - American Association of Nurse Practitioners
 - National League of Nursing
 - Utah Nurses Association
 - Utah Nurse Practitioners Association



SheriDawn Neilson

- Member of:
 - Emergency Nurses Association
 - National League of Nursing
- Public school outreach

Alan H. Pearson

- Member of:
 - National League of Nursing
 - Utah Nurses Association
 - Utah Nurse Practitioners Association
- Medical volunteer: Huntsman Senior World Games

Rebecca S. Rasmusson

- Member of:
 - Association of Utah Nurse Practitioners
 - Beaver Valley Hospital Medical Staff Association
 - National League of Nursing
 - Utah Nurses Association

Shelly R. Sanderson

- Member National League of Nursing
- Public School Outreach

Daphne A. Solomon

- Member of:
 - American Association of Nurse Practitioners
 - Association of Utah Nurse Practitioners
 - Five County Children's Justice Center
 - International Association of Forensic Nurses
 - National League of Nursing
 - Utah Nurses Association
 - Advisory Boards for Children's Justice Centers

Kevin D. Tipton

- Member of:
 - American Nurses Association
 - Emergency Nurses Association
 - Mothers Against Drunk Driving
 - National League of Nursing
 - Utah Nurses Association
 - Utah Organization for Nurse Leaders
 - Cedar City Hospital ER Council

Department of Physical Science

Mission Statement

The mission of the Department of Physical Science is to provide an environment that fosters academic excellence in physical science disciplines. The Department of Physical Science at Southern Utah University offers undergraduate programs in Chemistry, Geosciences, Geographic Information Systems, and Physics. We operate several special learning environments for students that include a nationally certified environmental water laboratory, a GIS lab, the Ashcroft Observatory, the Edward & Shirley Stokes open chemistry lab, and a thin section preparation laboratory. We provide comprehensive classroom and experiential learning environments that accentuate critical thinking, problem solving, decision making, and communication in the physical sciences. We also serve as the center of physical science knowledge and expertise for southern Utah.

Programs and Degrees Offered

BACHELOR DEGREES

BA/BS Physical Science Composite:
Teacher Education Emphasis

BS Chemistry:
Professional Emphasis
Health Care Emphasis
Forensic Emphasis
Teacher Education Emphasis

BS Geology:
Professional Emphasis

MINORS

Chemistry
Chemistry Teacher Education
Geography
Geography Teacher Education
Geology Teacher Education
Physics
Physics Teacher Education

CERTIFICATES

Geographic Information System

Student Learning Outcomes

Chemistry

- Students should be able to define problems clearly, develop testable hypotheses, design and execute experiments, analyze data using appropriate statistical methods, and draw appropriate conclusions.
- Students should be able to use the peer-reviewed scientific literature effectively and evaluate technical articles critically.
- Students should understand responsible disposal techniques, understand and comply with safety regulations, understand and use material safety data sheets (MSDS), recognize and minimize potential chemical and physical hazards in the laboratory, and know how to handle laboratory emergencies effectively
- Students should be able to present information in a clear and organized manner, write well-organized and concise reports in a scientifically appropriate style.

Geology

Students will demonstrate mastery of the following outcomes:

- Knowledge of the physical and natural world
- Integrative learning through teamwork, problem solving, inquiry, and analysis
- Introduction and development of geological field and lab skills
- Written and oral scientific communication

Special Accreditation



Although not a formal accrediting body, the American Chemical Society's Committee on Professional Training establishes guidelines and procedures for the approval of bachelor's degrees in programs in chemistry. The Chemistry Professional Emphasis degree at Southern Utah University is approved by the ACS.

Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Kristina B. Bronsema	Professional Staff	Lab Specialist	1997
Daniel J. Eves	Assistant Professor	Bio-analytical Chemistry	2009
Robert L. Eves	Professor, Dean	Geochemistry	1988
Nathan A. Hanson	Lecturer, Non-Tenure Track	Physics/Astronomy	2011
Jennifer E. Hargrave	Assistant Professor	Paleontology	2011
Bruce R. Howard	Associate Professor	Biochemistry	2002
Jason Kaiser	Assistant Professor	Mineralogy	2014
Paul R. Larson	Associate Professor	Geography	1994
John S. MacLean	Assistant Professor	Structural Geology	2010
David J. Maxwell	Professional Staff	GIS	1997
Christopher F. Monson	Assistant Professor	Analytical Chemistry	2011
Cameron Pace	Assistant Professor	Physics/Astronomy	2015
Elizabeth Pierce	Assistant Professor	Biochemistry	2015
J. Ty Redd	Professor, Chair	Organic Chemistry	1990
Guizella Rocabado	Visiting Assistant Professor	Medicinal Chemistry	2015
Hussein A. Samha	Professor	Inorganic Chemistry	2001
Mackay B. Steffensen	Associate Professor	Organic Chemistry	2006
Elaine Vickers	Lecturer, Non-Tenure Track	Inorganic Chemistry	2014
Kim H. Weaver	Associate Professor	Analytical Chemistry	2000
Nathan S. Werner	Assistant Professor	Organic Chemistry	2012
Rhett R. Zollinger	Assistant Professor	Physics/Astronomy	2015

Productivity Highlights 2015—2016

Scholarly Presentations at Professional Meetings

Davis, L.E.; Pollock, G.L.; Eves, R.L., *et al*
“Hymenoptera Trace Fossils from the Coprinisphaera Ichnofacies in the Pink Member of the Claron Formation, Pansaugunt Plateau, Bryce Canyon National Park, Utah” *Geological Society of America Annual Meeting*, November 3 2015, Baltimore MD

Larson, P.R.; Lohrengel, C.F. “Water Barometer Exercise for Physical Geography” *Annual Meeting of the American Association of Geographers*, March 29 2016, San Francisco CA

Kaiser, J.F.; Hogan, J.P.; Wizevich, M.; Hargrave, J.; MacLean, J.S. “Using Student-Led Field Trips to Create Active Learning Environments and Validate Student Interpretations” *Geological Society of America Annual Meeting*, November 2 2015, Baltimore MD

Pratt, R.; Kaiser, J.F. “Testing the Physical and Chemical Homogeneity of a Cinder Cone: A Case Study of the Henry Knolls Cinder Cone Volcano in Southwest Utah” *Geological Society of America Annual Meeting*, November 2 2015, Baltimore MD

Christensen, P.D.; MacLean, J.S. “Integrating Tectonic Processes with Structural Geology, Sedimentology, and Environmental Geology using a Deformation Sandbox Model” *Geological Society of America Annual Meeting*, November 3 2015, Baltimore MD

Kidman, G.C.; MacLean, J.S.; Maxwell, D.J. “New Kinematic Model of the Southern Utah Virgin Anticline through New 3-D Stereoscopic and Traditional Field Methods” *Geological Society of America Annual Meeting*, November 1 2015, Baltimore MD

Kupfer, K.L.; Zdanowski, S.E.; MacLean, J.S. “Citizen Science in Cedar Breaks National Monument” *Geological Society of America Annual Meeting*, November 1 2015, Baltimore MD

MacLean, J.S.; “Course Objective: Complete and Publish Research” *Geological Society of America Annual Meeting*, November 1 2015, Baltimore MD

Scholarly Presentations, continued

Yon, J.C.E.; MacLean, J.S. “Channel Evolution of the lower San Juan River, SE Utah” *Geological Society of America Annual Meeting*, November 1 2015, Baltimore MD

Sears, J.W.; MacLean, J.S. “Early Cambrian Trilobites confirm Siberia-West Laurentia Paleocontinental Connection” *Rocky Mountain Section Meeting of the Geological Society of America*, May 19 2016, Moscow ID

Haddon, E.K.; Webb, C.; McNitt, J.; Pollock, G.L.; Davis, L.; MacLean, J.S. “Brittle Deformation and Hoodoo Development in Bryce Canyon National Park” *American Geophysical Union Fall Meeting*, December 15 2015, San Francisco CA

Monson, C.F.; Reynolds, C. “Phosphatidylserine-Containing Supported Lipid Bilayer as a Separation Medium for Copper Binding Compounds” *American Chemical Society National Meeting*, March 14 2016, San Diego CA

Butterfield, A.G.; Werner, N.S. “Preparation of t-Butyldimethylphosphine Borane and t-Butyldiethylphosphine Borane by Selective Grignard Reagent Substitution of Phosphorus Trichloride” *American Chemical Society National Meeting*, March 16 2016, San Diego CA

Maedgen, R.L.; Tomlinson, K.A.; Werner, N.S. “Diastereoselectivity of the Nucleophilic Addition of (±)-Menthylmagnesium Chloride with sp Hybridized Electrophiles” *American Chemical Society National Meeting*, March 14 2016, San Diego CA

Holt, H.; Werner, N.S. “Preparation of trans-Stilbene Derivatives by Palladium-Catalyzed Cross-coupling Reaction” *American Chemical Society National Meeting*, March 14 2016, San Diego CA

Honors, Awards and Special Recognition

Nathan S. Werner
• 2016 SUU Distinguished Educator

Scholarly Publications

Eves, D.; Weaver, K.H.; Redd, J.T. "Southern Utah University internship: a working model of peer mentorship" in *Chemistry and the Environment: Pedagogical Models and Practices*, ACS Symposium Series 1214; American Chemical Society 2015, 17—33

Weaver, K.H.; Eves, D.J. "Environmental chemistry and analytical chemistry: a synergistic relationship in the teaching laboratory" in *Chemistry and the Environment: Pedagogical Models and Practices*; ACS Symposium Series 1214; American Chemical Society 2015, 35—50

Davis, L.E.; Eves, R. L. "Swimming reptile tracks in the Lower Triassic Moenkopi formation, Capitol Reef National Park, UT" *The Compass: Earth Science Journal of Sigma Gamma Epsilon* 88 (1), Article 2. Available at: <http://digitalcommons.csbsju.edu/compass/vol88/iss1/>

Eves, R.L.; Davis, L.E. "Coal clinker site in the late Cretaceous Blackhawk formation, Castle Gate, Utah, USA" *The Compass: Earth Science Journal of Sigma Gamma Epsilon* 87 (4), Article 2. Available at: <http://digitalcommons.csbsju.edu/compass/vol87/iss4/>

Kaiser, J.; MacLean J.S.; *et al* "Field and petrographic analysis of the Indian Peak-Caliante Caldera Complex at Condor and English Canyons in eastern Nevada" *The Compass: Earth Science Journal of Sigma Gamma Epsilon* 87 (4), Article 1. Available at: <http://digitalcommons.csbsju.edu/compass/vol87/iss4/>

Trujillo, M.J.; Scholes, D.T.; Reynolds, C.M.; Winegar, C.; Monson, C.F. "Phosphatidylserine-Copper (II) binding can lead to fast through-membrane copper transport" *Journal of the Utah Academy* 92, 257—271

Pace, H.; Simonsson, L.; Gannarsson, A.; Eck, E.; Monson, C.; Geschwindner, S.; Snijder, A.; Höök, F. "Preserved transmembrane protein mobility in polymer-supported lipid bilayers derived from cell membranes" *Analytical Chemistry* 87 (18), 9194-9203

Scholarly Publications, continued

Pilachowski, C.; Pace, C. "The abundance of fluorine in normal G and K stars of the galactic thin disk" *Astronomical Journal* 150 (3), Article 66

Pace, C.; Salim, S. "Suppression of star formation in the hosts of low-excitation radio galaxies" *Astrophysical Journal* 818 (1), Article 65

Tianero, M.D.; Pierce, E.; *et al* "Metabolic model for diversity-generating biosynthesis" *Proceedings of the National Academy of Sciences* 113 (7), 1772—1777

Gibson, M.I.; Chen, P.Y.; Johnson, A.C.; Pierce, E.; Can, M.; Ragsdale, S.W.; Drennan, C.L. "One-carbon chemistry of oxalate oxidoreductase captured by X-ray crystallography" *Proceedings of the National Academy of Sciences* 113 (2), 320—325

Butterfield, A.G.; Prater, M.P.; Werner, N.S. "Preparation of *t*-butyldimethylphosphine borane and *t*-butyldiethylphosphine borane by selective Grignard reagent substitution of phosphorus trichloride" *American Journal of Undergraduate Research* 13 (1), 51—57

Documents, Books, and other Publications

Samha, H.A.; Lab Manual "Introductory Chemistry Demonstrations and Experiments 3rd Edition", 2016

External Grants

David J. Maxwell

- *Bryce Canyon (IIC/NPS)* Archeological GIS support (with John MacLean), 2015—2016 (\$17,400)
- *Forest Service (USDA)* GIS mapping cooperative agreement, 2011—2015, extended to September 2016 (\$100,000)
- *Five County Association of Governments* Hazard mitigation, 2015—2016 (\$18,683)

Christopher F. Monson, Kim H. Weaver, *et al*

- *iUTAH (NSF)* "Oxygen quantitation in anoxic waters and correlation to microbial life", January—July 2016 (\$14,846)

Professional Memberships and Community Service

Daniel J. Eves

- Member of *National Science Teachers Association*

Robert L. Eves

- Board member of:
 - *Bryce Canyon Natural History Association*
 - *Escalante Heritage Center*
 - *RM NASA Space Grant Consortium*

Bruce R. Howard

- Member of:
 - *AAAS*
 - *American Chemical Society*
- Public school outreach

Jason Kaiser

- Member of:
 - *American Association of Petroleum Geologists*
 - *American Geophysical Union*
 - *Association for Women Geoscientists*
 - *Geological Society of America*
 - *National Association of Geoscience Teachers*
 - *National Collegiate Honors Council*
 - *Utah Geological Association*
- Public school outreach

Paul R. Larson

- Member of:
 - *Association of American Geographers*
 - *Iron County Historical Society*
 - *National Council for Geographic Education*
 - *National Geographic Society*
 - *Phi Kappa Phi*
- Reviewer for *Pearson Higher Education*

John S. MacLean

- Member of:
 - *American Association of Petroleum Geologists*
 - *Association of Women Geoscientists*
 - *Geological Society of America*
 - *Utah Geological Association*
 - *National Collegiate Honors Council*
 - *Steering committee for Partners in the Parks*
- Public school outreach

David J. Maxwell

- Member of:
 - *Utah Geographic Information Council*
 - *Five Counties GIS User Group*
 - *Southern Utah Technology Council*
- Mapping of LDS ward boundaries
- Public school outreach

Christopher F. Monson

- Member of *American Chemical Society*
- Public school outreach

Cameron Pace

- Member of *Great Basin Observatory Consortium*
- Public school outreach

J. Ty Redd

- Member of *American Chemical Society*
- Public school outreach

Hussein A. Samha

- Public school outreach

Mackay B. Steffensen

- Member of:
 - *American Chemical Society*
 - *UCUR Steering Committee*
- Public school outreach

Elaine A. Vickers

- Public school outreach

Kim H. Weaver

- Reviewer for
 - *Journal of Environmental Quality*
 - *Journal of Solid Waste Tech & Mgmt*

Nathan S. Werner

- Member of *American Chemical Society*

Rhett R. Zollinger

- Member of:
 - *American Astronomical Society*
 - *American Association of Physics Teachers*
 - *Great Basin Observatory Consortium*
 - *Society of Physics Students*
- Public school outreach
- Reviewer for *American Journal of Physics*



Dr. Fred Lohrengel 1939-2015

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