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## EXECUTIVE SUMMARY 2011-2012

### Summer 2012

The Walter Maxwell Gibson College of Science and Engineering (COSE) has much to reflect positively upon at the end of the 2011-2012 academic year. This executive summary highlights some of the accomplishments, events, and productivity which all indicate the level of dedication of the talented faculty in this college.

1. As of July 1 2011, the former College of Science and College of Computing, Integrated Engineering and Technology merged to form the College of Science and Engineering. A very generous endowment from the estate of alumnus Walter Maxwell Gibson was received this past year. This donation constitutes the largest gift in Southern Utah University's history. The endowment proceeds are wholly dedicated for use within the newly named Walter Maxwell Gibson College of Science and Engineering (read the *Message from the Dean* on page 4 to learn more details).
2. Our healthcare professional acceptance success continues. In 2011-12, 95% of COSE applicants were accepted to medical school; 89% of dental school applicants were successful; 80% of COSE graduates who applied for pharmacy admissions were accepted, and 90% of applicants to PA schools. This phenomenal success is largely 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 College of Science and Engineering. 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 continues to excel. The Commission on Collegiate Nursing Education (CCNE), a Division of the American Association of Colleges of Nursing (AACN), awarded our programs full accreditation for the maximum period of ten years. Our student's pass-rate on the national standardized licensure exam (NCLEX) was 100% for both December 2011 graduates and May 2012 graduates (the preliminary national average is 91.2%). 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 COSE Professors John R. Taylor and Mackay B. 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. This year marks the 8th year of the Southern Utah Center for Computing, Engineering, and Science Students (SUCCESS) Academy partnership with SUU. Of the 79 graduates, 70 students earned SUU Associate of Science degrees in 2012 while completing their high school diplomas. The SUCCESS Academy 10th and 12th grade math teams were recognized as the Statewide Team Math Champions. School wide SUCCESS Academy at SUU earned 2311 concurrent enrollment credits from Southern Utah University and paid over \$100,000 dollars in tuition costs for Senior participation in on campus courses. Over 85% of the graduating class will attend SUU to complete their Bachelor of Science degree. This has been a very 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 College of Science and Engineering has provided high-quality outdoor education to over 4,500 4<sup>th</sup>-6<sup>th</sup> students in the last thirteen years. This summer Professor Wittwer and her staff served 387 elementary students in nine separate camps, with more than 250 others turned away for lack of space. In addition CMSC offered a program for middle school students who enjoyed five days and four nights rafting along the San Juan River. More information is available at: <http://suu.edu/cose/center/>.

7. The College continues its efforts to serve public education through several important programs:
- Partnership for Effective Science Teaching and Learning (PESTL): Professors John R. Taylor and Mackay B. Steffensen were involved in the completion of the latest three-year cycle of this grant. During this cycle, SUU has played host to Iron and Washington County School District's best science teachers. The program strengthens both science content knowledge and a better understanding of the nature of science for teachers who instruct grades 4-6. We have already received word that SUU will continue to offer this program for another two-year cycle.
  - Professor John Taylor's joint grant with BYU, UVU, and Emery County School district continues for another year. This funded grant (\$104,000) provides professional development to the in-service instructors of eight different curricula.
  - Bryce Canyon Natural History Association (BCNHA) Field Seminar Program. This long running (15 years) cooperative program is a partnership between COSE, BCNHA, and the High Plateaus Institute (HPI). In-service educators primarily from Kane and Garfield counties attend a four-day seminar that integrates archeology, range and plant ecology, and geology. Dr.'s Ronald Martin and Robert Eves were two of the faculty participants in the program. The participants learn science in a field setting and apply what they have learned in their own classrooms.
  - As of August 7 2012, COSE has just been awarded a National Science Foundation *S-STEM* award of \$116,000/year for the next four years to further enhance the preparation of Science, Technology, Engineering, and Math Educators at SUU. Kudos to Principal Investigator Jana Lunt and her team consisting of Bruce Howard, Glen Longhurst, John MacLean and Fred Govedich.
8. The Third Annual COSE Undergraduate Research Symposium was held on November 7, 2011. This event was an opportunity to showcase student-faculty research in the College of Science and Engineering. Presentations included in-progress and more complete research presentations. Inter-departmental collaborative presentations were particularly encouraged. There were 46 faculty mentored student presentations (oral and poster) at this year's meeting. You can check out the abstracts and some photos at: <http://suu.edu/cose/symposium/>.
9. COSE offered numerous high school outreach events during 2011-12, incorporating student contests, prizes, and special guests.
- Engineering Week at SUU (February)
  - Southern region of the Utah State Math Contest (March)
  - Southern Utah Science and Engineering Fair (March)
  - 10<sup>th</sup> Annual Chemical Olympics (April)
  - Technology Fair (April)
10. This has been a productive year for College faculty. For the 2011-2012 academic year, the following data were reported:
- Refereed Scholarly Publications – 20
  - Refereed Presentations at Professional Meetings – 53
  - Books authored – 4
  - Funded Grants – 8
  - Special Recognitions and Awards – 4
11. We acknowledge the retirement of Walter Faucette at the end of the 2011-2012 academic year and are grateful for his excellent teaching and service.

## MESSAGE FROM THE DEAN



One of the most significant events of the past year was the opportunity to implement the merger of the former College of Computing, Integrated Engineering, and Technology with the former College of Science. The reorganization occurred on July 1<sup>st</sup> of 2011, and we have been working together as one college for a year. Despite some initial minor adjustments, I think all agree that the transition has been a smooth one, resulting in some new opportunities for both former colleges.

One of those opportunities was the successful expansion of our annual faculty/student research symposium. This year's event was conducted on November 7<sup>th</sup>, 2011. There were twelve faculty presentations or posters and 34 student presentations/posters. As the University moves into the implementation phase of the Engaged Education Requirement (EER) events of this type will take on increasing significance. The College is, again, ahead of the game in creating opportunities for students to demonstrate the completion of capstone experiences.

On Thursday, May 3<sup>rd</sup>, 2012, one of Southern Utah University's most prominent graduates was forever linked to the College of Science and Engineering, one of SUU's largest academic colleges. The College has been formally renamed the Walter Maxwell Gibson College of Science and Engineering. The late Walter M. Gibson, a preeminent scientist of his time, will forever inspire SUU's students, thanks to an impressive contribution — the largest gift in SUU history — from the Gibson family that will in perpetuity support scholarships and research initiatives for the College. A native of Enoch, Utah, Mr. Gibson is an alumnus of the Branch Agricultural College. He earned an associate's degree in chemistry in 1951 and credited his love for science and discovery to his time at SUU. He went on to receive a bachelor's degree from the University of Utah and later completed a doctorate in nuclear chemistry at the University of California-Berkeley. As a career researcher at Bell Laboratories, Gibson performed groundbreaking research that contributed to the rescue of the Telstar satellite in 1963. We recognize the significance of the Gibson family's gift and express our sincere gratitude for their generosity.

Another important event this year was an additional gift from the ALSAM Foundation. This philanthropic organization, built on the retail efforts of the Skaggs family, has shared and is still sharing their good fortune. Still personally managed by L.S. Jr. (Sam) and his wife Aline, the ALSAM Foundation has given hundreds of million dollars to education and health research by way of scholarships, and the establishment or funding of a wide number of university and research centers. Their most recent gift will be used to endow scholarships and provide ongoing funding to support student research in the College. Due to their generosity, the recently completed Center for Health and Molecular Science (the Science Center Addition) will soon be formally named in their honor.

As we end this academic year, I again extend my personal thanks to dedicated students, devoted faculty and administration, and, at this particular moment, to the generous individuals whose financial contributions make such a difference in the academic lives of our students. This continues to be a wonderful time to be Dean of the College of Science and Engineering.

Sincerely,  
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 and Nutrition Science, Biology, Integrated Engineering, Mathematics, Nursing, Physical Science and the School of Computing and Technology. We operate or participate in the operation of several special learning environments for students that include a Keck Foundation sponsored undergraduate research lab, an astronomical observatory, a GIS lab, a certified water lab, a scanning electron microscopy lab, the Garth & Jerri Frehner Natural History Museum, the Cedar Mountain Science Center, the Valley Farm, a Computer Forensic Lab, a Networking and Security Lab, the James E. Bowns Herbarium 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:

- 95% acceptance to medical schools
- 89% acceptance to dental schools
- 80% acceptance to pharmacy schools
- 75% acceptance to physical therapy programs
- 90% acceptance to PA schools



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 2011-12, the following were reported:

- Educational Testing Service (ETS) Major Field Exams
  - Chemistry–86<sup>th</sup> percentile student average, 98<sup>th</sup> percentile institutional/program average
  - Biology–50<sup>th</sup> percentile student average
  - Mathematics–71<sup>st</sup> percentile student average
  - Math Ed–50<sup>th</sup> percentile student average
- American Chemical Society (ACS) end of course exams
  - Average for all Summer 2011 sections: 70<sup>th</sup> percentile
  - Average for all Fall 2011 sections: 63<sup>rd</sup> percentile
  - Average for all Spring 2012 sections: 69<sup>th</sup> percentile
- NCLEX national standardized nursing licensure exam
  - 100% pass rate for Fall 2011
  - 100% pass rate for Spring 2012

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 2011-12

- Each syllabus was examined at the department chair level.
- Student research experiences were evaluated during local presentation of the results, including the 3<sup>rd</sup> Annual 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.

In 2011-12 COSE acquired:

- an HD medical camera
- a microwave reactor
- a solvent purifier
- a microbiological incubator
- a glucose monitor,
- a biochemical analyzer
- a benchtop shaker
- a gradient cyler, a polarimeter
- three smartboards
- a plasma cutter

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 the dean during 2011-12.
- All new faculty hires are highly qualified and hold 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 Southern Utah 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 continues to support the SUU agriculture program.
- The Mountain Ranch and its uses are being reviewed and a utilization plan drafted in cooperation with SUU Outdoor Recreation and the Office of Regional Services.
- Cedar Mountain Science Camp served over 387 students from 62 cities/towns in nine separate camps and continues to have many 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
- The Casting/Welding Lab allows the physical realization of design projects for engineering and technology students.

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 the COSE continue to serve on the cooperating association boards of Zion and Bryce Canyon national parks.
- 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

### Department Goals

#### Agriculture Science

1. Through a broad offering of one, two, and four-year programs, the agriculture program prepares students for careers in agricultural science and industry, farm and ranch management, and related public or private service.
2. The agriculture program prepares students to pursue advanced degrees or admission to a professional school upon completion of their work in the agriculture program at SUU.

#### Nutrition Science

1. The goal of the nutrition program at SUU is to prepare students for a number of related careers or entrance into a graduate program upon degree completion at SUU.
2. The intent of the program is to foster a broad understanding of the science of nutrition as it is integrated into all human pursuits.

### Programs and Degrees Offered

#### BACHELOR DEGREES

BIS in Agricultural Science & Industry (examples of coursework that can be used toward a BIS degree include Agribusiness, Animal Science, Plant Science and General Agriculture)  
BS in Human Nutrition/Allied Health  
BS in Human Nutrition/Pre-Dietetics

#### ASSOCIATE DEGREES

Agriculture: Livestock and Farm Management  
Agriculture: Equine Studies

#### MINORS

Agriculture  
Human Nutrition

#### CERTIFICATES

Agriculture: Livestock Farm Management

### Student Learning Outcomes

#### Agriculture Science

1. Students will demonstrate knowledge and applications-based competency in their particular certificate program, degree, and emphasis (i.e., Certificate in Livestock Farm Management; AAS in Livestock Farm Management; BIS in Agricultural Science and Industry with an emphasis in agribusiness, animal science, plant science, or general agriculture; pre-veterinary studies).
2. Students will use scientific methodology, employ critical thinking skills and apply appropriate tools/methods/theories to address problems, carry out investigations, and meet the challenges of providing food, fiber, by-products, and recreational opportunities to others.
3. Students will communicate effectively using terminology appropriate to the discipline.
4. Students will express satisfaction with their learning experience and be well prepared for post-graduation plans and opportunities.

#### Nutrition Science

1. Students will demonstrate their knowledge of the discipline (i.e., nutrition and food sciences) at a level appropriate to the offering.
2. Students will be satisfied with the learning experiences afforded them by the program.
3. Students will recognize and be prepared for numerous opportunities afforded them professionally or to pursue further study at a level appropriate to the offering.



## Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Nica Clark	Lecturer	Human Nutrition	2011
Chad L. Gasser	Assistant Professor	Animal Science	2005
Artis P. Grady	Associate Professor	Human Nutrition	1990
Matthew C. Schmidt	Associate Professor	Human Nutrition	2001
Randall Violett	Assistant Professor	Range Science	2011
Dean L. Winward	Associate Professor	Agriculture	1990
Lee G. Wood	Associate Professor	Animal Science	2000
Cynthia B. Wright	Professor, Chair	Human Nutrition	1981





# Productivity Highlights 2011-12

## Scholarly Presentations at Professional Meetings

**Wright, C.B.** "Using Visual Plate Waste to Measure the Impact of the Reorganization of a Hospital Food Delivery System" *Food & Nutrition Conference & Expo*, November 25 2011, San Diego CA

**Gasser C.;** "Managing the Beef Cow Biological Cycle", *4<sup>th</sup> Annual Cowman's Reproduction Workshop*, September 22 2011, Alton UT

**Grady A.** "ChooseMyPlate - Updates, Background and Resources" *Utah Association of Family & Consumer Sciences Conference*, November 5 2011, Midway UT

**Grady, A.;** Horrocks, S.; **Schmidt, M.;** Steffanof, N. "Perceived Body Image of Middle School Age Children in Rural Southern Utah" *Utah Association of Family & Consumer Sciences*, November 5 2011, in St. George, UT

**Grady, A.;** Reed, B.J.; Platt, J.; **Schmidt, M.;** Ulloa, N. "Student Perceptions of Overweight and Obese Individuals as Measured on the Fat Phobia Scale". *Utah Academy of Nutrition and Dietetics Annual Meeting*, March 29 2012, South Jordan UT

**Winward, D.** "Utah Pesticide Law and Safety Update" Utah Section of the *Society for Range Management*, November 3 2011, Richfield UT

## Professional and Community Service

### Nica Clark

- Student service-learning coordinator for:
  - *Iron County Share & Care*
  - *Iron County Schools*
  - *Cedar City Senior Center*
  - *LDS Bishops Storehouse*
  - *Valley View Medical Center*
- Food Science Coordinator, *Regional Science Olympiad*
- Member of *Healthy Iron County Coalition*

## Service (Continued)

### Chad L. Gasser

- Member of the Editorial Board for the *Journal of Animal Science* and for *Animal Reproduction Science*
- Member of the *NACTA Journal Committee*
- Judge or organizer for:
  - *FFA events*
  - *Iron County Farm Field Day*
  - *SW Junior Livestock Show*

### Artis P. Grady

- Member of *Utah Dietetics Association*, Scholarship and Awards Committee
- Nutrition consultant for *The Spectrum/Daily News*
- Member *Head Start* Health Advisory Committee
- Washington County Fair judge

### Matthew C. Schmidt

- Member of *Utah Dietetics Association*, Scholarship and Awards Committee
- Nutrition consultant for SUU Gymnastics and Softball teams

### Dean L. Winward

- Member of the *North American Colleges and Teachers of Agriculture* Teacher Recognition Committee
- Member of the *Iron County Weed Board*
- Iron County Fair judge
- Judge for *SW Junior Livestock Show*
- Provided Master Gardener class for region
- Utah Division of Wildlife Resources arbitrator

### Cynthia B. Wright

- Reviewer for the *Journal of Family and Consumer Sciences*
- Member of *Healthy Iron County Coalition*
- Judge for *FFA Agriscience Fair*
- Volunteer for Utah SW Public Health Department

## Honors, Awards and Special Recognition

### Nica Clark

- 2012 SUU Service-Learning Fellow

### Lee Wood

- 2012 SUU Distinguished Educator



## Professional Development Meetings and Training Sessions

### Nica Clark

- Food & Nutrition Conference & Expo, *Academy of Nutrition and Dietetics*, September 24-27 2011, San Diego CA
- Annual Conference, *Utah Academy of Nutrition and Dietetics*, March 29-30 2012, Salt Lake City UT

### Chad Gasser

- *North American Colleges and Teachers of Agriculture* Annual Conference, June 14-18 2011, Edmonton Alberta

### Artis P. Grady

- Utah State Office of Education *What is an Educated Person Conference*, November 4, 2011
- *Utah Association of Family & Consumer Sciences* Annual Meeting, November 4-5, 2011
- *Utah Dietetic Association* Annual Meeting, March 29-30 2012, Jordan UT,
- Eight Webinars

### Randall Violett

- Weeklong BLM training, May 2012, St. George UT
- *Utah Wool Growers Association* Annual Meeting, February 4 2012, St. George UT

## Professional Development (Continued)

### Dean L. Winward

- *North American Colleges and Teachers of Agriculture* Annual Conference, June 14 - 18 2011, Edmonton Alberta
- AZ Strip/Southern Utah Invasive Weed Update, August 17 2011, Washington UT
- 2011 *Western Alfalfa and Forage Conference*, December 12-13 2011, Las Vegas NV
- *Utah Farm Bureau Hay & Forage Symposium* Jan. 27 – 28 2011, St. George UT
- 2012 Utah Water Users Workshop, March 12 -14 2012, St. George UT
- *Harward Irrigation and Sprinkler World's Irrigation Expo*, February 22 2012, Springville UT

### Cynthia B. Wright

- Thirty-five webinars



## Scholarly Publications

Grady, A. "Reflections: Taking Steps" *Diabetes Forecast*, 2012: 65(2); 76.



# Department of Biology

## Department Goals

1. Maintain a highly qualified faculty with diverse areas of specialization covering the scope of the biological world.
2. Foster student inquiry into science and experiential education using a variety of pedagogical approaches including laboratory and field-based activities.
3. Provide a personalized learning environment where students are educated in critical thinking, effective communication and lifelong learning skills scientific literacy.
4. Provide opportunities for research, scholarship, and other professional experiences with qualified faculty mentors.
5. Prepare students for post-baccalaureate pursuits including:
  - graduate programs
  - professional health programs
  - science teaching careers
  - natural resources management
  - other biology-related careers
6. Provide service courses for general education purposes and that adequately prepare students for acceptance to and success in other academic programs.
7. Establish short-term and long-term goals defining the future direction of the department and establish specific policies to describe departmental governance.
8. Develop departmental criteria to define excellence in teaching, exceptional service and outstanding scholarly activities and establish support mechanisms to encourage and reward those efforts.
9. Periodically review and modify curriculum to ensure that we are meeting our students' needs while remaining current within our discipline and the evolving goals of SUU.

## Programs and Degrees Offered

### BACHELOR DEGREES:

BA or BS in Biology:

- Botany Emphasis
- Education Emphasis
- Forensics Emphasis
- Zoology Emphasis

MINOR:

Biology

## Student Learning Outcomes

- A. Students will demonstrate an understanding of general knowledge of biology: its language, history, findings and applications, including:
  1. the basic chemistry of life, DNA, RNA, proteins
  2. the processes associated with inheritance
  3. cell structure and function
  4. physiological systems and processes
- B. Students will demonstrate an understanding of the dynamics of interactions and adaptations within and among biological systems, including:
  1. population biology and the importance of organismal interactions
  2. the importance of the interaction between biotic and abiotic components of an ecosystem
  3. the diversity of living organisms and the evolutionary relationships among them
  4. evolutionary processes and their importance
- C. Students will demonstrate an understanding of the methodologies of science and will synthesize new knowledge from scientific literature; students will demonstrate their knowledge and understanding of the following:
  1. the scientific method
  2. reading, understanding, and critiquing peer-reviewed literature
- D. Students will communicate effectively in oral, written, and other formats; students will demonstrate their skills in the following areas:
  1. oral presentation of scientific work or synthesis of knowledge from the field
  2. written presentation of scientific work or synthesis of knowledge from the field
- E. Students will use appropriate tools to carry out investigations in their intended fields, including:
  1. demonstrating competency in use of appropriate field and/or laboratory equipment
  2. successful completion of an SUU-approved experiential learning activity
  3. acquiring sufficient knowledge and training to successfully enter graduate or professional school
  4. completion of an independent research project

## Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Elizabeth Bancroft	Assistant Professor	Zoology, Ecology	2010
Helen C. Boswell	Associate Professor	Evolutionary Biology	1999
Laurie Cotroneo	Assistant Professor	Genetics	2011
James Crouch	Professional Staff	Greenhouse Specialist	1990
Fredric Govedich	Assistant Professor	Zoology, Entomology	2006
Debra Hanson	Assistant Professor, Non-Tenure Track	Biology, Anatomy	2004
William Heyborne	Assistant Professor	Zoology, Herpetology	2011
Terri Hildebrand	Assistant Professor	Botany	2006
Jonathan Karpel	Assistant Professor	Cellular/Molecular Biology	2010
Paul Larson	Associate Professor, Interim Chair	Geography	1994
Ron Martin	Associate Professor	Botany	1996
Paul Pillitteri	Assistant Professor	Anatomy, Physiology	2005
Paul Spruell	Assistant Professor	Ecology	2007
John Taylor	Assistant Professor	Biology, Secondary Education	2002
Mary Jo Tufte	Lecturer	General Biology	2010
Matthew Weeg	Assistant Professor	Neurobiology	2011

# Productivity Highlights 2011-2012

## Scholarly Presentations at Professional Meetings

**Bancroft, B.A.;** Slabaugh, K.E.; Hunt, J.; Ferrin, J; Limb, Z. "The Effects of Temperature Change and Water Fluctuation on Growth in Amphibian Larvae" *National Council of Undergraduate Research (NCUR)*, March 29-31 2012, Ogden UT

**Bancroft, B.A.;** Lee, W.; Wright, R. "The Effects of Thyroid Hormone on Tadpole Growth and Development in the Amphibian *Rana catesbeiana*" *National Council of Undergraduate Research (NCUR)*, March 29-31 2012, Ogden UT

Adams, R.C.; **Hildebrand, T.;** **Spruell, P.** "Identification of Bacteria Found in Water Samples Extracted from Primary Irrigation Waterways in Iron County, Utah" *National Council of Undergraduate Research (NCUR)*, March 29-31 2012, Ogden UT

Cole-Rasch, J.; **Karpel, J.** "Application of Medium-Throughput Mutagenesis Techniques in the Molecular Laboratory Environment", *18<sup>th</sup> International C. elegans Conference*, June 22-26 2011, UCLA

Beal, K.; Laursen, T.; **Pillitteri, P.** "Coaches Opinions on the use of Genetic Screening for Assessment of Collegiate Athletes" *National Council of Undergraduate Research (NCUR)* March 29-31 2012, Ogden UT

**Taylor, J.R.;** Bornemeier, A.; White, K.; Van Alfen, A. "Temporal and Spatial Distribution of Bats in Pipe Spring National Monument and the Kaibab Paiute Reservation" *11<sup>th</sup> Biennial Conference of Research on the Colorado Plateau*, October 2011, Flagstaff AZ

## Scholarly Publications

**Heyborne, W.H.;** Fast, M.; Goodding, D.G. "How-to-do-it: The Madagascar Hissing Cockroach: A New Model for Learning Insect Anatomy" *The American Biology Teacher* **74** #3 (2012)185-189.

## Documents, Books, and other Publications

Smetanka, R.; **Tufte M.J.** "Human Anatomy Laboratory", 3rd Edition 2011, *Fountainhead Press*, ISBN 978-1-59871-466-1

**Hanson, D.** "Introductory Microbiology" 2011 *Fountainhead Press*, ISBN 978-1-59871-463-0

## External Grants

### Terri Hildebrand

- NPS Grant through Colorado Plateau Cooperative: Ecosystem Studies Unit (CPCESU) Correlation between Wetland Vegetative and Microbial Community Diversity of Bryce Canyon National Park's Southern Region. May 2011-December 2012 (\$9,997)
- NPS Grant through Colorado Plateau Cooperative: Ecosystem Studies Unit (CPCESU) Targeted Vegetation Survey and Preparation of NPS Technical Report on the Flora of the Grand Canyon-Parashant National Monument, AZ – Phase II. June 2010-April 2012 (\$49,893)

### Ron Martin

- *Dixie National Forest* Native Plant Restoration August 2011-June 2012 (\$333,526)

### John Taylor

- NPS (CPCESU) Implement cooperative study to understand bat ecology of Pipe Spring National Monument and the Kaibab Paiute Reservation. September 2010-December 2013 (\$40,000)
- Title II, Part B. Mathematics and Science Partnership. Teachers as Scientists Program. Taylor, J.R., D. Merrell, D., A. Johnston. July 2011-September 2012. (\$104,000)
- CFDA Title: Fish, Wildlife, and Plant Conservation Resource Management. Cedar City Field Office Bat Habitat Inventory and Population Monitoring. September 2011-November 2012 (\$20,000)

## Professional and Community Service

### Betsy Bancroft

- Member of *Ecological Society of America*
- Volunteer for Cedar City's Migratory Bird Festival
- Editor or reviewer for four journals:
  - *Animals*
  - *Biology Open*
  - *Conservation Biology*
  - *Ecohealth*
- Ad hoc reviewer for *NSF*

### Helen Boswell

- Professional review of "Evolution: Making Sense of Life", by Karl Zimmer and Doug Emlen (2011)

### Laurie Cotroneo

- Member of *Ecological Society of America*
- Member of *Evolution Society*
- Professional review of "Genetics, Analysis and Principles" 5th Edition (2012)

### Fred Govedich

- Editor or reviewer for three journals:
  - *Comparative Parasitology*
  - *Functional Ecology*
  - *ZooKeys*

### Terri Hildebrand

- Reviewer for *NCUR 2012* abstracts
- Member of:
  - *Botanical Society of America*
  - *National Association of Biology Teachers*
  - *Utah Native Plant Society*

### William Heyborne

- Reviewer for *American Biology Teacher*
- Member of:
  - *National Association of Biology Teachers*
  - *American Entomological Society*
  - *American Malacological Society*
  - *Society for Study of Reptiles & Amphibians*

### Jon Karpel

- Reviewer for *NCUR 2012* abstracts
- Professional review of "How Life Works", by Morris *et al*

## Service (Continued)

### Paul Spruell

- Reviewer for *Transactions of the American Fisheries Society*

### John Taylor

- Committee member of SUU-Iron County Schools District Partnership (creation of North Elementary)
- Board member of
  - *Zion Natural History Association*
  - *Utah Science Teacher Association*
  - Gateway Preparatory Academy

### Matthew Weeg

- Member of *Society for Neuroscience*



## Honors, Awards and Special Recognition

### Elizabeth Bancroft

- 2012 SUU Distinguished Educator

# Department of Computer Science & Information Systems

## Department Goals

1. Provide excellent (undergraduate, AAS, and minor) programs in Computer Science and Information Systems.
2. Prepare graduates for careers enabling them to compete on a global level in government, industry, secondary education, and acceptance to graduate school.
3. Provide excellent General Education and service to the degree programs of other Departments and the University community.
4. Engage in research and other scholarly activities that enhance, promote, and support our degree programs, our instructional activities, and the intellectual and professional growth of our students and our faculty.
5. Provide an environment that promotes collegiality, collaboration, and the joy of learning.
6. Recruit and retain highly qualified students to Computer Science and Information Systems.

## Programs and Degrees Offered

### BACHELOR DEGREES:

BS in Computer Science:

Forensic Science Emphasis

BS in Information Systems

### ASSOCIATE of APPLIED SCIENCE

Information Technology

Networking/Telecomm Emphasis

CS and IS Security Emphasis

### MINOR:

Computer Science

Computer Science, Forensic Science

Information Systems

## 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.

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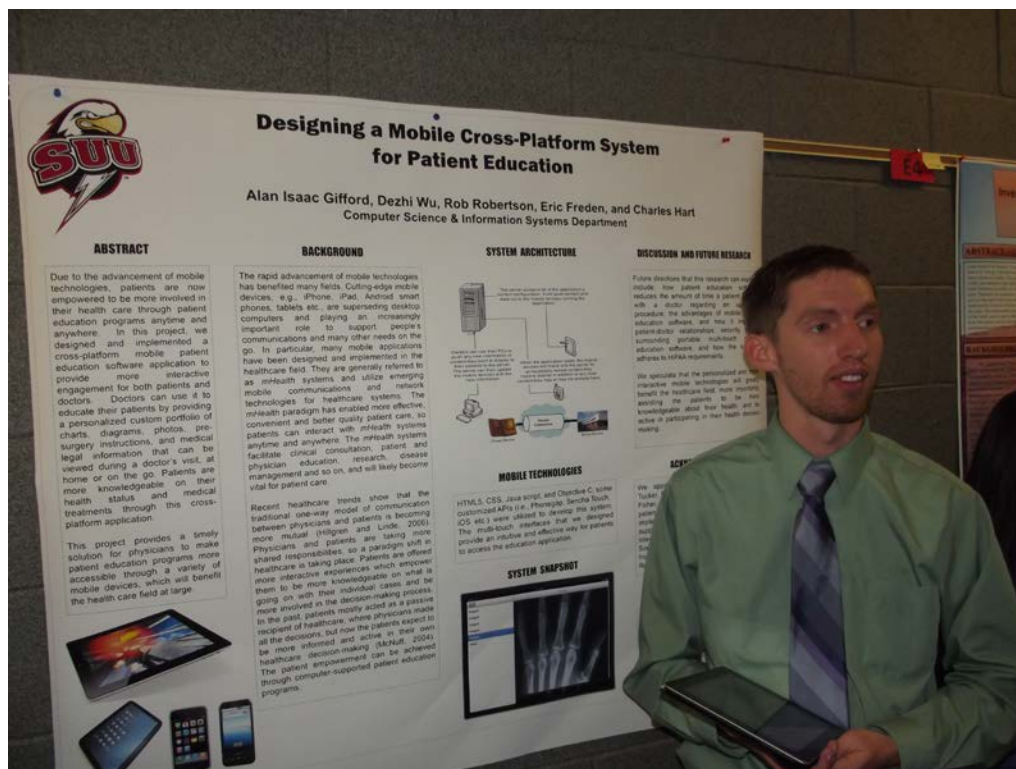
## Special Accreditation

The Computer Science and Information Systems degrees at Southern Utah University are ABET accredited.



## Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Nathan Barker	Assistant Professor	Bioinformatics, Data Mining	2007
Michael Grady	Associate Professor	Algorithms, Computational Mathematics	2001
Cecily Heiner	Visiting Assistant Professor	AI, Machine Learning	2011
Shalini Kesar	Assistant Professor	E-commerce, Information Security	2007
Laurie Harris	Lecturer	Computer Literacy	2011
Connie Nyman	Associate Professor	Computer Education	1970
Rob Robertson	Associate Professor	Network Security	2001
Nasser Tadayon	Associate Professor	Data Mining, Neural Networks	2005
Dezhi Wu	Associate Professor	Human-Computer Interface	2005





## Productivity Highlights 2011-12

### Scholarly Presentations/Publications at Professional Meetings

**Barker, N.; Nyman, C.** "Test Time vs. Test Performance" *WorldComp (FECS '11)*, July 18, Las Vegas NV

Clement, B.; **Barker, N.** "Using Microsoft Kinect to improve CNC machining cuts and reduce the loss of raw material" *National Council of Undergraduate Research (NCUR)*, March 29-31 2012, Ogden UT

**Kesar, S.;** Sharma, N. "Lessons Learnt from Working for Families Project in Scotland" *EthicComp 2011*; September 2011, Sheffield UK

**Kesar, S.** "Underlying Reasons for Gender Imbalance in Computing" *13<sup>th</sup> Annual Global Information Technology Management World Conference*, June 18, 2011 Bangalore India

**Kesar, S.** "Management of Information Security from Criminologist Perspective" *13<sup>th</sup> Annual Global Information Technology Management World Conference*, June 18, 2011 Bangalore India

**Robertson, R.** "Security Auditing: The Need for Policies and Practices" *13<sup>th</sup> Annual Global Information Technology Management World Conference*, June 18, 2011 Bangalore India

### Presentation/Publications (Continued)

**Freden, E.; Robertson, R.; Wu, D.** "Empowering Patients through Mobile Patient Education Systems" *EthicComp 2011*; September 2011, Sheffield UK

**Tadayon, N.** "Adaptive Curriculum in Computer Literary Courses" *WorldComp (FECS '11)*, July 17 2011, Las Vegas NV

**Wu, D.** "The Effects of School Website Design and Usability on Knowledge Sharing and User Satisfaction"; *International conference on Information Systems (ICIS 2011)*, December 2011, Shanghai China

**Wu, D.** "An Investigation of iPad User Experiences in a Road Safety Training" *International conference on Information Systems (ICIS 2011)*, December 2011, Shanghai China

**Wu, D.** "Identifying Usability issues in Personal Calendar Tools" *3<sup>rd</sup> International conference on Networked Digital Technologies*, July 2011, Macau China



## Membership and Participation in Professional Organizations

### Nathan Barker

- Reviewer for the *National Science Foundation*
- Member: *Association for Computing Machinery*

### Michael Grady

- Member of:
  - *Association for Computing Machinery*
  - *Mathematical Association of America*
  - *CCSC Rocky Mountain*

### Cecily Heiner

- Member: *International Society of Educational Data Mining*

### Shalini Kesar

- Editor/reviewer for the *Journal of Information, Communication and Ethics in Society*
- Editor/reviewer for the *Journal of Liability and Scientific Enquiry*
- Reviewer for *EthiComp 2011*
- Member of:
  - *Association for Computing Machinery*
  - *Association of Information Systems*
  - *Special Interest Group in EGovernment*
  - *Special Interest Group in IS Security*
  - *Computer Science Teachers Association*
  - *National Center for Women and IT*

### Connie Nyman

- Member of:
  - *National Business Education Association*
  - *Western Business and IT Educators*
  - *Utah Business and Comp Ed Association*
  - *Association for Career and Tech Ed*
  - *Phi Kappa Phi*

### Nasser Tadayon

- Member: *Association of Computing Machinery*

### Dezhi Wu

- Reviewer of *NCUR 2012*
- Reviewer for *AMCIS 2012*
- Co-chair for *ICIS 2011 HCI Workshop*
- Chair for *Special Interest Group in HCI*
- Member of:
  - *Association of Computing Machinery*
  - *Association for Information Systems*
  - *Member of Project Management Institute*

## Community Service

### Nathan Barker

- Sterling Scholar judge

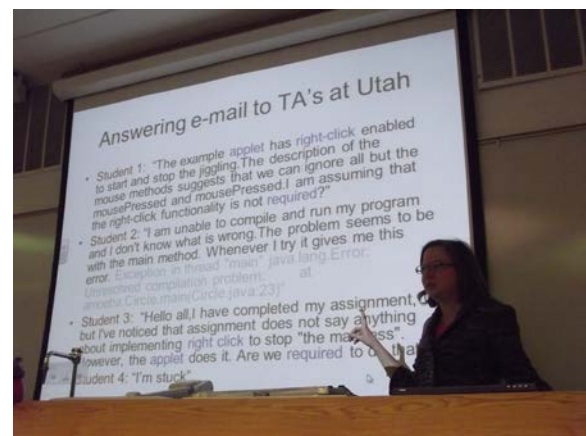
### Connie Nyman

- Member of *Utah Shakespeare Festival Guild*
- Volunteer for Utah Summer Games
- Volunteer for Relay for Life

## Honors, Awards and Special Recognition

### Dezhi Wu

- Association for Information Systems SIGHCI Outstanding Service Award, 2011.



# Department of Engineering Technology & Construction Management

## Department Goals

1. Pursue and maintain ABET accreditation for all programs
2. Increase enrollment in all programs
3. Encourage all non-tenure track faculty to pursue terminal degrees
4. All faculty will work to stay current and up to date in their field.
5. All programs will become regionally recognized for the quality of graduates.
6. Improve student undergraduate experiences and performance through internship and cooperative education opportunities.

## Programs and Degrees Offered

### BACHELOR DEGREES

BA or BS in:

Construction Management

Engineering Technology

Arch/Civil Design Emphasis

CAD/CAM Emphasis

CAD/GIS Emphasis

EET Emphasis

### ASSOCIATE OF APPLIED SCIENCE

Construction Technology

CAD/CAM Technology

Electronics Technology

### MINORS

Construction Technology

CAD/CAM Technology

Electronics Technology

### CERTIFICATES

Civil Design/CAD

Construction 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 Borisova	Lecturer	Electronics and Computer Technology	2011
Richard Cozzens	Professional in Residence	2D and 3D Design	2001
Matt Edwards	Professional in residence	Construction Technology	2007
Boyd Fife	Assistant Professor	Construction Management	1993
Roger Greener	Instructional Staff	Computer Aided Manufacturing (CAM)	1990
L. Scott Hansen	Associate Professor	Technology Education	2007
Dave Ward	Associate Professor	Electronics Technology	1985



# Productivity Highlights 2011-12

## Scholarly Presentations at Professional Meetings

**Cozzens, R.** "Social Media: An Effective Web-Based CAD Training Tool" *EthicComp 2011*; September 2011, Sheffield UK

**Cozzens, R.** "SolidWorks Applied to Dome Architecture" *SolidWorks World 2012*; February 2012, San Diego CA

**Cozzens, R.** "Bringing Creativity into the Classroom" *15<sup>th</sup> Annual Meeting of the American Association of Behavior and Social Sciences*; February 2011, Las Vegas NV

**Cozzens, R.** "YouTube: An Effective CAD Training Resource" *119<sup>th</sup> Annual Conference of the American Society for Engineering Education*; June 2012, San Antonio TX

**Edwards, M.** "Raising the Standard of Living in Underdeveloped Countries: Can Technology Help?" *EthicComp 2011*; September 2011, Sheffield UK

## Scholarly Publications

**Ward, D.** "Getting Started with FPGAs (part 1)" *Servo Magazine* September 2011, 62-66

**Ward, D.** "Getting Started with FPGAs (part 2)" *Servo Magazine* September October, 55-60

**Ward, D.** "Product Review: Digilent NEXYS3 Spartan-6 FPGA Board" *Servo Magazine* February 2012, 64-65

## Documents, Books, and other Publications

**Hansen, L. S.** "Autodesk Inventor" 1<sup>st</sup> Edition, *McGraw-Hill* 2013, ISBN-13 9780073522708

## Professional Memberships and Community Service

### Richard Cozzens

- Member of :
  - *American Society for Engineering Education*
  - *CATIA Higher Education and Training*
  - *Advisory Board for Design Graphics (WSU)*

### Matt Edwards

- Volunteer for *Utah Housing Authority*
- Member of:
  - *Association of General Contractors*
  - *National Association of Home Builders*

### Boyd Fife

- Chairman for local Red Cross Blood Drive
- Member of:
  - *Educational Advisory Board for Iron County Homebuilders Association*
  - *SWATC Advisory Board*
  - *Dixie ATC Building Trades Board*

### Dave Ward

- Director of Career and Technical Education (SUU)



# Department of Integrated Engineering

## Department Goals

1. Renew and maintain ABET accreditation
2. Respond to direction from the Board of Regents and University administration
3. Renew/develop strong relationships with local industry, recent graduates, and the community
4. Become fully engaged in the Design-Build-Bluff service program
5. Secure internships for all juniors who can accept them and as many others as are interested
6. Revitalize and expand capabilities in Department laboratories
7. Improve student success rate on the Fundamentals of Engineering Examination to get 80% passing on their first attempt.

## Programs and Degrees Offered

### BACHELOR DEGREES

BS in Integrated Engineering

### ASSOCIATE DEGREES

Associate of Pre-Engineering

## Special Accreditation



The Integrated Engineering degree at Southern Utah University is ABET accredited.

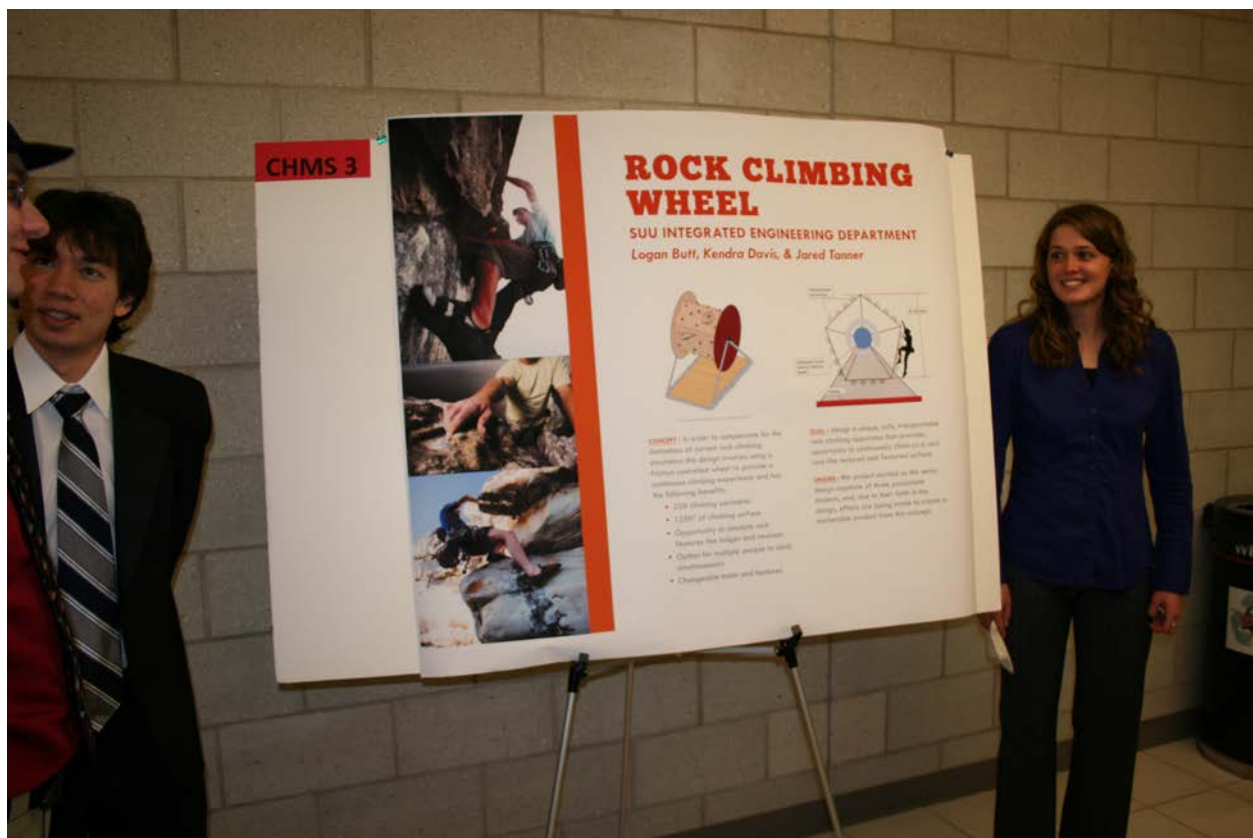
## Student Learning Outcomes

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



## Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Roger Greener	Instructional Staff	Computer Aided Manufacturing (CAM)	1990
Glen Longhurst	Associate Professor	Nuclear Engineering	2009
Thad Morton	Assistant Professor	Fluid Dynamics	2009
John Murray	Associate Professor	Mechanical Engineering, Sustainable Design	2007
Desmond Penny	Professor	Civil Engineering	1983



# Productivity Highlights 2011-12

## Scholarly Presentations at Professional Meetings

**Longhurst, G.R.** "Enhance the Teaching of Engineering" *119<sup>th</sup> Annual Conference of the American Society for Engineering Education*; June 2012, San Antonio TX

**Murray, J.** "Taking it to the Streets: Sustainable Communities for the 21<sup>st</sup> Century" *American Society for Engineering Education Region IV Conference*, March 2012, Ogden UT

## Scholarly Publications

**Longhurst, G.R.;** Tsuchia, K.; Dorn, C.H.; Folkman, S.L.; Fronk, T.H.; Ishihara, M.; Kawamura, H.; Tranter, T.N.; Rohe, R.; Uchida, M.; Vidal, E. "Managing Beryllium in Nuclear Applications" *Nuclear Technology* December 2011 **176**, 430-441

Tranter, T.N.; Tillotson, R.D.; Mann, N.R., **Longhurst, G.R.** "Separation of Transmutation and Fission Produced Radioisotopes from Irradiated Beryllium" *Nuclear Technology* November 2011 **176**, 290-295

**Morton, T.** "How to obtain velocity fields from observed streamline patterns" *Journal of Scientific and Mathematical Research* February 2012, 64-65

## Professional Memberships and Community Service

**Glen Longhurst**

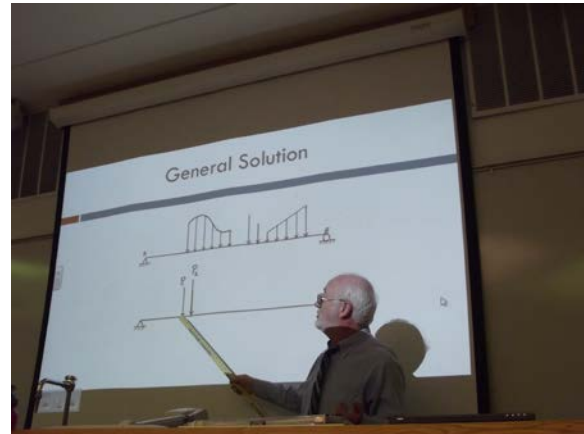
- Renewable Energy Fair judge
- Member of
  - *American Society for Engineering Education*
  - *Southwest Utah Renewable Energy Center Steering Committee*

**John Murray**

- Member of the *American Association for the Advancement of Science*

**Des Penny**

- Advisor for Central Iron County Water Conservancy District





# Department of Mathematics

## Department Goals

1. To offer general education courses and their prerequisites. (Organizational effectiveness.)
2. To offer courses, as requested by departments whose majors we serve, that accommodate the needs and interests of their students. (Organizational effectiveness.)
3. To prepare Mathematics Education majors both with mathematical knowledge and with teaching skills required for success in teaching careers and/or graduate work. (Student success.)
4. To prepare Mathematics majors for successful professional careers and /or graduate school. (Student success.)
5. To recruit quality students; to encourage them to reach their academic potential and guide them to completion of their program of study. (Student success.)
6. To recruit well-prepared, terminally degreed faculty; to encourage and reward excellent and rigorous teaching, scholarly activity and service to colleagues in the department and university. (Faculty and staff development.)
7. To provide scholarships and student employment opportunities to help financially support our majors who demonstrate solid academic performance. (Resources.)

## Programs and Degrees Offered

### BACHELOR DEGREES

BS in Mathematics:

Actuarial Science Emphasis

Pure Math Emphasis

BS in 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
Seth Armstrong	Associate Professor	Partial Differential Equations	2001
Said Bahi	Associate Professor	Operations Research	2001
James Brandt	Assistant Professor	History of Math, Math Education	2006
Sarah Brown	Associate Professor	Partial Differential Equations	2004
Walt Faucette	Assistant Professor, Non-Tenure Track	Math Education	2010
Eric Freden	Associate Professor, Associate Dean	Geometric Group Theory	1997
Jianlong Han	Assistant Professor	Partial Differential Equations	2005
Derek Hein	Assistant Professor	Combinatorial Design Theory	2004
Marty Larkin	Associate Professor	Math Education	1989
Jana Lunt	Assistant Professor	Math Education	2010
Mark Meilstrup	Lecturer	Geometric Group Theory	2011
Gretchen Rimmasch	Assistant Professor	Algebraic Geometry	2008
Andreas Weingartner	Associate Professor	Number Theory, Actuarial Science	1999
Cecilia Weingartner	Lecturer	Numerical Methods	2008
Chunlei Zhang	Assistant Professor	Partial Differential Equations	2006

# Productivity Highlights 2011-12

## Scholarly Presentations at Professional Meetings

**Armstrong, S.** "A Nonstandard Discretization Method for Numerical Analysis of a Lotka-Volterra Food Web Model" *MAA Intermountain Section Meeting*; April 2012, Salt Lake City UT

**Bahi, S.** "Dimensions of Service Quality in Higher Ed: Underlying Structure of Students and Faculty Perception" *MAA Intermountain Section Meeting*; April 2012, Salt Lake City UT

**Brandt, J.; Rimmasch, G.** "Small Group Discussion and Student Evaluation of Presented Proofs", *15th annual Conference on Research in Undergraduate Mathematics Education*, February 2012, Portland OR

**Brandt, J.; Rimmasch, G.** "Doing Mathematics: Perspectives from Mathematicians and Mathematics Educators", *15th annual Conference on Research in Undergraduate Mathematics Education*, February 2012, Portland OR

**Brown, S.** "Numerical Analysis for the Relaxation of a Nonlocal Allen Cahn Equation" *American Mathematical Society Western Section Meeting*, October 2011, Salt Lake City UT

**Freden, E.** "From Indexed Languages to Generating Functions", *AMS/MAA Joint Mathematics Meeting*, January 2012, Boston MA

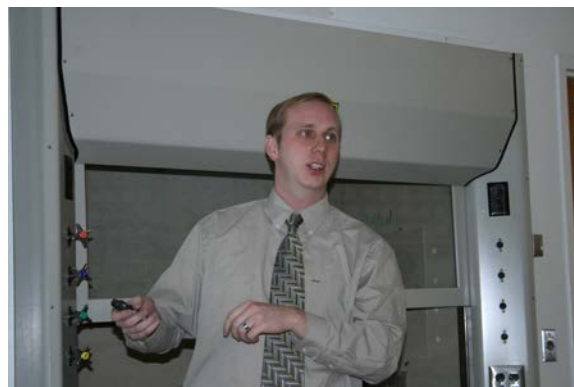
**Han, J.** "A Numerical Approximation for a Nonlocal Evolution Equation with Kac Potentials" *MAA Intermountain Section Meeting*; April 2012, Salt Lake City UT

**Hein, D.** "On Decompositions of  $\lambda$ Kin", *Midwest Conference on Combinatorics, Cryptography and Computing*, October 2011, Las Vegas NV

**Lunt, J.** "The Effects of Teachers Understanding of Addition and Subtraction Word Problems on Student Understanding", *The North American chapter of the International Group for the Psychology of Mathematics Education*, October 2011, Reno NV

## Presentations (Continued)

**Meilstrup, M.** "Archipelago Groups" *Workshop on the Topology of Wild Spaces and Fractals*, July 2011, Strobl Austria



## Professional Memberships and Community Service

### Said Bahi

- Reviewer: *American Educational Research Journal*

### Jim Brandt

- Textbook reviewer for:
  - *W.H. Freeman*
  - *Brooks/Cole*

### Eric Freden

- Organizer of AMS Special Session, *AMS Western Section Meeting*, October 2011, Salt Lake City UT
- Member of the *American Mathematical Society*
- Volunteer for *Parowan Shade Tree Commission*

### Jianlong Han

- Member of the *American Mathematical Society*
- Reviewer for:
  - *Reviews in Mathematical Physics*
  - *Interfaces and Free Boundaries*

## Service (Continued)

### Derek Hein

- AP Calculus reader
- Sterling Scholar Judge
- Member of:
  - American Mathematical Society
  - Mathematical Association of America
  - Institute of Combinatorics and its Applications

### Marty Larkin

- Reviewer for *Teaching Children Mathematics*
- AP Calculus reader
- Volunteer for Utah Shakespeare Festival
- Member of
  - American Mathematical Society
  - Mathematical Association of America
  - National Council of Teachers of Mathematics
  - Utah Council of Teachers of Mathematics
  - Association of Mathematics Teacher Educators
  - Utah Association of Mathematics Teacher Educators

### Jana Lunt

- Member of
  - Psychology of Mathematics Education NA
  - Mathematical Association of America
  - National Council of Teachers of Mathematics
  - Utah Council of Teachers of Mathematics
  - Association of Mathematics Teacher Educators
  - Utah Association of Mathematics Teacher Educators



## Service (Continued)

### Mark Meilstrup

- Member of the *American Mathematical Society*

### Gretchen Rimmasch

- Member: *Mathematical Association of America*

### Andreas Weingartner

- Member of
  - American Mathematical Society
  - Society of Actuaries

## Scholarly Publications

Conner, G.; Grant, C.P.; Meilstrup, M. "A Sharkovsky Theorem for Non-locally Connected Spaces, *Discrete and Continuous Dynamical Systems –Series A*, October 2012 **10**, 3485-3499



# Department of Nursing

## Department Goals

The goals and objectives of the Department of Nursing are:

1. To prepare graduates to successfully enter nursing practice by offering well-planned and pedagogically sound learning exercises in courses and in research projects that develop skills in analysis, critical thinking, problem solving, and ethical decision making.
2. To develop technically proficient nurses by offering students hands-on experiences with state-of-the-art health care equipment and providing coursework and clinical practicum opportunities.
3. To support faculty as health care professionals who demonstrate excellence in teaching, scholarly endeavors, practice, and professional community service and who provide leadership in nursing practice by rewarding good teaching, encouraging participation in clinical practice and professional organizations, recruiting professional and doctoral-prepared faculty

## 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

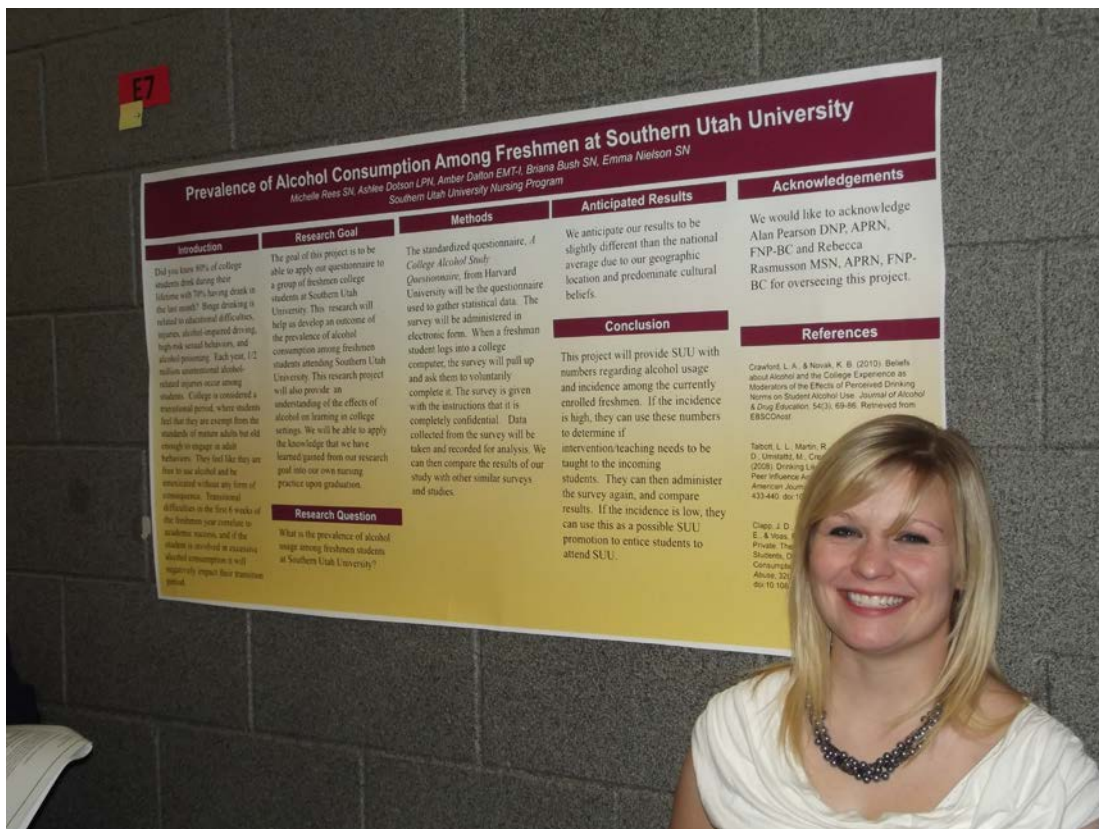
BS in Nursing:

- Pre-Licensure Emphasis
- RN to BSN Emphasis



## Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Aja James	Assistant Professor, Non-Tenure Track	EMT, ICU	2007
Claudia Kreipl	Assistant Professor, Non-Tenure Track	Nursing Education	2009
Elizabeth Hatfield	Instructional Staff	Nursing Lab Specialist	2002
Selwyn Layton	Assistant Professor, Non-Tenure Track	Nursing Education	2009
Donna J. A. Lister	Associate Professor, Non-Tenure Track, Chair	Clinical Nursing	2005
Alan H. Pearson	Assistant Professor, Non-Tenure Track	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
Kevin D. Tipton	Assistant Professor, Non-Tenure Track	Geriatric Nursing	2006
Janet Warner	Assistant Professor, Non-Tenure Track	Maternal/Newborn Nursing	2004



# Productivity Highlights 2011-12

## Professional and Community Service

### Claudia Kreipl

- Volunteer service at TLC (Training Learning Center)
- Volunteer at St George Free Clinic
- Medical volunteer, Iron Man St George

### Selwyn Layton

- Medical volunteer, Utah Summer Games
- Volunteer service for Head Start

### Janet Warner

- Instructor, *The Arthritis Foundation's Self-Help Course*

## Membership and Participation in Professional Organizations

### Aja James

- Member of :
  - *National League of Nursing (NLN)*
  - *American Critical Care Nurses (ACCN)*
  - *Emergency Nurses Association (ENA)*
  - *Board of Certification for Emergency Nursing*

### Claudia Kreipl

- Member of:
  - *Utah Nurse's Association (UNA)*
  - *Sigma Theta Tau*
  - *UpLedger Institute*
  - *Nurse Healers Associates International*
  - *National League of Nursing (NLN)*

### Selwyn Layton

- President of *Valley View Emergency Department Chapter*
- Member of:
  - *American Association of Critical Care Nursing*
  - *Emergency Nurses Association (ENA)*
  - *Sigma Theta Tau*
  - *National League of Nursing (NLN)*
  - *Utah Nurses Association (UNA)*
  - *American Nurses Association (ANA)*

## Membership (Continued)

### Donna J. A. Lister

- Board member of *Utah Organization of Nurse Leaders (UONL)*
- Member of:
  - *Utah Nurses Association (UNA)*
  - *Sigma Theta Tau*
  - *National League of Nursing (NLN)*
  - *American Association of Nurse Practitioners*
  - *Valley View Medical Staff Association*

### Alan H. Pearson

- Member of:
  - *Valley View Medical Staff Association*
  - *National League of Nursing (NLN)*

### Rebecca S. Rasmusson

- Member of:
  - *National League of Nursing (NLN)*
  - *Utah Nurses Association (UNA)*

### Kevin D. Tipton

- Member of:
  - *Emergency Nurses Association (ENA)*
  - *Utah Nurses Association (UNA)*
  - *American Nurses Association (ANA)*
  - *Mothers Against Drunk Driving (MADD)*
  - *Intermountain Emergency Department*

### Janet Warner

- Member of:
  - *American Nurses Association (ANA)*
  - *Utah Nurses Association (UNA)*
  - *National League of Nursing (NLN)*



## Professional Development Meetings and Training Sessions

### Aja James

- *Elsevier/Mosby Faculty Development Institute*, January 2012, Las Vegas NV

### Claudia Kreipl

- *DI Associates, Inc. Boot Camp for Nurse Educators* July 2011, Albuquerque NM

### Selwyn Layton

- *Elsevier/Mosby Faculty Development Institute*, January 2012, Las Vegas NV
- *Academic Leadership Committee (ALC) Nursing Education Conference*, April 2012, Salt Lake City UT

### Rebecca S. Rasmussen

- *National League for Nursing Education Summit "Advancing the Health of the Nation"* September 2011, Orlando FL
- *Utah Creative Teaching Strategies for the Nurse Educator*, January 2012, Salt Lake City UT

### Donna J. A. Lister

- *AACN 2011 Summer Seminar: "Type A Behavior: The Good, the Bad, and the Ugly"* (Maximizing Performance While Minimizing Sabotage), July 2011, Portland OR
- *AACN 2011 Fall Semiannual Meeting "Preparing Nurses of the Challenges of the Future"* October 2011, Washington DC
- *National League for Nursing Education Summit "Advancing the Health of the Nation"* September 2011, Orlando FL
- *AACN 2012 Master's Education Conference*, February 2012, San Antonio TX
- *Nursing Campaign for Action, Western Regional Education Meeting*, February 2012, Sacramento CA

### Kevin D. Tipton

- *NCSBN NCLEX Conference*, September 2011, San Francisco CA

### Janet Warner

- *NLN Simulation Workshop, "Beyond the Basics: Innovative Simulation Topics for Health Care Educators"*, April 2012, Boise ID





# Department of Physical Science

## Department Goals

### Chemistry

Our target outcomes include:

1. Preparation of students for acquisition of a graduate degree in chemistry
2. Preparation of students for success in their pursuit of degrees and careers in the health sciences
3. Preparation of students, upon obtaining an undergraduate degree, to gain employment within a science related field
4. Development exceptional chemical educators within the classroom and society
5. Maintaining accreditation by a nationally recognized organization as a means of assuring and advertising the quality of our programs
6. Ensuring a faculty body comprised of exceptional educators, noteworthy scholars, and those committed to serving students, colleagues, the University and community.
7. Provide encouragement, support and mentorship for undergraduate research

### Geology

The Geology Program will:

1. Provide students with a personalized education that focuses on the excellent geological resources in the southwestern U.S;
2. Provide geology majors with myriad of research opportunities that result in presentations at regional or national conferences;
3. Encourage and participate in service activities such as educational programs for the community;
4. Work with student organizations to promote a sense of academic opportunity and camaraderie;
5. Develop a 4-year course plan to allow the most efficient program completion;
6. Provide the students with the necessary skills to either continue on to graduate school or obtain a discipline-related job;
7. Develop a graduate program within the next 10 years; and
8. Develop modern laboratory and instrumentation facilities (either in house or shared with other programs) to enhance student and faculty research opportunities.

## 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

## Programs and Degrees Offered

### BACHELOR DEGREES

#### BA/BS

Physical Science: Teacher Education Emphasis

#### BS Chemistry:

Professional Emphasis  
Health Care Emphasis  
Forensic Emphasis  
Teacher Education Emphasis

#### BS Geology:

Earth Science Emphasis  
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

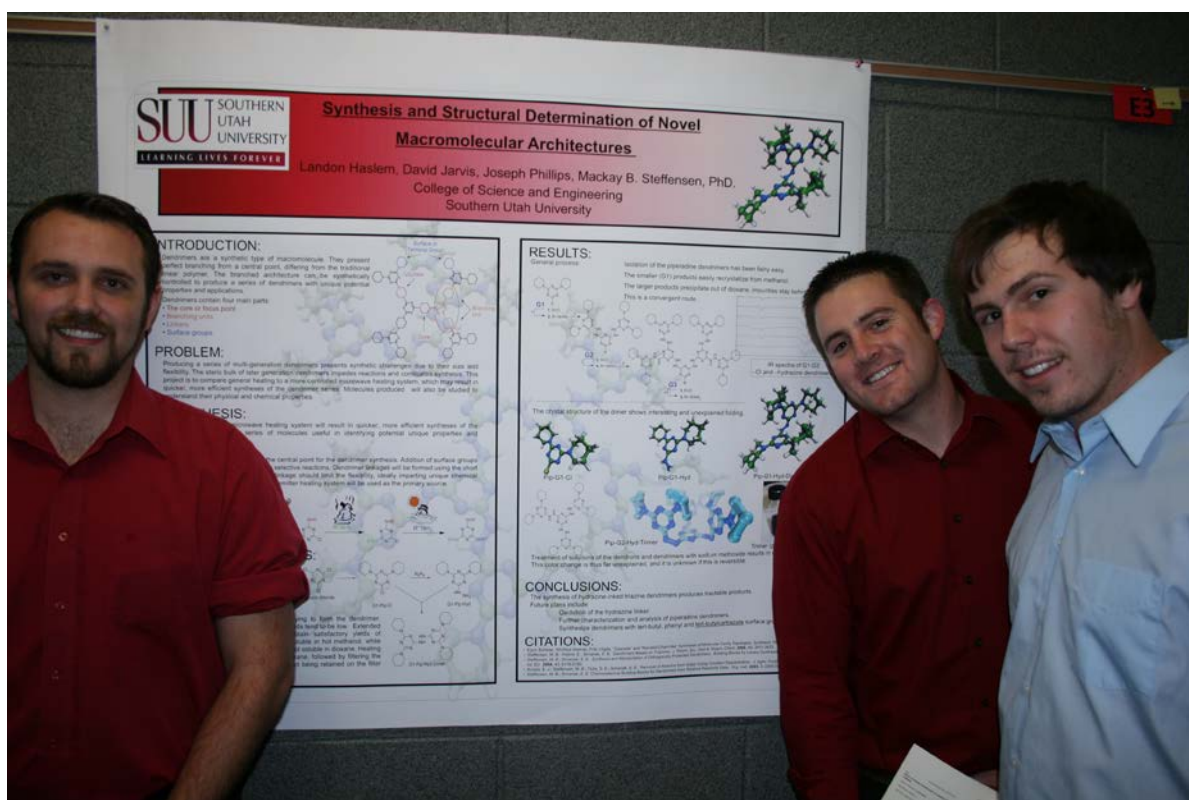
The abbreviated ACS learning outcomes consist of mastering the following areas:

- A. Problem Solving Skills
- B. Chemical Literature Skills
- C. Laboratory Safety Skills
- D. Communication Skills
- E. Team Skills
- F. Ethics

### Geology

Students will demonstrate mastery of the following outcomes:

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



## Departmental Faculty

Faculty	Rank	Specialty	Year Began at SUU
Terry D. Alger	Professor (Emeritus)	Physical Chemistry	1981
Kristina B. Bronsema	Instructional Staff	Chemistry	1997
James C. Chisholm	Assistant Professor	Physics/Cosmology	2007
Mark D. Colberg	Associate Professor	Metamorphic Petrology	2001
Daniel J. Eves	Assistant Professor	Bio-analytical Chemistry	2009
Robert L. Eves	Professor, Dean	Geochemistry	1988
Nathan Hanson	Lecturer	Physics/Astronomy	2011
Jennifer Hargrave	Assistant Professor	Paleontology	2011
Bruce R. Howard	Associate Professor	Biochemistry	2002
Matthew Jorgensen	Visiting Assistant Professor	Chemistry	2011
Paul R. Larson	Associate Professor	Geography	1994
C. Frederick Lohrengel II	Professor (Emeritus)	Micro-paleontology	1986
John MacLean	Assistant Professor	Structural Geology	2010
David Maxwell	Instructional Staff	GIS	1997
Christopher Monson	Assistant Professor	Analytical Chemistry	2011
Radhika Nair	Assistant Professor	Inorganic Chemistry	2010
J. Ty Redd	Professor, Chair	Organic Chemistry	1990
Hussein A. Samha	Associate Professor	Inorganic Chemistry	2001
Brent A. Sorensen	Associate Professor	Physics/Astronomy	1983
Mackay B. Steffensen	Assistant Professor	Organic Chemistry	2006
Kim H. Weaver	Associate Professor	Analytical Chemistry	2000

# Productivity Highlights 2011-12

## Scholarly Presentations at Professional Meetings

**Chisholm, J.R.** "A Recipe for Seeds: Growing SMBHs from PBHs", Section meeting of the *American Physical Society*, October 21-22 2011, Tucson AZ

**Colberg, M.** "New Constraints on the Paleoproterozoic Assembly of the Southwestern Margin of Laurentia: High (ultra-high?) Pressure Metamorphism in the Mojave-Yavapai Suture, Utah, Nevada and Arizona", *Geological Society of America, Annual Meeting*, October 9-12, 2011 Minneapolis, MN

**Hargrave J.** "Fossil Avifauna of the Pleistocene Fossil Lake Formation (Oregon): Can Birds be Used as a Proxy to Determine Paleoclimatic Conditions?" *Society of Vertebrate Paleontology 71<sup>st</sup> Annual Meeting*, November 2-5 2011, Las Vegas NV

Milne, L.; Losee, B.; Harris, J.; **Hargrave, J.E.**, "Can I Bi-a-Valve? Investigating Origins of Mysterious Casts Found in the Moenave Formation at the Dinosaur Discovery Site, St. George Utah" *National Council of Undergraduate Research (NCUR)*, March 29-31 2012, Ogden UT

**Larson, P.R.;** **Lohrengel, C. F.** "Teaching Climate Classification Using the Köppen System" *Annual Meeting of the Association of American Geographers*, March 28 2012, New York NY

**MacLean, J.S.** "A Trisected Environmental Geology Course" *Geological Society of America Annual Meeting*, October 9-12 2011, Minneapolis MN

Leavitt, R.E.; May, S.B.; **MacLean, J.S.** "Preliminary Field Investigation into the Relationship Between Hoodoo Formation and Footwall Shearing of the Ruby's Inn Thrust Fault, Bryce Canyon, Utah" *Geological Society of America Annual Meeting*, October 9-12 2011, Minneapolis MN

Leavitt, R.E.; May, S.B.; **MacLean, J.S.** "Extent of Footwall Shear Adjacent to the Ruby's Inn Thrust Fault, Southern Utah" *Geological Society of America Annual Meeting*, October 9-12 2011, Minneapolis MN

## Presentations (Continued)

Richards, K.; **MacLean, J.S.** "Two Phases of Contractional Deformation in the Carmel Formation, Cedar City, Utah" *Geological Society of America Annual Meeting*, October 9-12 2011, Minneapolis MN

Nickerson, M.; Petersen, T.; **MacLean, J.S.**, "The Wild Metropolis: Partners in the Parks, Experiential Education, and the Honors Paradigm" *National Collegiate Honors Council Annual Conference*, October 19-23 2011, Phoenix AZ

Tirre, A.; Samha, L.; **Nair, R.;** **Samha, H.**, "Effect of Concentration on Molecular Distribution of Cyanine Dyes in Aqueous Solutions" *National Council of Undergraduate Research (NCUR)*, March 29-31 2012, Ogden UT

**Redd, J.T.;** **Samha, H.;** Natoli, S.; Christensen, J.; Brewer, J. "Synthesis and Photophysical Properties of Novel 1,8-Naphthalimides" *243<sup>rd</sup> National Meeting of the American Chemical Society*, March 27 2012, San Diego CA

Haslem, L.H.; Jarvis, D.A.; Phillips, J.D.; **Steffensen, M.B.** "Synthesis and Structural Determination of Novel Macromolecular Architectures" *243<sup>rd</sup> National Meeting of the American Chemical Society*, March 27 2012, San Diego CA

## External Grants

### David Maxwell

- CPCEU Zion and Bryce Canyon NP Archeological GIS support (\$48,000 over two years)
- Perkins CTE - Technology Education (\$15,000)
- Fire Mapping/TA Agreement, BLM (\$2500)

### Radhika Nair

- *Western Alliance to Expand Student Opportunities* grant, "Platinum Schiff Base Complexes Derived from Purines and Pyrimidines" (\$3256)

## Scholarly Publications

**Chisholm, J.R.** "Clustering of Primordial Black Holes. II. Evolution of Bound Systems", *Physical Review D*, 2011 **84**, 124031.

May, Skyler B.; Leavitt, Roger E.; **MacLean, J.S.** "Extent and Mechanism of Footwall Shear Adjacent to the Ruby's Inn Thrust Fault, Southern Utah" *The Compass: Earth Science Journal of Sigma Gamma Epsilon* 2012, **84**, no. 1, Article 5

Liu, C.; **Monson, C.F.**; Yang, T.; Pace, H.; Cremer, P. S. "Protein Separation by Electrophoretic-Electroosmotic Focusing on Supported Lipid Bilayers" *Anal. Chem.* 2011, **83**, 7876-7880.

**Nair, R.P.**; Pineda, J. A.; Frost, B. J. "Atom Transfer Radical Addition (ATRA) of Carbon Tetrachloride and Chlorinated Esters to various Olefins Catalyzed by Cp'Ru(PPh<sub>3</sub>)(PR<sub>3</sub>)Cl Complexes", *Inorg. Chim. Acta* 2012, **380**, 96-103.

Zhang, R.; Robles, J.; Kang, J.; **Samha, H.**; Chen, H. M.; Jean, Y.C. "Study of the Chemical Environment inside Free Volume Holes in Halogenated Styrene Polymers Using Positron Annihilation Spectroscopy" *Macromolecules*, 2012, **26**, no. 18, 14648-14654.

## Professional Consulting

### David Maxwell

- Sulphurdale Geothermal Resource Area, *Utah Geological Survey*
- Parcel Management Updates and Edits, *Iron County*
- Brian Head, Master Trails Project, *Brian Head*

### J. Ty Redd

- Bioorganic Reaction Animations, Team Advisor

### Hussein Samha

- Textbook evaluator for publisher *McGraw-Hill*

### Mackay Steffensen

- Textbook evaluator for publisher *Wiley & Sons*

### Kim Weaver

- Analytical Services, to *XECO Corporation* for their quality control in making circuit boards

## Documents, Books, and other Publications

Rowley, P.D.; Rutledge, E.F.; **Maxwell, D.J.**; Dixon, G.L; Wallace, C.A. "Geologic Map of the Sulphurdale Geothermal-Resource Area, Beaver and Millard Counties, Utah"; *UGS Open File Report*, November 2011



## Professional and Community Service

### James Chisholm

- Executive Committee (Member-at-Large), Four Corners Section of the *American Physical Society* (Term: 2010-2013)

### Jennifer Hargrave

- Member of:
  - *Geological Society of America*
  - *Society of Vertebrate Paleontology*
  - *Colorado Plateau Field Institute Advisory Council*
- Reviewer for *NCUR*

### Bruce Howard

- Member of:
  - *American Chemical Society*
  - *American Association for the Advancement of Science*

### Radhika Nair

- Member of: *American Chemical Society*

### Mackay Steffensen

- Member of: *American Chemical Society*

### Paul Larson

- Member of:
  - *Utah Geological Society*
  - *National Association of Geoscience Teacher*
  - *National Council on Geographic Education*
  - *National Collegiate Honors Council*
  - *Partners in the Parks Advisory Board*
  - *Iron County Historical Society* (Board)
  - *BSA Utah National Parks Council* (Board)
- *Sterling Scholars* judge
- Reviewer for *Journal of Geography*

### John MacLean

- Reviewer for *South Carolina Geology*

### Chris Monson

- Reviewer for *Journal of the American Chemical Society*

### David Maxwell

- Member of:
  - *American Society of Photogrammetry and Remote Sensing*
  - *Utah Geographic Information Council*
  - *Five County GIS Users Group*

