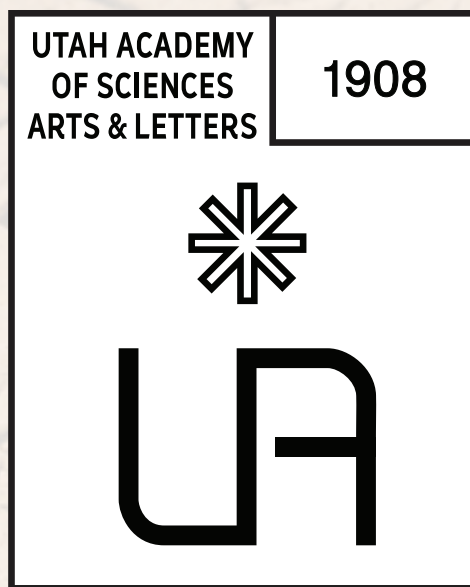




**UTAH ACADEMY
of
Sciences, Arts & Letters**

Established 1908

Annual Conference

March 10, 2016

**Westminster College
Salt Lake City, Utah**

**UTAH ACADEMY OF
SCIENCES, ARTS & LETTERS**
Annual Conference, Thursday, March 10, 2016

9:00 a.m. - 10:00 a.m.

Check-in & Registration

Vieve Gore, Concert Hall, Jewett Center for Performing Arts

10:00 a.m. - 10:05 a.m.

Welcome: Dean Lance Newman

Vieve Gore, Concert Hall, Jewett Center for Performing Arts

10:05 a.m. - 10:15 a.m.

President's Welcome: Jonathan Westover

The Case for Interdisciplinarity

Vieve Gore, Concert Hall, Jewett Center for Performing Arts

10:15 a.m. - 10:30 a.m.

Distinguished Service Award Presentation

Richard Sadler, Weber State University

John and Olga Gardner Prize Presentation

Randy Silverman, University of Utah

Vieve Gore, Concert Hall, Jewett Center for Performing Arts

10:30 a.m. - 11:00 a.m.

Break

Poster Session

11:00 a.m. - 12:00 p.m.

O.C. Tanner Lecture: *My Love Affair with History*

Richard Sadler, Weber State University

Vieve Gore, Concert Hall, Jewett Center for Performing Arts

12:00 p.m. - 1:00 p.m.

Lunch

Muli-Purpose Court, Dolores Eccles Health, Wellness, and Athletics Center

1:30 p.m. - 5:00 p.m.

Division Session Presentations

See "Division Session Room Assignments"

5:30 p.m. - 6:30 p.m.

UASAL Board Meeting

Vieve Gore, Concert Hall, Jewett Center for Performing Arts

DIVISION SESSIONS

Room Assignments

POSTER SESSION: JEWETT CENTER FOR PERFORMING ARTS 202

ARTS: DOLORES DORE ECCLES HEALTH, WELLNESS, AND ATHLETIC CENTER (HWAC) 351

BIOLOGICAL SCIENCES: DICK SCIENCE BUILDING 102

BUSINESS: BILL AND VIEVE GORE SCHOOL OF BUSINESS 133 & 134

EDUCATION: JEWETT CENTER FOR PERFORMING ARTS 200

ENGINEERING: DICK SCIENCE BUILDING 109

HUMANITIES/PHILOSOPHY/FOREIGN LANGUAGE: DOLORES DORE ECCLES HEALTH, WELLNESS, AND ATHLETIC CENTER (HWAC) 352 & 353

LETTERS LANGUAGES/ LITERATURE: DOLORES DORE ECCLES HEALTH, WELLNESS, AND ATHLETIC CENTER (HWAC) 354

PHYSICAL SCIENCES: DICK SCIENCE BUILDING 103

SOCIAL SCIENCES: BILL AND VIEVE GORE SCHOOL OF BUSINESS 227, 228, B24, B25

TO ACCESS WIRELESS INTERNET:

1. Connect to Westnet Secure wifi.
2. Enter the following credentials.
 - Username: conference (this is case sensitive.)
 - Password: uasal16

O.C. Tanner Lecture: “My Love Affair with History”

Richard Sadler, Weber State University

Richard Sadler is an active historian, he has co-authored books on Ogden City, Weber County, The Weber Basin water history, and has written several articles published in academic journals, including the Utah Historical Quarterly. He also served as editor of The Journal of Mormon History. He is the author and editor of “Weber State College...A Centennial History,” published in 1989, which chronicles WSU’s first 100 years. In addition to teaching generations of Weber State students about history, he has lived it, and in the process, has added to the institution’s story.

He was president of the Utah Academy of Sciences, Arts, & Letters from 1979-81. His publications include: *A History of Weber County* (Salt Lake City: Utah State Historical Society; Ogden: Weber County Commission, 1997). Coauthored with Richard C. Roberts; *Utah, The Right Place: The Official Centennial History* (Salt Lake City: Gibbs Smith, 1996). By Thomas G. Alexander; Richard W. Sadler, general editor; Susan A. Whetstone, photographic editor, Jay M. Haymond, project director; *The Weber River Basin: Grass Roots Democracy and Water Development* (Logan, Utah: Utah State University Press, 1994). Coauthored with Richard C. Roberts; *Ogden: Junction City* (Northridge, Calif.: Windsor Publications, 1985). Coauthored with Richard C. Roberts.

Richard Sadler will also be recognized with the Distinguished Services Award at the 2016 Utah Academy of Science, Arts, & Letters conference, which is given to an academic professional for exceptional services to the higher education community in Utah.

John & Olga Gardner Prize

Randy Silverman

The Gardner Prize is awarded annually for exceptional achievement by an academic professional in Utah

Randy Silverman, Head of Preservation at the University of Utah's J. Willard Marriott Library since 1993, has worked in the field of book conservation for 38 years. He holds a Masters degree in Library Science from BYU and teaches Preservation as an adjunct faculty member for Emporia State University (KS), Dominican University (IL), and University of Arizona (AZ). He is a founding member of the Western States and Territories Preservation Assistance Service (2007) and teaches disaster preparedness workshops throughout Arizona, Montana Utah, and Wyoming. He has 86 professional publications, has been involved in disaster recovery since 1986 (including Hurricane Katrina), and has presented professional lectures and workshops in 27 states and 11 countries outside the U.S. He received the American Library Association's Banks Harris Award in 2013 for "outstanding achievement in the field of preservation," and was given a Fulbright Specialists award in 2014 to begin helping the National Library of Uzbekistan improve its preservation standards.

Distinguished Service Award

Richard Sadler

The Distinguished Services Award is given to an academic professional for exceptional services to the higher education community in Utah.

Dr. Richard Sadler has been teaching in the history department at Weber State University since 1969, with his research and publications focusing on United States History, Utah History, and Western American History. Additionally, Dr. Sadler was Dean of the College of Social and Behavioral Sciences for 26 years (1985 through 2011) and has served on numerous local and state-wide boards during his long career, including his tenure as president of the Utah School Boards Association. In 2004, he was made a Fellow of the Utah State Historical Society for outstanding historical research and writing and he has received numerous other awards and recognitions for his teaching, research, and contributions to the state of Utah.

Journal of the Utah Academy

Publication Policy

The Journal of the Utah Academy of Sciences, Arts, and Letters publishes works in all of the fields of study encompassed in the Academy's mission. Papers published in The Journal of the Utah Academy of Sciences, Arts, and Letters are drawn from papers presented by members in good standing at the annual conference of the Utah Academy. To qualify for publication, the papers must be recommended through a refereeing system.

Presenters are encouraged to publish their paper in The Journal of the Utah Academy. The Journal's criteria are that a submission is (1) fresh, meaningful scholarly insight on its subject; (2) readable and well written; and (3) of general interest for an academic readership beyond the author's field.

If you wish your paper to be considered for publication in The Journal, please submit a Microsoft Word document to the section editor of the appropriate section by June 1st 2014. Contact information for the section editors is available on the Utah Academy's website (www.utahacademy.org.)

The Journal of the Utah Academy is a refereed journal. Editorial responses will be forthcoming after the resumption of school the following fall when referees have returned their comments to the division chairs.

Papers should be between ten and twenty double-spaced pages. Detailed instructions to authors are available at <http://www.utahacademy.org/>.

Utah Academy
2016 Spring Excursion
Friday & Saturday, June 3-4, 2016
The Mormon Trail with visiting scholar Richard Saddler

Join us for the annual UASAL Excursion on Friday & Saturday June 3 - 4, 2016.

Please plan to join us as Dr. Richard Sadler, Professor of History at Weber State University and an active historian, shares sites and stories along the Utah segment of the Mormon Pioneer Trail in this year's UASAL Spring Excursion. The excursion will begin at Ft. Bridger, Wyoming on Saturday morning, June 4, at about 7:30 AM. From Ft. Bridger we will travel down Echo Canyon to the visitors center, then on to Hennifer for lunch. Following lunch we will drive to Mormon Flat where those who wish to hike to Big Mountain—about 3 miles up-hill one way—will have that opportunity. Others can drive to Big Mountain. From Big Mountain we will travel down Emigration Canyon to the “This is the Place” monument and possibly Brigham Young’s grave. The excursion should end about 4 PM. Dr. Sadler suggests that those who would like to stay Friday night near Ft. Bridger arrange to stay at Little America near Green River Wyoming, where we can meet and have an informal discussion and Q&A in preparation for Saturday’s activities. Mark your calendars and invite friends and family members as well. More information will be forthcoming via email. Contact Laine Berghout, Weber State University, with any questions and to RSVP.

Dr. H. Laine Berghout,
Department of Chemistry
Weber State University
250 University Circle
Ogden, Utah 84408-2503
Phone: 801-626-6954
FAX: 801-626-7445
Email: hlberghout@weber.edu

Poster Session

Session Chair: R. Steven Turley
Brigham Young University

A Scientific Study Determining Variables Affecting Metal Oxide Oxidation States Coloring High Fire Ceramic Art Glazes

Victoria Willard, Wendy Schatzberg, Shane Christensen, Heath Papa, Dixie State University

Religious Freedom: A Global Concern

Jill Jaspersen, University of Utah

Flow and Fluidity: Perception and Experience in Drawing Landscapes and Riverscapes for Landscape Architecture

Caroline Lavoie, Utah State University

French and American Police Organizational Leadership Training

Sarah Gordon, Malcom C. Collier, Utah State University

Oil in the Watershed

Abby Jorgensen, Robyn Hyde, Westminster College

Measuring Learning Outcome in Chemistry Outreach in

Saúl Quintero, Allen Doong, Ron Valcarce, Salt Lake Community College

Increasing Rates of Homicide in the U.S.: the "Ferguson Effect"?

John Hill, Brianne Hill, Salt Lake Community College

Geodatasets for Emergency Management

Brian Stearmer, Weber State University

The Relationship Between Various Forms of Hypoxia and Postpartum Depression

Mallory M Rogers, Perry F. Renshaw, Rebekah Huber, University of Uah

Intrinsic factor inhibition due to the use of isotretinoin

Maikie Sengdeng and Bahar Alimadadi, Ashley Rogers, Weber State University

Arts

Division Chair: Angela Banchero-Kelleher
Utah Valley University

Session One:

Session Leader: Angela Banchero-Kelleher

1:30 pm Russia's Imitation Act Through Don Quixote

Madeline Fowers Baum, Utah Valley University

1:50 pm The Hope of a Decade: Fred Astaire's and Ginger Rogers' Dances of the 1930s

Kathie Debenham and Pat Debenham, Utah Valley University

2:10 pm Dance and Class in the Great Depression

Madison Cavaness, Utah Valley University

2:30 Break

2:40 pm The Road to Salvation is Lined with Kitsch

Victoria Willard, Dixie State University

3:00 pm Substrate Poetry

Zach T. Power, Brigham Young University

3:20 pm The Invisibles: The Unseen Artists Behind the Bangs Sisters' Precipitated Paintings

Loclyn Torres, Utah Valley University

3:40 pm Q&A

4:00 pm Conclude

Biological Sciences

Division Chair: Laurie Mauger
Southern Utah University

Session Leader: Laurie Mauger

1:30 pm Determination of treatments to reduce late gassy defect in cheese due to *Lactobacillus wasatchensis*

Issac Bowen and Craig Oberg, Weber State University

1:45 pm Rapid Floristic Analysis with Geolocated Photographs and Geographic Information System (GIS)

Software

Sadie Larson, Matthew Hutchinson, and James Harris, Utah Valley University

2:00 pm The Effects of Caffeine Free American and Mexican Coca-Cola® on Glycemic Index and Glycemic Load

Spencer Rickers, Jordan Cruze, Sariah Saili, and Nathan Kartchner, Utah Valley University

2:15 pm Insect Origins, Key Innovations, and Trophic Succession

Robert L. Bossard, Bossard Consulting

2:30 pm Student's t-test and scientific reproducibility

Julian Chan, Brian Knaeble, Russell Costa, Douglas Getty, Katie McLean, and Riddhi Rampeearae,
Weber State University

2:45 pm X-ray analysis of Lead (II) binding to H. volcanii Malate Synthase

Michael Adams and Bruce Howard, Southern Utah University

3:00 pm Break

- 3:15 pm Determination of treatments to reduce late gassy defect in cheese due to *Lactobacillus wasatchensis* contamination
Craig Oberg, Marissa Walker, and Michele Culumber, Weber State University
- 3:30 pm Impact of the Integration of Produced Water on Microalgae Productivity
Brian McNeil and Jason C. Quinn, Utah State University
- 3:45 pm Study of an outbreak of skin infections among a university football team in Utah
Marissa Walker, Craig Oberg, Joel Bass, and Karen Nakaoka, Weber State University
- 4:00 pm Analysis of Urinary Biomarkers in the Diagnosis of Depression
Daniel E. Hayward, Jeremy F. Garcia, and Grant E. Jones, Weber State University
- 4:15 pm A novel method for detecting chytrid fungus in wild populations of the canyon tree frog
Kevin Rorie, Tucker Marsong, and Curt Walker, Dixie State University
- 4:30 pm Classification of Bacteriophage Isolated from the Great Salt Lake using Electron Microscopy
Matthew J. Domek, Brent D. Nelson, and David M. Belnap, Weber State University
- 4:45 pm Chronic Effects of Intermittent Sound Disturbance of Buenos Aires Tetra
Jeremy Arnt, Weber State University
- 4:45 pm Q & A
- 5:00 pm Conclude

Business

Division Chair: Taowen Le
Weber State University University

Session One:

Session Leader: Taowen Le

- 1:30 pm Examining Leadership of the Global Millennial Generation in the Workplace
Sean Costello and Jonathan Westover, Utah Valley University
- 1:50 pm The White Collar Crime Registry: A Utah Original
Chelsea Dye and Ronald M. Mano, Westminster College
- 2:10 pm Conditions of Shareholder Wealth Maximization Ethicality under Classic Philosophical Paradigms
Rebekah Inez Brau and James C Brau, Brigham Young University
- 2:30 pm Break
- 2:40 pm Western States Work to Corral Fraudulent Tax Return Hackers
Jill Jasperson, Utah Valley University
- 3:00 pm Artificial Intelligence, Business Law and Mr. Batman
Shadman Bashir, Dixie State University
- 3:20 pm The Dilemma of Maintaining Relevance of the CPA Designation
Jennifer Harrison and Ronald M. Mano, Westminster College
- 3:40 pm The Determinants of Achievement in an Introductory Marketing Class
Stephen Owen, James C. Brau, and Mike Swenson, Brigham Young University
- 4:00 pm Q & A
- 4:30 pm Conclude

Session Two:

Session Leader: TBA

1:30 pm The Effects of Gender on the College Major Choice Model in Utah: What Prevents Female Students from Selecting Business as Their College Major
S. Paige Gardiner, Utah Valley University

1:50 pm Student Golf Tournaments: "Speed Dating on the Golf Course"
Michael Lauret, Charlie Leveroni, and Ronald M. Mano, Westminster College

2:10 pm Break

2:20 pm Teaching Practices That Optimize Entrepreneurial Intention
Vance Gough and Peter Robinson, Utah Valley University

2:40 pm Another Piece of the Corporate Payout Puzzle
Lauren Lo Re, Rob Patterson, and Mahfuz Raihan, Westminster College

3:00 pm Exploring Shifting Global Labor Management Practices and Comparative Job and Life Satisfaction
Jonathan Westover, Joe Light, Kaitlin Carlisle, and Bergen Eski, Utah Valley University

3:20 pm Q & A

3:40 pm Conclude

Education

Division Chair: Laura Snelson
Utah Valley University

Session One:

Session Leader: Laura Snelson

1:30 pm An Empirical Analysis of Success Factors in an Introductory Business Class
Jim C. Brau, Rebekah Inez Brau, Truman D. Rowley, and Mike J. Swenson, Brigham Young University

1:50 pm The Effects of Dual Credit Enrollment on Higher Education and Labor Market Outcomes
Richard Haskell, Peter Seppi, and David Tille, Westminster College

2:10 pm Benefits of Computer Mediated, Student Centered, Collaborative Learning in the Human Development Classroom
Dana Erskine, Utah Valley University

2:30 pm Break

2:40 pm Grading for Presence: Participation Grades in Post-Secondary Institutions
Erin M. Walton, Salt Lake Community College

3:00 pm Why We Need Woodshop Again: A Look into the Purpose of School
Dorothy Eilertsen, Weber State University

3:20 pm Title: Combining Classics with Contemporary: Incorporating Young Adult Literature in the Secondary Classroom
Alyssa Devey, Brigham Young University

3:40 pm Title: Evaluation of Study Skills and Life Style Factors Effect on Performance in Organic Chemistry
Don Davies, Heather Root, and Valerie Herzog, Weber State University

4:00 pm Q & A

4:20 pm Conclude

Engineering

Division Chair: Doran Baker

Utah State University

Session One:

Session Leader: Doran Baker

1:30 pm A New Perspective to Antenna Design for Reconfigurable Wireless Networks

Mehedi Hasan, Israfil Bahceci, and Bedri A. Cetiner, Utah State University

1:50 pm Fabrication of Dye-Sensitized Solar Cells using Different Nanocrystals in Ferritin as the Dye

Alessandro Perego, Brigham Young University

2:10 pm Security Imaging Using Wifi based Channel State Information

Khem Narayan Poudel, David Schurig, and Neal Patwari, University of Utah

2:30 pm Break

2:40 pm FDTD: A Powerful Tool In Computational Electromagnetics

Khem Narayan Poudel and Santosh Pokhrel, University of Utah

3:00 pm A Comparison of Solar Tracking Algorithms Utilized by the SAM Instrumentation

Zakk Rhodes and Gene Ware, Utah State University

3:20 pm Throttled Launch-Assist Hybrid Rocket Motor for an Airborne NanoSat Launch Platform

Zachary Spurrier, Stephen Whitmore, Sean Walker, and Stephen Merkley, Utah State University

3:40 pm The Impact of Circumsolar Radiation on CSP Renewable Energy Harvesting

Gene Ware, Doran Baker, Zakk Rhodes, Mark Norman, and Alireza Ghasempour, Utah State University

4:00 pm Q & A

4:30 pm Conclude

Humanities, Philosophy, & Foreign Language

Division Chair: David Richter

Utah State University

Session One:

Session Leader: David Richter

1:30 pm Where has Nabonidus gone?

Spencer C. Woolley, University of Utah

1:50 pm That's Rich: Survival in the Tudor Court

Joshua C. Wiggins, Salt Lake Community College

2:10 pm Russian California, Outpost of Empire

Brian Simons, Utah State University

2:20 pm Break

2:30 pm No longer either French or Anything: The Situation of Jewish Women in North Africa during World War II

Avenel Rolfsen, Westminster College

2:50 pm Resettlement Experiences of Children who Entered the United States as Refugees

Elizabeth Katherine Gamarra, University of Utah

3:10 pm Q & A

3:30 pm Conclude

Session Two:

Session Leader: Jason Goltz

1:30 pm A Philosophical Critique of St. Thomas Aquinas' Theory of Reason and Revelation

Hannah Lee Brau, Brigham Young University

1:50 pm The Mechanics of Scientific Belief

Michael Warren Cook, Westminster College

2:10 pm An Academic Librarian's Interpretation and Brief Synopsis as a Historical Text of Scroll 8 HEV1 from the Dead Sea Scrolls

Peter L. Kraus, University of Utah

2:20 pm Break

2:30 pm A Series of Glimpses: Witnessing to World War II Through Memory and History

Adriana Pinegar, Westminster College

2:50 pm The Modern Hollywood Sequel: An analysis of Theme and Story

James Nick Reddoch, Salt Lake Community College

3:10 Q & A

3:30 pm Conclude

Letters Language/Literature

Division Chair: Keith Lawrence

Brigham Young University

Session One: American Identities as Shaped by Status and Place

Session Leader: Keith Lawrence

1:30 pm Thy Placeless Power': Herman Melville, Mobility, and the Poetics of Placelessness

Todd Goddard, Utah Valley University

1:50 pm Temporarily Embarrassed Millionaires': F. Scott Fitzgerald's 'Winter Dreams

Elizabeth Robison, Weber State University

2:10 pm Leaking' Paine: Richard Carlile's Illegal Publication of The Age of Reason

Andrew Doub, Brigham Young University

2:20 pm Q&A

2:30 pm Break

Session Two: English Language and Literatures in Transnational Contexts

Session Leader: Keith Lawrence

3:00 pm The Rhetorical Education of Matteo Ricci, S.J.

Roberto Leon, Brigham Young University

3:20 pm G.K. Chesterton: Teaching a Religious Writer in the Secular Classroom

John Schwiebert, Weber State University

3:40 pm Digital Literacy as Evaluative Pedagogy: Assessing the Digital Revolution from Social Networking to Cyber Warfare

James Young, Weber State University

4:00 pm Q & A

4:10 pm Conclude

Physical Sciences

Division Chair: Rico DelSesto
Dixie State University

Session One:

Session Leader: Chin-Yah Yeh

1:30 pm Basic Statistical Adjustment

Brian Knaeble, Jingyi Huang, and Thomas Vitti, Westminster College

1:50 pm How Much Less is More? The Predictive Consequences of Overfitting

Bill Bynum, Brian Knaeble, and Gano Hasanbegovic Garrett Wilson, Westminster College

2:10 pm Schrödinger Equations with 1-D Potential Wells

Chin-yah Yeh, Salt Lake Community College

2:30 pm Q&A

2:40 pm Break

Session Two:

Session Leader: H. Laine Berghout

3:00 pm Experimentally determined optical constraints for yttrium oxide in the extreme ultraviolet

Margaret Miles, David D. Allred, R. Steven Turley, Benjamin D. Smith, Joseph B. Muhlestein, and Stephanie Thomas, Brigham Young University

3:20 pm Density Functional Theory Investigation of Polycyclical Peroxide Stability

Charles J. Simon, Don R. Davies, and H. Laine Berghout, Weber State University

3:40 pm First Steps towards Allowing Aluminum's Far UV Reflectance to be Accessible for Broadband VUV for Space-based Instruments

David D. Allred, R. Steven Turley, Spencer Willett, Stephanie Thomas, and Michael Greenburg, Brigham Young University

4:00 pm The Emmission from Newborn Supermassive Black Holes in the Early Universe

Brandon K. Wiggins, Joseph M. Smidt, and Jarrett L. Johnson, Brigham Young University

4:20 pm Q&A

4:40 pm Conclude

Social Sciences

Division Chair: Wade M. Cole
University of Utah

Session One: Politics and the State, Part I

Session Leader: CoCo James

1:30 pm Indirect Health Effects of War

Daniel Poole, Salt Lake Community College

1:50 pm Quality of Life and Direct Democracy

Josh Smith and Ryan Yonk, Utah State University

2:10 pm Effects of Roman Imperialism on Central European Populations

L. Brock James, University of Utah

2:30 pm Q&A

3:00 pm Break

Session Two: Identities and Diversity

Session Leader: Wade Cole

1:30 pm Death of Hetero/Homo

alithia zamantakis, University of Utah

1:45 pm Survival: The Evolution of Jewish Identity in the 20th Century

Nathan G. Caplin, Snow College

2:00 pm Exploration of African American Health Priorities

Tashelle B. Wright, Westminster College

2:15 pm Q&A

2:45 pm Break

Session Three: Studies in Social Psychology

Session Leader: James C. Brau

1:30 pm Becoming Psychologically Literate: Responding to Those with Symptoms of Depression

Amy Blommer, Sophia Garcia, Claire Short, and Eric Amsel, Westminster College

1:45 pm Finding Meaning in Serving Others: Factors Predicting College Students' Self-Perceptions of Being an Adult

Hui-Tzu Grace Chou and Ron Hammond, Utah Valley University

2:00 pm Positive Psychology Holistic Determinants, Testosterone Treatment, and Veterans Happiness

James C. Brau and Hannah L. Brau, Brigham Young University

2:15 pm Behavioral Economics and the Value of a Statistical Life

Alecia Hunter, Ryan Bosworth, and Ahsan Ulkibria, Utah State University

2:30 pm Q&A

3:00 pm Break

Session Two: Politics and the State, Part II

Session Leader: Thomas C. Terry

3:30 pm Framed Couplets: Agenda Setting, the Bumper Sticker Effect, and How Candidate Name Pairings

Predict Winners and Losers in Presidential Elections, 1840-2012

Thomas C. Terry, Utah State University

3:50 pm Intelligence-Led Policing

John Hill, Salt Lake Community College

4:10 pm The New Normal: The Chinese Response to Terrorist Threat in Xinjiang China

Huiying W. Hill, Weber State University

4:30 pm Q&A

5:00 pm Conclude

Session Five: Issues in the West

Session Leader: Daniel Poole

3:30 pm Water Issues in the State of Utah

Daniel Poole, Heather Aagard-Jimenez, Ryan Butler, Steven Graham, Zachary Hansen, Gabriela Martinez and Kathryn Thompson, Salt Lake Community College

3:45 pm Uranium Legacy of Southern Utah

Gulsumkhanum Bayazitova, Westminster College

4:00 pm Depleted Uranium Munitions and the Mind of the Killer Robot

Shadman Bashir, Dixie State University

4:15 pm Federal Relations in the American West

Jamie Nelson, Salt Lake Community College

4:30 pm Q&A

5:00 pm Conclude

Session Six: Challenging Morality and Changing Mores

Session Leader: Wade Cole

3:30 pm Information Technology or Demographic Transition? Testing Competing Hypotheses of Retention and Disaffiliation among Utah Mormons

Rick Phillips, University of North Florida

3:45 pm Clothing the Angel in the Home: Constructing Emphasized Femininity in The Church of Jesus Christ of Latter-Day Saints through Modesty Rhetoric, Practices, and Policing

CoCo James, University of Utah

4:00 pm Durkheim's Social Solidarity in Modern Life: Experiences of Mormon Women in Transition

Bethany Gull, Utah Valley University

4:15 pm Childhood Pornography Exposure: An Exploration and Comparison of the Female Experience and Affect

Lacy A. Bentley and Cameron John, Utah Valley University, and Kent D. Hinkson Jr., University of Utah

4:30 pm Q&A

5:00 pm Conclude

Abstracts

POSTER

Presenter(s): Maikie Sengdeng and Bahar Alimadadi

Other Authors: Ashley Rogers

Title: Intrinsic factor inhibition due to the use of isotretinoin

Affiliation: Weber State University

Abstract: Acne is a common skin condition that is described as pimples, blackheads, whiteheads and oily skin typically of the face. Isotretinoin (commonly known as Accutane) is a therapeutic drug used for the treatment and prevention of severe acne by influencing skin cell-cycle progression, cellular differentiation, and cell survival. This drug is a derivative of Vitamin A known for its ability to treat acne that has not responded to antibiotics. Isotretinoin is known to express both mild and very serious side effects, such as nosebleeds or spontaneous abortions. A previous study done on the effects of isotretinoin concluded that patients prescribed with isotretinoin showed a significantly prolonged partial thromboplastin time (aPTT). aPTT is a timed, clinical test to detect abnormalities in the coagulation cascade, specifically the intrinsic pathway. The intrinsic pathway is comprised of four coagulation factors: XII, XI, IX and VIII. Once these factors are activated, they play a major role in hemostasis and the coagulation cascade to form a hemostatic plug that prevents internal bleeding. An irregular or prolonged aPTT indicates that one or more factors of the intrinsic pathway may be inhibited, thus hypothesizing that isotretinoin may be the cause of this delay. The objective of this study is to investigate which factor(s) of the intrinsic pathway is being inhibited. In order to determine which factor(s) are affected, normal patient plasma will be collected, treated with a standardized concentration of isotretinoin, and undergo a factor assay. The factor assay is comprised of four different factor deficient plasmas. Each factor deficient plasma will include the treated patient and an aPTT will be measured. The expected results will show a delay in one or more of the deficient plasmas and will indicate what factor(s) are inhibited in the intrinsic coagulation pathway.

Presenter(s): Sarah Gordon
Other Authors: Malcom C. Collier
Title: French and American Police Organizational Leadership Training
Affiliation: Utah State University

Abstract: This study takes a comparative approach to organizational leadership theory and practices in French and American Police organizations. We explore the concepts of adaptive leadership and situational leadership in specific examples, including the training programs of the LAPD and the French Gendarmerie. We also compare the use of hands-on activities, simulations, and role play in the two models. The poster provides translations of French materials.

Presenter(s): Victoria Willard
Other Authors: Dr. Wendy Schatzberg, Prof. Shane Christensen, Adv. Heath Papa
Title: A Scientific Study Determining Variables Affecting Metal Oxide Oxidation States Coloring High Fire Ceramic Art Glazes
Affiliation: Dixie State University

Abstract: In this study we have integrated the fields of art and science, more specifically the artistic medium of ceramics with the science of glaze chemistry. High temperature silica-alumina based glaze colors are manipulated using appropriate transition metal oxides as colorants. There is a range of variables that all contribute to determine the final transition metal oxidation state used in glazes. This final oxidation state affects the shape of the electron cloud around the metal ions that are left suspended in the cooled glaze. We explored a series of controlled tests and evaluated which glazing variables had the largest impact on the final colors produced. We tested different ways to manipulate the final glaze colors and investigated any impact resulting from including iron oxides into the glaze body.

We chose iron oxide because it is capable of producing extensive range of color. Iron oxides distinctively responds to both oxidation and reduction kiln atmospheres which was an important variable. We ran tests on the iron oxides and varied them by iron types, amount, purity, initial oxidation state, and particle sizes. The particle sizes were varied from a large mesh down to a nano-scale sizes. We tested how the glaze colors produced by these iron oxide were affected by the presence of other transition metals using a bi-axial blend method. Lastly, we fired the glazes on a porcelain clay body in both reduction and oxidation atmospheres. We built a gas test kiln specifically for these experiments that has capabilities reaching and holding temperatures as high as 2200 degrees Fahrenheit.

Presenter(s): Jill Jaspersen
Other Authors:
Title: Religious Freedom: A Global Concern
Affiliation: Utah Valley University

Abstract: World Religious Freedom is tenuous. American citizens cherish freedom of religion as identified in the First Amendment of the Constitution. However, there are religious/belief atrocities committed across the globe without regard to those freedoms. Because American citizens are concerned about these atrocities, the International Religious Freedom Act (IRFA) was signed into law. This act created a special office in the State Department to defend religious freedom abroad; the United States Commission on International Religious Freedom (USCIRF). This commission creates a lengthy annual report, and has identified the world's top religious freedom abusers in map form. See <http://www.uscirf.gov/reports-briefs/annual-report>

The author created this poster identifying these abusers with an interesting twist. The juxtaposition of the countries is a telling story of the sorrow and heartbreak created through lack of this important right.

Presenter(s): Saúl Quintero
Other Authors: Allen Doong, Ron Valcarce
Title: Measuring Learning Outcome in Chemistry Outreach
Affiliation: Salt Lake Community College

Abstract: Elemental Expeditions is a chemistry outreach program that was created at Salt Lake Community College to provide hands-on chemistry learning to underserved schools in the Salt Lake City area. Through the use of written and pictorial assessment, we measured the change in science based informational knowledge and perception in k - 6th Elementary School Students. Our assessment tool was administered pre and post classroom presentation and the change in responses was measured.

Presenter(s): Caroline Lavoie
Other Authors:
Title: Flow and Fluidity: Perception and Experience in Drawing Landscapes and Riverscapes for Landscape Architecture
Affiliation: Utah State University

Abstract: This poster includes a theoretical and practical discussion of how drawing enriches and informs the field of Landscape Architecture, focusing particularly on the unique challenges of large-scale landscapes and riverscapes. The project includes large-scale pen and ink drawings and site descriptions as well as reflections on the function and value of drawing. It investigate perceptions, experiences, and representations of large-scale landscapes and bodies of water. Drawing enables a better understanding and internalization of the flow of water as it meanders through space, time, and human experience. The paper/poster explains how drawing enables the artist, and the viewing public, to experience vast watersheds, powerful rivers, trickling brooks, historic canals and bridges, restored streams, and immense canyon landscapes carved by water. It explores drawing water as a creative and communicative tool in stream restoration for hydrologists and stream ecologists. With fluid lines, the example drawings traverse the horizons of expansive landscapes, retracing the path of water. A relationship with the landscape and with the movement of bodies of water is revealed in the flowing lines of the drawings. All sketches were drawn on site, and the project shows how such on-site, large-scale drawings help us to perceive, interpret, internalize, and interact with the flow of rivers, streams, waterfalls, and bays. Finally, the author explains how drawings such as those exhibited are useful as they focus on different aspects of the landscape. They explore the layers that form the visual landscape (the foreground, middle ground, and background) sometimes blurring their boundaries, while capturing the fluidity and changing nature of the landscape and riverscape

Presenter(s): Abby Jorgensen
Other Authors: Robyn Hyde
Title: Oil in the Watershed
Affiliation: Westminster College

Abstract: The goal of this ongoing research is to develop a QuEChERS (quick easy cheap effective rugged safe) extraction method to determine the level of contamination of oil in the snow in the Salt Lake City watershed. This requires the extraction of nonpolar organics from polar water. Extracts are analyzed by synchronous scan fluorescence spectroscopy (SSFS). Sample preparation requires only 4 mL of hexane and 0.2 g of salt. Total preparation analysis time has been shortened to approximately 1 hour. Reference materials have been created by spiking distilled water with various motor oils and gasoline's. Findings show there is linearity between concentration and fluorescence intensity. Calibration is possible and the limit of detection is at or below 100 ppm. Semi-quantitative data will be presented showing levels of contamination on snowmobile trails, ski resort parking lots, and mountain lakes with high traffic. This research could help inform policies that are meant to protect water quality in the Salt Lake City watershed.

Presenter(s): John Hill

Other Authors: Brianne Hill

Title: Increasing Rates of Homicide in the U.S.: the "Ferguson Effect"?

Affiliation: Salt Lake Community College

Abstract: Over 30 major American cities are experiencing a recent increase in homicide rates. The researchers analyze the "Ferguson Effect" as a causal relation or correlation to this increase. The "Ferguson Effect" is identified as overly-passive and ultra-reactive policing created after the backlash resulting from the Michael Brown shooting (in Ferguson, Missouri, 2014). The consequence is alleged to be an empowered criminal element proliferation concurrent to a discouraged police force disengaging from enforcement activities.

Presenter(s): Brian Stearmer

Other Authors:

Title: Geodata sets for Emergency Management

Affiliation: Weber State University

Abstract: The project scope had two components, (1) collaborate with the appropriate teams and individuals within the Utah National Guard and Emergency Operation Center to identify important Intelligence Requirements (IR) and (2) identify, organize and create key Geographic Information System (GIS) datasets that could answer IR's in Defense Support of Civil Authorities operations across the state of Utah. Each feature on the surface of the Earth has a different energy reflectance that can be identified by multispectral imagery. A statewide multispectral baseline image would enable us to understand the components of a disaster and better tailor response efforts, but yet there wasn't one available within any GIS data holding.

The key in large scale emergency management scenarios is applying available resources to where they are needed. However, communication lines are also degraded and/or overflowing, identifying where resources are needed is the most obscure and often costly decisions leaders have to make. GIS analysts can use remote sensing multispectral imagery to quantify the nature of various disasters without having to take time and resources for manual reconnaissance. For example, solid vs broken asphalt have a unique energy reflectance. Using classification software, the analyst can identify damaged roads without having to drive across the entire state.

It took several thousand hours to identify, adjust and compile Utah's 17 different Landsat scenes. I narrowed the timeframe to September, early fall had the least amount of cloud cover while still a good vegetation reflectance. There are automated tools, however manual color adjustment yielded the best result. Because of the accuracy of the adjustment, seamlines between images are nearly undetectable. The end result was a 99.99% cloud-free mosaic, with an average date of Sept 4th, 2015. Looking to the future, continued work in creating seasonal baselines and integrating airborne platforms that can assess post catastrophe difference.

Presenter(s): Mallory M Rogers

Other Authors: Perry F. Renshaw, Rebekah Huber

Title: The Relationship Between Various Forms of Hypoxia and Postpartum Depression

Affiliation: University of Utah

Abstract: Studies have shown a relationship between hypoxia and depressive symptoms (Brenner, Cheng, Clark, & Camargo, 2011; Kanekar et al., 2014). Hypoxia is defined by Merriam-Webster as a "deficiency in the amount of oxygen reaching the tissues." Hypoxia can be caused by various factors including environmental conditions, medical conditions, or health behaviors. The proposed study will examine the relationship between various causes of hypoxia and the occurrence of postpartum depressive symptoms. The proposed study will define hypoxic conditions as: residence at high altitude (>¥2000 ft. as defined in a study done by Brenner et al., 2011), moderate to heavy smoking (as defined by PRAMS data),

asthma, and hypertension. Subjects will be divided into five categories: 1high altitude, 2smokers, 3hypertensive, 4asthmatic, and 5non-hypoxic. Using a multivariable analysis in SPSS, a logistic regression will be used to examine the relationship between postpartum depressive symptoms and each form of hypoxia. We hypothesize that women in a state of hypoxia will be more likely to experience postpartum depressive symptoms. This hypothesis is supported by literature on hypoxia and mood disorders (Kanekar et al., 2014; Nicolas et al., 2000), altitude and suicide (Brenner et al., 2011), smoking and depression (Fergusson, Goodwin, Horwood, 2003; NCHS, 2010), and asthma and depression (Rubin, 1993). There is currently very little research on postpartum depression or the variables associated with it. As postpartum depression affects 10-15% of American mothers (Robertson, Grace, Wallington, Stuart, 2004), an increased understanding of these factors may serve to further advance prevention and treatment of postpartum depression.

ART ORAL PRESENTATIONS

Presenter(s): Madison Cavaness

Other Authors:

Title: Dance and Class in the Great Depression

Affiliation: Weber State University

Abstract: The American Dream is one that suggests the capability of moving between classes easily (Dickstein, 218). During the Great Depression, belief in the American Dream was still alive despite the turmoil of the time. It was an idea used in many forms of art to lift the spirits of the people. However, what if the upper class was attempting to appease the lower classes by distracting them with performance and dance? This research argues that 1930s movie musicals functioned as a means to divert the lower class's attention from legitimate concerns surrounding their situation in a way that was harmless and seemed to pose no threat to either class. Instead, the form served to maintain class standing through reinforcement of societal norms of the time. Reinforcing class divisions served as a mechanism to maintain control. Those in power did whatever they could to maintain power. Marxist Critical Theory asks whom does it benefit? Who is truly benefitting from the movie musical? This research will show it was the upper class benefitting from the films. Production companies like RKO Radio Pictures used actors like Fred Astaire and Ginger Rogers to appeal to the lower class, as if to say there was not truly a division between classes. Their 1936 movie *Swing Time* provides a glimpse into the classes of 1930s America, during the Great Depression, particularly in how dance was utilized in a period of great despair. The performances of Astaire and Rogers within the film provide an insight into how the power of the upper class was maintained over the lower class. This research will include a synthesis of written source material and critical analysis of *Swing Time* from a Marxist perspective, illustrating the differences in class and demonstrating how power was maintained during the Great Depression of 1930's America.

Presenter(s): Victoria Willard

Other Authors:

Title: The Road to Salvation is Lined with Kitsch

Affiliation: Weber State University

Abstract: Archaeologists have unearthed a number of ceramic St. Menas flasks from locations all over Western Europe. These flasks were made near the burial place of St. Menas outside of Alexandria, Egypt and sold at pilgrimage sites around the Mediterranean. These flasks are not normally studied by art historians, as they were mass produced souvenirs and not considered unique works of fine art. However, they offer an opportunity to study mass production, pilgrimage travel, and the nature of belief in the early Christian world.

Despite their rough crudely crafted appearance, these flasks were of great spiritual value to those who purchased them. The flasks themselves, through their clay, embodied the sacred location of the saint's burial site and could be used to carry water, dirt, or oil acquired at sacred places. These natural materials served as relics that offered the bearer special access to divine power by invoking the good will of the saint. The owners of these items believed that the flasks, with their sacred

clay, image of the saint, and other sacred contents, had the power to ensure safe travel and heal people of their infirmities. Ultimately, many of these flasks were discovered in Christian burial sites, suggesting that the owners of these items believed that these relics could assist the owner in successfully reaching heaven. This presentation will trace the objects from their origins in Egypt through to their final resting places and offer insights into the meaning and making of these items

Presenter(s): Zach T. Power

Other Authors:

Title: Substrate Poetry

Affiliation: Weber State University

Abstract: Poetry has a longstanding tradition with the white sheet of paper. Even as poetry has moved online, the website as a medium is nonetheless skeumorphic and referential of its traditional medium: the blank white sheet of paper. As a result the word processor has been the main source of creating poetry, reducing poetry (mostly) to a systems art based on the keyboard (at least in a Western sense). Substrate poetry is poetry that resists the traditional substrates of poetry (white sheet of paper, keyboard, word processor, etc.) and seeks meaning through new mediums where scripted visual language is possible. Substrate poetry does not try to just place language/poetry in new places/mediums, but seeks to integrate the meaning of the language with the meaning of the substrate. Some examples of non-traditional substrates include social networks such as Twitter, Vine, Tumblr, etc. or a return to handwritten language, or even includes file formats such as .GIF. Additionally, substrate poetry is aware of the physical ontology of a poem: if digital, the poem exists electromagnetically on a server or computer; if physical, exists in visual contrast on ink and paper, etc. Ultimately, substrate poetry hopes to highlight the possibilities with the ways in which poetry exists in order to free it from the trappings of its tradition and free poetry to exist more extensively in response to new technology. Art always works in tandem with technology, and substrate poetry seeks to highlight and clarify that relation.

Presenter(s): Loclyn Torres

Other Authors:

Title: The Invisibles: The Unseen Artists Behind the Bangs Sisters' Precipitated Paintings

Affiliation: Weber State University

Abstract: Throughout the history of art, it has not been unheard of for a painting to be credited to the wrong artist, only for the true artist to be identified centuries later. However, there remains an entire movement in art built on the backs of unseen and unknown artists. During their time they were the wizard behind the curtain and today they have been all but forgotten. They are the invisible artists who made the Precipitated Spirit Portraits during the heyday of Spiritualism (1848-1920s). Grieving loved ones could receive full oil portraits of their deceased done by 'spirits' working through the powers of the mediums. While most mediums used cabinets or the dark to hide the painting until it was complete, there was a pair of phenomenal sister mediums, May and Lizzie Bangs, who were able to make paintings appear in the light just two feet away from the sitter's face. People traveled from all over to watch as art was created, spontaneously, without hands. But no one knows just how these portraits were actually created. To this day there are unanswered questions: how did the Bangs Sisters turn a blank canvas into a fully rendered portrait just a couple feet from the sitter's face, how did they know what the dead looked like, how did the sisters get the finished portrait into the room undetected, what are these 'unearthly' portraits made out of, and the greatest question of them all, who actually created these portraits? By synthesizing the research and reports of both the skeptics and believers, I seek to answer these questions and finally reveal the truth behind these otherworldly portraits and turn one of the greatest art mysteries into a new page in art history.

Presenter(s): Kathie Debenham

Other Authors: Pat Debenham

Title: The Invisibles: The Hope of a Decade: Fred Astaire's and Ginger Rogers' Dances of the 1930s

Affiliation: Weber State University

Abstract: This presentation examines from an LMA perspective how the choreography and performance of Fred Astaire and Ginger Rogers embodied hope during dark days of the Great Depression. Astaire and Rogers' partnership on screen was a physical metaphor for opportunity and for freedom from the oppressive reality of the deep and pervasive poverty that gripped the United States. Their musicals, though by some considered light-weight in relationship to the reality of life outside the movie house, exuded 'hope' and encouraged a sense of optimism that "tomorrow would be a better day." We use the lenses of Body, Effort, Shape and Space to examine two specific works, 'Let's Face the Music and Dance' from Follow the Fleet and 'Pick Yourself Up' from Swing Time. These dances illustrate how Astaire and Rogers exhibited in physical form a hope for both the nation and the individual.

Presenter(s): Madeline Fowers Baum

Other Authors:

Title: Russia's Imitation Act Through Don Quixote

Affiliation: Weber State University

Abstract: Current dance history research holds that dance, as a cultural artifact, reflects culture. Noted dance anthropologist, Joann Kealiinohomoku stated "all dance forms reflect the cultural traditions in which they developed" (Kealiinohomoku 33). Through an analysis of dance, important cultural values are revealed, such as a culture's aspirations, political structure, and social expectations. Therefore, critically analyzing the ballet Don Quixote should provide insight into Russian culture in the late 1800's. However, further inspection of the ballet reveals several seeming contradictions challenging Kealiinohomoku's assertion. Don Quixote was a Spanish novel that premiered as a ballet in Moscow in 1869. How does a Spanish story reflect Russian culture? To address this question the New Historicism frame of analysis will be very enlightening. New Historicism is a critical theory that interprets history as a cultural artifact; a way to learn how time and place are linked together and reflect a specific culture (Tyson 286). Understanding the cultural atmosphere of 19th century Russia is essential to understanding why Russian ballet displayed foreign elements. 19th century Russia went to great lengths to emulate European culture. This emulation began in the late 1600's when Tsar Peter the Great attempted to close the perceived cultural gap between Moscow and Western Europe through a 'Westernizing project.' Peter aspired for Russia to appear as powerful, cultured, and sophisticated as France, the leading world power of the time (Homans 246). As Russia emulated European powers, particularly France, foreign cultural relics leaked into Russian ballet. Don Quixote is a perfect example of Russian efforts to adopt Western values in ballet. A review of written source material and a critical analysis of Don Quixote will demonstrate how Peter the Great's Westernizing efforts were noticeable centuries later as Western values were still emulated through ballet to make Russia appear powerful, and therefore cultured.

BIOLOGY ORAL PRESENTATIONS

Presenter(s): Issac Bowen

Other Authors: Craig Oberg

Title: Determination of treatments to reduce late gassy defect in cheese due to *Lactobacillus wasatchensis* WDC04 contamination

Affiliation: Weber State University

Abstract: *Lactobacillus wasatchensis* WDC04 is a newly discovered lactic acid bacterium, which causes serious commercial losses from bloated cheese packages and textural defects. Experiments were performed to determine its salt tolerance at pH 5.2 and 6.5, resistance to HTST pasteurization, and pH growth range. MRS with 1.5% ribose (MRS-R) was prepared

at either pH 5.2 or 6.5 with salt concentrations ranging from 0.0%-10.0%. Two ml of the MRS-R test media was added to each well in a 24 micro-well plate and a pre-inoculated absorbance reading was taken at 600 nm. After, 100 µL of WDC04 was inoculated into each well, and the plate incubated at 25°C for 3 d (pH 6.5 MRS-R) or 2 d (MRS-R pH 5.2). Plates were placed in a Teacon Infinite 2000 with absorbance readings (A600) taken every 4 h for 24h. Results showed WDC04 grew best at 3.0% salt (pH 6.5) and 2.0% salt (pH 5.2) but showed some growth up to 6.0%. Using a narrower salt range (5.25%-6.75%) at pH 6.5 was done to determine if a salt concentration used in cheese could suppress WDC04 growth. Above 6.0% salt, WDC04 was inhibited and ceased to grow. Using the same methodology, the pH range (2-8) for WDC04 was determined. WDC04 grows best at pH 5-6 (cheese pH) but not below pH 4 or above pH 7. WDC04 was heat shocked in a hot water bath at 72°C for 15 sec and plated. With an initial count of 108 CFU/ml, results showed a decrease of 105 CFU/ml in survival of WDC04, indicating WDC04 could be contaminating the cheese by surviving pasteurization. These results suggest using a higher salt/moisture ratio in cheese and increasing pre-pasteurization sanitation to remove biofilms would decrease the likelihood of *Lb. wasatchensis* WDC04 in ripening cheese, thus, reducing the possibility of late gassy defect.

Presenter(s): Sadie Larson

Other Authors: Matthew Hutchinson, James Harris

Title: Rapid Floristic Analysis with Geolocated Photographs and Geographic Information System (GIS) Software

Affiliation: Utah Valley University

Abstract: Geographic Information System (GIS) computer software has become a powerful tool in biogeographic analyses. But the technique is somewhat limited by the time and effort required to collect statistically significant amounts of distribution data through traditional methods. Geolocated photographs (photos with embedded geographic coordinates) provide a rapid, precise method of collecting vast amounts of biological distribution data that can then be incorporated into a GIS analysis of distribution. The speed and simplicity of geospatial data collection with photographs provide a practical method of producing a high-resolution characterization of biological distribution in a region of interest. The technique is particularly well suited to vegetation studies. To test the concept, we assembled over 9000 geolocated photographs of plants from Mt. Timpanogos in the Wasatch Range of Utah. Latitude, longitude, and elevation data were used in ArcMap GIS software to correlate plant distribution with a wide variety of ecological factors. Our GIS analysis allows a broad range of ecological questions about the flora of Mt. Timpanogos to be addressed. Due to the simplicity of collecting geolocated photographs of plants, our technique lends itself well to student and citizen science projects.

Presenter(s): Spencer Rickers,

Other Authors: Jordan Cruze, Sariah Saili, Nathan Kartchner

Title: The Effects of Caffeine Free American and Mexican Coca-Cola® on Glycemic Index and Glycemic Load

Affiliation: Utah Valley University

Abstract: Most soft drinks sold in the United States are sweetened with High fructose corn syrup (HFCS) rather than Sucrose or Cane Sugar (CS). Public concerns say that consuming HFCS is less healthy than consuming CS. The purpose of this study is to examine the GI and GL of caffeine free Coca-Cola® variants containing CS, and HFCS, from a carbohydrate standpoint. 20 non-pregnant, healthy females, between the ages of 19-30, with a BMI between 18-25 were selected to participate. Each subject consumed three 12oz drinks containing 39g of carbohydrate in the form of CS (Mexican Coca-Cola®), HFCS (American Coca-Cola®), and dextrose water (DW), with Tap Water (TW) as the control. Capillary Blood Glucose Levels (BGL) were measured at 15 minute intervals over four two-hour testing periods. The GL and GI were calculated for each drink by taking the area under the blood glucose/time curve. One-Sample T-test on differences of GI with a P-value of 0.773 failed to reject the null hypothesis and concluded that the average GI for American Coca-Cola® is not significantly greater than that of Mexican Coca-Cola®. Non-parametric procedures also concluded that the median GI for American Coca-Cola® is not significantly greater than that of Mexican Coca-Cola®. Corresponding tests on GL data do not change this conclusion. We conclude that differences in GI and GL for non-caffeinated soft drinks sweetened with CS versus HFCS are not significant, as revealed by our analyses.

Presenter(s): Robert L. Bossard
Other Authors:
Title: Insect Origins, Key Innovations, and Trophic Succession
Affiliation: Bossard Consulting

Abstract: Like Aphrodite, insects appear to rise perfected from the sea. New evidence shows subterranean freshwaters should be investigated for cryptobiotic microcrustaceans closely related to insects. Key innovations that help create insect diversity include hexapody, water conservation, dicondylic jaws, foldable wings, sucking mouthparts, elytra, single pair of wings, sociality, and symbioses with microbes, fungi, plants, and animals. I examine the trophic succession hypothesis, that herbivorous insects preceded carnivorous and parasitic insects during biosphere evolution.

Presenter(s): Julian Chan
Other Authors: Brian Knaeble, Russell Costa, Douglas Getty, Katie McLean, Riddhi Rampeearee
Title: Student's t-test and scientific reproducibility
Affiliation: Weber State University

Abstract: Many scientific results cannot be reproduced. Although there are many reasons for irreproducibility in science, here we focus on the influence of statistical procedures that are less than optimal. For simple inference about a population mean, the one-sided t test is less powerful than the optimal likelihood-ratio test, assuming independent and normally distributed observations. Here we conduct simulations to determine if this power discrepancy is of practical significance. We assess the sensitivity of our results to departures from independence and normality. We estimate false positive rates for both tests under various assumptions for alternative parameters, and we use Bayes' rule to evaluate implications for scientific reproducibility. Results are tabulated for reference by scientists concerned about reproducible inference for a population mean.

Presenter(s): Michael Adams
Other Authors: Bruce Howard
Title: X-ray analysis of Lead (II) binding to H. volcanii Malate Synthase
Affiliation: Southern Utah University

Abstract: Elucidation of protein structures at the atomic level using X-ray crystallography is an effective technique for studying metabolic enzymes and defining binding interactions of small molecules and ions. Our research centers on the structure of the malate synthase isoform H (MSH) from *Haloferax volcanii*, which is a key enzyme in the glyoxylate pathway of cellular metabolism and allows this organism to integrate two carbon compounds for anabolic biosynthetic reactions. We have collected X-ray diffraction data from a protein crystal soaked in a solution containing lead (II) acetate. This heavy atom derivative provided SIRAS phasing to solve the structure of the native enzyme, but this structure has not previously been analyzed and fully refined. Here we report the iterative model-building and refinement of this structure at 2.1 Å resolution to an overall R value of 0.1815, and an R free of 0.2157. This structure allows a detailed analysis of lead (II) ion binding to the protein. In addition to the displacement of the required magnesium ion and accompanying distortions in the local vicinity of the active site, we find three additional binding sites for lead ions. Strong peaks are observed at these lead binding sites in anomalous difference Fourier maps, as well as very high electron-density peaks in the 2Fo-Fc map at these four locations. Lead binding at inter-subunit contacts may explain the increased resolution of X-ray diffraction from this derivative versus the native protein.

Presenter(s): Craig Oberg

Other Authors: Marissa Walker, Michele Culumber

Title: Determination of treatments to reduce late gassy defect in cheese due to *Lactobacillus wasatchensis* contamination

Affiliation: Weber State University

Abstract: *Lactobacillus wasatchensis* WDC04, a new nonstarter lactic acid bacteria (NSLAB), was recently isolated from “gassy” Cheddar cheese and may be an important cause of late gassy defect in aged cheese. One way to control WDC04 may be to incorporate other NSLAB strains into cheese that inhibit its growth. Experiments were performed to determine if inhibition occurs between common NSLABs and WDC04 utilizing the agar-flip method. A lawn of WDC04 was swabbed on MRS agar with 1.5% ribose (MRS-R) and incubated anaerobically at 25°C for 2 d or 4 d. Agar was then aseptically flipped over and individual NSLAB challenge cultures swabbed on the exposed surface. Plates were incubated anaerobically at 30°C or 37°C for 5 d. Growth of NSLAB cultures was compared to their growth on MRS-R plates without a WDC04 lawn (controls). In a second experiment, the media contained 4% NaCl and pH 5.2 to mimic the cheese environment. In a third experiment, MRS-R (4% NaCl, pH 5.2) was also used but the NSLAB cultures were initially swabbed as the lawn, incubated, then WDC04 was streaked on the opposite side of agar. In the first and second experiments, *Lb. curvatus* WSU1 showed the greatest inhibition by WDC04 while *Lb. paracasei* Lila and *Lb. rhamnosus* 7469 were the least inhibited. All challenge NSLAB strains showed decreased levels of growth compared to control plates. In both experiments, most NSLAB cultures showed more inhibition by WDC04 grown for 4 d compared to 2 d before the culture challenge. Results from the third experiment suggest some NSLAB strains can affect growth of WDC04 under cheese-like conditions with *Lb. casei* F19, *Lb. paracasei* Lila, and *Lb. rhamnosus* 7469 exhibiting inhibition. Since there was no direct contact between WDC04 and NSLAB strains, any inhibition was due to secretion of inhibitory compounds. Examining the antagonism between

Presenter(s): Brian McNeil

Other Authors: Jason C. Quinn

Title: Impact of the Integration of Produced Water on Microalgae Productivity

Affiliation: Utah State University

Abstract: Microalgae represents a promising biofuel feedstock as it can be cultivated on low quality land and can be integrated with a variety of waste streams. Produced water is the largest waste stream generated in the oil and gas industry. A variety of economic and life cycle studies assume the seamless integration of algal cultivation systems with produced water. The integration of the two systems is synergistic as algal cultivation requires large volumes of water and there is a need for remediation of produced water. Produced water contains inorganic and organic contaminants that could inhibit growth and lipid production of microalgae directly impacting the yield of the system. In this study, produced water from the Uintah Basin, Utah oil and gas industry was used as the primary growth media for microalgae, *Nannochloropsis salina*. Experiments included the evaluation of microalgae productivity cultivated on different dilutions, 0% (control), 25%, 50%, 75%, and 100% produced water. Results show that produced water severely inhibits growth of microalgae, with no growth shown in the 100% group. Results integrated into techno-economic and life cycle modeling work to illustrate the impact of the reduced productivity on economic viability and environmental impact of a microalgae biorefinery.

Presenter(s): Marissa Walker

Other Authors: Craig Oberg, Joel Bass, Karen Nakaoka

Title: Study of an outbreak of skin infections among a university football team in Utah

Affiliation: Weber State University

Abstract: An outbreak of soft tissue infections occurred during the 2015 football season, spreading among eight football players at a university in Utah. During this two week outbreak, eight student athletes (ATH) developed skin infections of the axilla, elbows, iliac crest and lower leg. A roommate of an infected athlete was also infected even though the person did not play football. Aggressive wound care and empirical antibiotic treatment resolved the infections in these nine

individuals. Team managers implemented mandatory showers after each game or practice, and enhanced environmental cleaning, especially the locker rooms. Antibiotic treatment and the other interventions were successful in stopping the outbreak shortly after two weeks. Right and left nares of ATH were swabbed and plated onto media that was selective for the bacteria *Staphylococcus*. Thirty-five (31%) of 114 ATH were positive for *Staphylococcus aureus* (SA) in at least one nares. Thirteen (68%) of 19 roommates of the nine infected students were either infected with or carried nasal SA. Five (36%) of 14 locker mates of the eight infected ATH carried nasal SA. These data indicate that close contact may facilitate transfer of SA, resulting in infection or nasal carriage. Ten (29%) of the 35 SA isolates were resistant to at least one of 6 antibiotics tested, but only one was MRSA. Eight of these 10 isolates were resistant to erythromycin and 6 of these had inducible clindamycin resistance. Several of the SA isolates had large hemolytic zones when plated on SBA plates, indicating higher virulence. These antibiotic resistance and virulence factors may have implications relating to a patient's clinical course. This study indicates the importance of hygienic vigilance and aggressive medical intervention in ending community acquired SA epidemics. It also indicates the potential benefit of characterizing these isolates using factors not normally considered in community outbreaks of SA.

Presenter(s): Daniel E. Hayward

Other Authors: Jeremy F. Garcia, Grant E. Jones

Title: Analysis of Urinary Biomarkers in the Diagnosis of Depression

Affiliation: Weber State University

Abstract: Depression is a common psychological disorder and is frequently misdiagnosed. Currently, there is not an objective diagnostic tool for depression; clinicians must rely on symptoms of their patients in order to make a diagnosis. This study aims to provide clinical values of key biomarkers that will objectively differentiate between depressed and healthy patients. This study will analyze levels of Brain-Derived Neurotrophic Factor (BDNF), Norepinephrine (NE), and cortisol, found in participant urine. Adult men and women, currently living in the northern Utah area, will comprise the sample of 100 participants. Each participant will submit a first-morning-void urine sample and respond to the standardized demographic questionnaire and depression inventory. The Beck Depression Inventory will be used to classify participants as depressed or healthy control. All analytes will be measured using enzyme-linked immunosorbent assays (ELISA). Multivariate linear regression analysis will be used to determine how well this panel of analytes can be used to predict depression. Results will find that patients who identify as depressed will have decreased BDNF and NE levels and increased cortisol levels. These analyte concentrations will also decrease and increase respectively based on severity of depression in the participant. This study hopes to show that clinical psychologists and psychiatrists can accurately diagnose depression with the aid of an objective assay of BDNF, NE, and cortisol rather than solely interpreting the subjective feelings of their patients.

Presenter(s): Kevin Rorie

Other Authors: Tucker Marsong, Curt Walker

Title: A novel method for detecting chytrid fungus in wild populations of the canyon tree frog

Affiliation: Dixie State University

Abstract: We noted that the mouthparts of canyon tree frog tadpoles in Zion National Park looked abnormal in certain populations known to harbor chytrid fungus, *Batrachochytrium dendrobatidis*. Because reports existed in the literature that cartilage growth was adversely affected by the fungus, particularly in tadpole mouthparts, we reasoned that this might constitute a method for detecting the presence of the fungus in wild populations quickly and easily. To test our hypothesis, we swabbed tadpole mouthparts according to standard protocol for chytrid fungus detection on amphibian skin. DNA was then extracted from the swabs and a PCR analysis performed to check for the presence of chytrid. Results showed that none of the tadpoles with normal mouthparts tested positive for chytrid; most of those with abnormally-shaped mouthparts tested positive. We therefore conclude that we have found a reliable way to quickly and easily test for the presence of chytrid fungus in wild populations of *Hyla arenicolor* tadpoles in the field, and that infection rates can also be quickly estimated with this method.

Presenter(s): Matthew J. Domek

Other Authors: Brent D. Nelson, David M. Belnap

Title: Classification of Bacteriophage Isolated from the Great Salt Lake using Electron Microscopy

Affiliation: Weber State University

Abstract: Bacteriophage lyse bacteria and play a crucial role in the recycling of nutrients in a halophilic environment such as the Great Salt Lake (GSL). A previous study showed that the bacteriophage CW02, isolated from the GSL, was a dsDNA bacteriophage with an icosahedral head, short non-contractile tail and belonged to the bacteriophage family Podoviridae. CW02 was also shown to share a conservative protein fold in a capsid protein originally identified in bacteriophage HK97. Very few bacteriophage isolated from the GSL have been assigned within the bacteriophage classification scheme. In this study we attempt to classify recently isolated bacteriophage from the GSL based on morphology using transmission electron microscopy (TEM) and molecular techniques. Bacteriophage were isolated from water and soil in or near the GSL. Bacterial lysate containing bacteriophage were centrifuged and filtered to remove bacterial debris. The sample was concentrated using 100,000 molecular weight cut-off filters. Samples were further purified by CsCl density gradient ultracentrifugation. Six bacteriophages have been imaged using TEM. TEM has shown all bacteriophage infecting *Salinivibrio costicola* bacterium SA-39 to be icosahedral with no detectable tail while bacteriophage infecting *S. costicola* bacterium SA-40 having a circular head with a long tail. This suggests that the structure and shape of the bacteriophage capsid play an important role in the specificity of the bacteriophage to host. Based on shapes found using TEM, the bacteriophage infecting SA-39 likely belongs to the group Podoviridae while bacteriophage infecting SA-40 possibly belong to either long-tailed bacteriophage families Myoviridae or Siphoviridae.

Presenter(s): Don R. Davies

Other Authors: Heather Root, Valerie Herzog

Title: Evaluation of Study Skills and Lifestyle Factors Effect on Performance in Organic Chemistry: Evidence Supporting the Need for Active Learning Methods in Student Comprehension

Affiliation: Weber State University

Abstract: Student performance in Sophomore Organic Chemistry courses was measured against lifestyle and study skill factors at a large, open-enrollment, public university in the mountain west region. The survey items were first evaluated individually for correlation to student actual performance on a midterm exam. Items requiring significant student output (active learning methods), such as verbally explaining concepts, participating in study groups and working practice exams, showed highest correlation to actual performance. Student chemical foundation, as measured by their 2nd semester General Chemistry grade, also was a significant contributor to student success in Organic Chemistry. A factor analysis grouped the items into 4 general categories including sleep patterns, active learning activities requiring significant student contribution (study groups, verbally explaining principles), passive learning activities based mostly on student reception of information (traditional learning methods such as attending lecture, reading the textbook and being tutored), and foundation and attitude, which included prior performance, level of anxiety experienced while taking exams and how well they liked Organic Chemistry. The factor that correlated most strongly to actual performance was foundation and attitude, but was closely followed by active learning activities.

Presenter(s): Jeremy Arnt

Other Authors:

Title: Chronic Effects of Intermittent Sound Disturbance of Buenos Aires Tetra

Affiliation: Weber State University

Abstract: Hearing-specialist fish are more susceptible to noise than generalists. The hearing-specialist *Hyphessobrycon anisitsi* was subjected to two, five week trials. One trial was subjected to intermittent anthropogenic boating noise (135 ± 3 dB rel: V/ μ Pa) twice per day for one hour and observed. The ambient noise trial (85 ± 3 dB rel: V/ μ Pa) was observed during the same time periods and differences of growth and behavior were assessed. Growth between trials of length,

weight, and Fulton's condition factor and the frequency of five behavioral categories were assessed to determine stress and habituation. We used ANOVA with repeated measure to determine difference between growth and two-tail T test to determine differences between behaviors. In addition, simple linear regressions were performed to determine habituation/sensitization over the trials and within one hour noise periods. We found that no growth consequences between trials. However, differences between three of the five behaviors were observed showing sensitization for the duration of the one hour periods. Also, sensitization was observed in three of five behaviors over the course of the five week trials. Finally, specimens showed habituation to the initial stimulus in two of the five behaviors. These results suggest that *H. anisitsi* may only reach the lower stress level of the general adaptation syndrome, which would indicate slight hormonal changes leading to the behavioral change but no change in growth.

BUSINESS ORAL PRESENTATIONS

Presenter(s): Sean Costello

Other Authors: Jonathan Westover

Title: Examining Leadership of the Global Millennial Generation in the Workplace

Affiliation: Utah Valley University

Abstract: With the young age cohort, commonly referred to as the "Millennial Generation," becoming growing in labor force participation and prevalence in the work place, increasing interest and focus has been placed on how to best lead and manage this unique rising generation. Furthermore, major media outlets, industry publications, and academic inquiry into the topic of managing and leading the millennial generation is on the rise. However, despite the high level of attention being place on this topic, there is a major gap emerging--while popular media and industry experts continues to insist on a large generational gap in the workplace, academic research suggests there is no huge comparative difference from one generation to the next in how individuals prefer to be led or to lead.

Continued academic research in this area is needed as the Millennial Generation increasingly takes its place in the work force and there is sufficient lag time for there to be more thorough and rigorous longitudinal studies. This project seeks to build off of the existing industry research and growing body of academic studies to explore if there are any significant differences and similarities between major generational cohorts (Baby Boomers, GenX, and Millennials) with regards to how they like to lead and how they like to be led. In addition, this project will explore best leadership practices for the upcoming millennial generation in the work place and how to successfully apply those leadership practices in the workplace. Once this is established, the project will then focus the examination on the comparative international generational differences in the U.S. and abroad, particularly within the high-tech sector.

This project will utilize secondary analysis of existing social science data sets, as well as primary research in the form of surveys and personal interviews (pending UVU IRB approval).

Presenter(s): Chelsea Dye

Other Authors: Ronald M. Mano

Title: The White Collar Crime Registry: A Utah Original

Affiliation: Westminster College

Abstract: White collar crime is growing across the nation and is particularly growing in Utah. For a number of years, there have been many areas of Utah with extremely low violent crime rates but increasingly high rates of white collar crime schemes.

Utah has long been a breeding ground for such schemes in part because of a culture of close personal relationships in communities and a general feeling of trust for fellow neighbors and community members. In an effort to arm citizens with a resource for information, Utah has become the first state in the nation to create a white collar crime registry. HB 378 (be-

coming Utah Code Ann. §77-42-101, et al) passed the Utah House 65 to 7 and unanimously passed the Utah Senate during the 2015 Legislative Session, creating the “Utah White Collar Crime Registry.”

Much like a sex offender registry, the white collar crime registry allows users to search for offenders. The system includes the registrant’s name, aliases, date of birth, height, weight, eye color, hair color, a current photo of the registrant, and a list of crimes for which he/she was convicted. The law aims to have a place where a potential investor can verify whether the person with whom they are investing has a past history of white collar offenses.

The law requires registration of a person that has been convicted of one or more of seven specified crimes: securities fraud, theft by deception, unlawful dealing of property by a fiduciary, fraudulent insurance, mortgage fraud, communications fraud, and money laundering. The offender must register for 10 years for a first offense, and additional 10 years for a second offense, and for life on a third offense.

Because restitution is the part of a sentence often ignored by those convicted of white collar offenses, the law also includes a provision that allows offenders to petition for removal from the registry after 5 years if they have met certain conditions including restitution. They must also have completed any treatment ordered by the court or the Board of Pardons, not be convicted of any other crimes, had notice provided to victims about the petition, and not been found liable in any case which involves fraud, deceit, breach of fiduciary duty or misappropriation of funds as an element.

The law provides for all individuals convicted of the specified crimes after December 31, 2005 to register. However, those convicted prior to the enactment of the law can avoid registration if they have complied with all court orders, have paid all restitution, and have not been convicted of any other offenses for which registration would be required.

This presentation will include a discussion of the requirements of the law as well as case studies supporting why Utah’s Attorney General Sean Reyes proposed that the Utah Legislature create such a registry. The presentation will also include a discussion of the arguments advocated by opponents of the law.

Presenter(s): Rebekah Inez Brau

Other Authors: James C Brau

Title: Conditions of Shareholder Wealth Maximization Ethicality under Classic Philosophical Paradigms

Affiliation: Brigham Young University

Abstract: In many business textbooks and classes, students continue to be taught that the goal of the firm is to “maximize shareholder wealth.” The shareholder wealth maximization (SWM) goal is also the utility function in most finance and economics academic articles. On its surface, this goal may seem a bit callous, or perhaps even unethical. The goal may even contribute to some negative stereotypes of capitalism or Wall Street. In this paper we analyze not if, but when SWM can be an ethical goal of the firm. Beginning with the seminal work of Berle (1931), Manne (1959), and Friedman (1962) we present a discussion of the goal of shareholder maximization within the theoretical construct of four main traditions of ethics thought: Deontology, Justice/Fairness, Utilitarianism/Consequentialism, and Virtue Ethics. We provide necessary and sufficient conditions under each ethics paradigm to determine if SWM is ethical or not. Under several of the ethical camps, the conditions are very narrow for SWM to qualify as an ethical goal.

Presenter(s): Jill Jaspersen

Other Authors:

Title: Western States Work to Corral Fraudulent Tax Return Hackers

Affiliation:Utah Valley University

Abstract: Identity Theft is a national problem, especially in the state tax submission arena. Millions of dollars are being siphoned to fraudsters that file fake tax returns.

I will go through the eight western states that collect income tax (three states do not have income tax—Washington, Nevada, and Wyoming) and discuss how each state (Oregon, California, Idaho, Montana, Utah, Colorado, Arizona and New Mexico) are handling this identity theft crisis. This information is gleaned from their state tax commission websites and press releases.

I will compare and contrast the efforts of each state: are they accentuating the fraud issues or not really notifying the public of the problem? Is the taxpaying public being informed of the risks they are taking by filing electronically? Are the states creating measures to allay public fears? Is there plenty of information on how to file a fake return? These and other issues will be discussed.

Presenter(s): Shadman Bashir

Other Authors:

Title: Artificial Intelligence, Business Law and Mr. Batman

Affiliation:Dixie State University

Abstract: Law can be dry and uninteresting for non-lawyers. A system of laws are the platform on which a society stands, but the myth and reality of legal lingo and jargon often keeps it and its practitioners separated from social and non-legal academic thought process. This paper is a comparative analysis of everyday legal hypothetical questions,??? and their possible answers. This includes, but is not limited to some of the most popular super heroes, and the legal scenarios which they get involved with in context of the Bill of Rights. Could it be possible for the courts to admit legal evidence collected by Batman? Could someone be tried for attempted murder of someone who can't die? Within the legal arena, we are used to dealing with a natural and the legal person. Are we prepared for an artificial person? In other words, what will happen when an illegal act is committed by Artificial Intelligence machine? Can a machine which kills, claim an insanity defense and get away with murder?

Presenter(s): Jennifer Harrison

Other Authors: Ronald M. Mano

Title: The Dilemma of Maintaining Relevance of the CPA Designation

Affiliation:Westminster College

Abstract: The post-nominal letters, CPA, compose the mostly widely recognized symbol of the accounting profession within the United States—that of the Certified Public Accountant. Among the myriad of accounting certificates, it is singular in that it is the only accounting license.

While each state is the regulating body behind licensure and has a state-run professional accounting association, the American Institute of Certified Public Accountants (AICPA) is the national accounting professional association. The AICPA represents the accounting profession through advocacy and education of the public, legislative entities, and accounting professionals.

While the AICPA's influence is considerable, that influence has diminished since its founding in 1887. As of the 1930's the Securities and Exchange Commission (SEC) has authority to make accounting standards for publically-traded companies—with responsibility granted to the Financial Accounting Standards Board (FASB). Additionally, with the passage of

Sarbanes Oxley in early the 2000's, the PCAOB now is the authoritative body with oversight responsibilities over most aspects of an accountant's professional practice. Finally, with the importance of access to global capital, and thus globally-accepted reporting standards, the AICPA must find its standing among other national accounting-professional organizations.

Membership in the AICPA, which until 2015 was comprised of only CPAs, is voluntary. Like any association, the AICPA must provide compelling reason for those who are qualified to join, to willingly do so. The AICPA must prove its relevance to potential members. As such, the AICPA's current mission statement is:

Powering the success of global business, CPAs, CGMAs and specialty credentials by providing the most relevant knowledge, resources and advocacy, and protecting the evolving public interest.

To accomplish its mission the AICPA is involved in many activities—some old, some new. Of interest to us is the inclusion of “CGMAs and specialty credentials” in attracting membership and maintaining relevance.

In this paper we will examine the proliferation of accounting certifications. More specifically, we will focus on those certifications sponsored by the AICPA and discuss whether the introduction of new accounting certificates dilutes or augments the value of the CPA designation. In an effort to maintain global relevance, is the AICPA deploying a brilliant strategy or becoming its own worst enemy?

Presenter(s): Stephen Owen

Other Authors: James C. Brau, and Mike Swenson

Title: The Determinants of Achievement in an Introductory Marketing Class

Affiliation:Brigham Young University

Abstract: We begin this paper with a careful review of previous literature on the determinants of academic performance. We perform extensive analysis on past literature including that of Harris (1940) which reviews relevant literature from 1930-1937. In his study of 328 articles on potential determinants of academic performance, he develops categories such as intelligence, high school grades, study habits, teaching methods and conditions, incentives and direct motivation, amount of course work taken, and extra-curricular factors. Gender, attendance, and course interest are among other significant variables found within more recent research [Kara, Bagheri, and Tolin, 2009]. Subsequently, we perform a survey of 835 undergraduate students at the end of a semester of an introduction to marketing class at a large private university. With the help of prior literature, other faculty members and students, we created a survey of approximately 40 questions that could be potential factors of course performance. The factors addressed include the aforementioned as well as other program specific factors. The primary research objective is to provide students and instructors information on factors that are most significant to their learning and course outcomes. This will allow both students and instructors to give focused efforts on the variables that provide the greatest marginal benefit for student learning and outcome in an intro to marketing class.

Presenter(s): S. Paige Gardiner

Other Authors:

Title: The Effects of Gender on the College Major Choice Model in Utah: What Prevents Female Students from Selecting Business as Their College Major

Affiliation:Utah Valley University

Abstract: Nationally, 48% of undergraduate business degrees were awarded to female students (Ball, 2012). In Utah, the number of female students selecting business as their college major was smaller. The University of Utah enrolled 28.8% females; Utah Valley University enrolled 23.3% females; Southern Utah University enrolled 35.9% of female; Dixie enrolled 32.9% of female; and Brigham Young University enrolled 21.7% of females (Madsen, 2011). The purpose of the research was to understand what personal characteristics Utah female students considered when selecting their college major. Survey research measured female students' perceptions and attitudes about possible careers in business assessing business careers for enjoyment and flexibility. This study is significant because as the state of Utah has already realized--to be competitive in a national economy--it must increase its female representation in the workforce. This research is also significant

to females in Utah and business school administrators who need to understand the college major choice model and how it differs for female and male students.

Presenter(s): Michael Lauret

Other Authors: Charlie Leveroni, and Ronald M. Mano

Title: Student Golf Tournaments: "Speed Dating on the Golf Course"

Affiliation: Westminster College

Abstract: This article discusses the development of student golf tournaments at two separate institutions. It discusses why they are valuable as well as a particularly unique set up that accomplishes the golf tournament goals better than any other format that these authors have ever heard of before. Also discussed are the side benefits that have been experienced through the golf tournaments.

Presenter(s): Lauren Lo Re

Other Authors: Rob Patterson, and Mahfuz Raihan

Title: Another Piece of the Corporate Payout Puzzle

Affiliation: Westminster College

Abstract: Corporate payouts are economically significant and have fluctuated dramatically for decades. Several researchers have documented these trends and waves in payout activity; however there has been little explanation for why these patterns occur. Existing literature focuses on examining cross-sectional variation in firm level characteristics as the basis for explaining payout policy, yet questions remain.

In this paper, we examine the role of macroeconomic factors in the payout equation, while controlling for firm level factors and find that payout activity fluctuates with changes in the business cycle. We find that IPI is a significant factor in explaining both aggregate dividend and repurchase activity. Specifically, IPI, as a measure of aggregate output, operates within a feedback loop in which economic activity drives investment and investment drives economic activity. In periods of increased investment, aggregate payout declines. Short term interest rates also significantly influence aggregate dividend and repurchase activity. The theoretical framework suggests that as costs of external finance increase, earnings decrease, and payouts decrease. We find evidence in support of this and find a significant, negative relation between short term rates and payout activity. Given that economic growth relates to each of these factors, our results indicate that payout activity and firm fluctuate with changes in the business cycle indicating that changes in the business cycle contribute to the explanation of why many firms initiate payout activity, and select the same form of payout, at the same time.

Our results indicate that waves of payout activity result from responses to the broad economic environment, as well firm level characteristics. We find that changes in the macroeconomic factors contribute to an explanation of aggregate payout trends in terms of both level and form of payout.

Presenter(s): Jonathan Westover

Other Authors: Joe Light, Kaitlin Carlisle, and Bergen Eski

Title: Exploring Shifting Global Labor Management Practices and Comparative Job and Life Satisfaction

Affiliation: Utah Valley University

Abstract: According to recent studies (Brown, 2016; United States Country Review, 2013; Times, 2013), Denmark consistently enjoys greatly levels of life satisfaction than other countries throughout the world. Despite geographical proximity, even neighboring countries do not achieve the same level of satisfaction as the Danish. Additionally, a growing body of research has shown that shifting global labor management practices have a large influence on changing worker attitudes and values. More specifically, various intrinsic and extrinsic motivators in the workplace environment have been shown to improve both worker job satisfaction, as well as their global life satisfaction (Jacobsen et al., 2014; Eskildsen et al., 2004).

This research utilizes comparative data from multiple waves of the World Value Survey to explore and examine the possible reason for these country differences and to parse out the many variables that contribute to varying job satisfaction and life satisfaction levels across nations, with a specific comparative focus on Denmark, Belarus, and the United States.

EDUCATION ORAL PRESENTATIONS

Presenter(s): Jim C. Brau

Other Authors: Rebekah Inez Brau, Truman D. Rowley, and Mike J. Swenson

Title: An Empirical Analysis of Success Factors in an Introductory Business Class

Affiliation: Brigham Young University

Abstract: In this article we first provide a review of the literature on the determinants of academic grades centered around 16 proposed factors. We extend an analysis which reviewed this literature over the years of 1930-1937 (Harris, 1940). Harris studies 328 previous articles and determines factors such as intelligence, high school grades, study habits, teaching methods and conditions, incentives and direct motivation, amount of course work taken, and extra-curricular factors. Next, we conduct a survey of 755 undergraduate students at the end of a semester of an introductory financial management class at a large Western United States university. Students are asked over 100 questions that could be possible determinants of their course grade. The factors include traditional determinants such as those in Harris (1940), as well as program specific factors. The primary research objective is to determine which factors help students achieve the best learning (as measured by course grade) so instructors can focus efforts on variables that benefit student learning in management classes.

Presenter(s): Richard Haskel

Other Authors: Peter Seppi, David Tille

Title: The Effects of Dual Credit Enrollment on Higher Education and Labor Market Outcomes

Affiliation: Westminster College

Abstract: This study considers the effects of Dual-Credit Enrollment and Early College High School programs on higher education and labor market outcomes for Utah's 2008 and 2009 public high graduation cohorts via an examination of the Utah Data Alliance longitudinal public education dataset, one of 46 state longitudinal data systems (SLDS) under development in the US, including a consideration of the issues involved in initiating similar SLDS studies outside of Utah. The study assesses high school graduation rates, dual course credits earned, higher education enrollment, time-to-completion, graduation and early labor market outcomes with a focus towards how these accelerated learning programs effect the student household and state, specifically, and public education finance, generally.

As participation in dual-credit programs is voluntary and by self-selection, the study employs Propensity Score Matching method (PSM) as a quasi-experimental design methodology in an effort to limit the endogeneity bias present in such non-experimental data. Although PSM offers many advantages, its strength as an estimator is dependent on the existence of complete and quality matching variables. To assure accurate model specifications given the available data, Receiving Operator Characteristic (ROC) Analysis is applied to variations on the PSM models.

Estimated outcomes reflect positive effects for the examined student populations differentiated by program participation, with the strongest outcomes arising from ECHS participation. The economic effects of accumulating higher education course credits and decreases in higher education time-to-completion may yield the most interesting outcomes, enjoy the strongest causal claims, and result in measurable household and state level savings. These outcomes may also reveal potential weakness in the structure of higher education course and major programming, and the difficulty presented as high school students make higher education decisions.

Certain challenges involved with using other SLDS data sets to form similar research studies are presented with possible solutions considered.

Presenter(s): Dana Erskine

Other Authors:

Title: Benefits of Computer Mediated, Student Centered, Collaborative Learning in the Human Development Classroom

Affiliation: Utah Valley University

Abstract: A paradigm shift is taking hold in American higher education. Colleges are moving away from being an institution that exists to provide instruction to an institution that exists to produce learning. In an effort to contribute to this shift, an in-class research study was conducted that paired student centered, computer mediated, and collaborative learning techniques in the Human Development classroom. This type of instruction shares power with the students by allowing them to pose and seek out answers to their own questions (student-centered) through the analysis and evaluation of information found in professional journals (computer mediated) while working as teams (collaborative learning) in the classroom. Many significant results were found using these techniques including enhanced student ability to re-evaluate prior subject matter knowledge and improved ability to translate empirical information into their own words.

Presenter(s): Erin M. Walton

Other Authors:

Title: Grading for Presence: Participation Grades in Post-Secondary Institutions

Affiliation: Salt Lake Community College

Abstract: The focus of this research is the effect of a participation grade upon students in a post-secondary learning environment. The study evaluates if requiring students to be in class assists in achieving higher final and cumulative scoring. This research was performed on two sections (one with the participation grade and one without) of the same course taught over a five week period, and included 32 participants. It was discovered, using both narrative and survey collected data, the section containing the added grading aspect performed significantly better than the one without. It can be concluded that the addition of the participation grade has the potential to increase student learning and retention. It was also noted that students who were required to attend class had a higher rate of course satisfaction on their final course evaluations. Finally, upon presentation to colleagues, the research was found to be relevant in their respective classroom settings. This suggests a wider reaching potential for instructors seeking to increase student learning outcomes.

Presenter(s): Dorothy Eilertsen

Other Authors:

Title: Why We Need Woodshop Again: A Look into the Purpose of School

Affiliation: Weber State University

Abstract: Despite government-mandated programs and strategies in pursuit of stronger school curriculum, more competitive test scores, and high success rates among a diverse range of students, it is what we aren't teaching that is failing our upcoming generation. Even after programs such as the Goals 2000: Educate America Act, Approving America's Schools Act, and the No Child Left Behind Act, our country's students fail to receive an education befitting of a leading nation of the world. In fact, the purpose of school among higher grades has been lost in the myriad efforts to enhance it. In this paper I will explore the educational shortcomings of our upper grade school programs and the necessary changes that could facilitate growth and reshape the education of the growing generation of 21st century Americans. Specifically, I argue that school has become an institute of correct answers, rather than a refuge for innovation. I propose the need for home economics, woodshop, and basic money management, and other such classes where knowledge of the answers is applied to produce relevant skills. This paper will draw upon ideas and attitudes shared in the 2015 Sundance Film Festival official selection titled "Most Likely to Succeed", a documentary by Ted Dintersmith about what and how students learn and the increasing need to rethink the purpose of school. Furthermore, the film suggests that important life skills are not necessarily learned by memorizing information in the classroom as much as by getting up and doing something that can be transferred into the professional field. If 53% of recent college graduates are jobless or underemployed, as the film indicates, then there must indeed be a change in the dynamic of education.

Presenter(s): Alyssa Devey

Other Authors:

Title: Combining Classics with Contemporary: Incorporating Young Adult Literature in the Secondary Classroom

Affiliation: Brigham Young University

Abstract: One of the best ways to help students enjoy reading and become better readers is to incorporate young adult literature (YAL) in the classroom. Unfortunately, many teachers struggle to utilize YAL. Minimal access to YAL, time constraints, common core testing, and the sometimes difficult content of young adult novels create barriers to teaching YAL. Several articles point out the need to teach young adult literature, but as Edward Sullivan points out, most of the articles are written by “university professors teaching adolescent literature” instead of by secondary teachers who could provide practical means of incorporating YAL into the classroom (Sullivan et al. 11). While these articles do make important arguments to convince those who are not yet willing to incorporate young adult literature in the classroom, this article focuses on helping the already willing teacher overcome the hurdles of incorporating YAL. For this reason, I discuss a list of practical suggestions for how secondary teachers can incorporate more YAL with what they are already doing with classic texts.

Presenter(s): Don R. Davies

Other Authors: Heather Root, Valerie Herzog

Title: Evaluation of Study Skills and Lifestyle Factors Effect on Performance in Organic Chemistry: Evidence Supporting the Need for Active Learning Methods in Student Comprehension

Affiliation: Weber State University

Abstract: Student performance in Sophomore Organic Chemistry courses was measured against lifestyle and study skill factors at a large, open-enrollment, public university in the mountain west region. The survey items were first evaluated individually for correlation to student actual performance on a midterm exam. Items requiring significant student output (active learning methods), such as verbally explaining concepts, participating in study groups and working practice exams, showed highest correlation to actual performance. Student chemical foundation, as measured by their 2nd semester General Chemistry grade, also was a significant contributor to student success in Organic Chemistry. A factor analysis grouped the items into 4 general categories including sleep patterns, active learning activities requiring significant student contribution (study groups, verbally explaining principles), passive learning activities based mostly on student reception of information (traditional learning methods such as attending lecture, reading the textbook and being tutored), and foundation and attitude, which included prior performance, level of anxiety experienced while taking exams and how well they liked Organic Chemistry. The factor that correlated most strongly to actual performance was foundation and attitude, but was closely followed by active learning activities.

ENGINEERING ORAL PRESENTATIONS

Presenter(s): Mehedi Hasan

Other Authors: Israfil Bahceci, Bedri A. Cetiner

Title: A New Perspective to Antenna Design for Reconfigurable Wireless Networks

Affiliation: Utah State University

Abstract: In recent years, wireless communication technologies are undergoing a period of unprecedented growth leading to a dramatic increase in data traffic. Network concept like internet of things, build on cloud computing and networks of data-gathering sensors, indicates an exponential increase of information exchange. This calls for reconfigurable wireless networks where each layer of the network shall be reconfigurable to account for a diverse set of operational requirements. Subject to these diverse operational requirements, an efficient reconfigurable physical layer shall consist of reconfigurable antennas. In Utah State University, a new class of antennas called multifunctional reconfigurable antennas (MRAs) have been developed. Parasitic tuning based reactive surfaces on top/around of driven antenna surface give MRAs the capability to dynamically modify resonant frequencies, polarizations and radiations patterns. Until now, while designing an MRA, the

considered parameters did not take into account the spatial and temporal statistics of multipath propagation environment e.g. angular spread, path correlations, coherence time and bandwidth of the underlying channels. Link level analysis shows while the traditional design parameters are important, the statistics of radio channel cannot be overlooked. For example, channel correlations can play vital role to increase spectral efficiency and improve the error performance. This observation gives a new perspective to antenna design. Simulation results indicate considering statistics of propagation environment along with traditional parameters while designing antennas improve overall system performance.

Presenter(s): Alessandro Perego

Other Authors:

Title: Fabrication of Dye-Sensitized Solar Cells using Different Nanocrystals in Ferritin as the Dye

Affiliation: Brigham Young University

Abstract: Solar energy is frequently lauded as a potential game changer in the energy landscape but unfortunately, commercially available photovoltaic technologies are based on inorganic materials (mainly silicon), which require high costs and highly energy consuming preparation methods. Dye sensitized solar cells (DSSCs) present a valuable and sustainable alternative to silicon solar cells. DSSCs have been studied for the past 20 years because of their simplicity in fabrication, but little progress has been made concerning their energy efficiency conversion (best reported efficiency is $11.9 \pm 0.4\%$, compared to 25.6% for silicon solar cells). Finding ways to improve the light harvesting and electron transfer reactions of the dye is the key to improving the energy conversion of DSSCs. Ferritin is a 12nm diameter spherical protein with an 8nm hollow interior, which naturally contains iron oxide nanocrystals. The natural core of ferritin can be removed and other metal oxide nanoparticles can be synthesized inside the empty ferritin. The choice of metal used in the growth of the nanoparticles determines the wavelengths of light that can be absorbed. The Watt and Colton labs at BYU have been studying these ferritin nano-architectures to quantify and characterize the light harvesting and oxidative charge separation reactions of ferritin to tune the wavelength of light that is harvested by each nanocrystal. Theoretical efficiencies have been calculated and they can reach up to 44.9% of solar energy conversion. Additionally, ferritin possesses the ability to prevent photocorrosion in metal oxide semiconductors and it is also thermo-stable up to 80°C. These unique properties make the ferritin nano-architecture an intriguing photocatalyst for DSSC cells. Engineering a working device that combines the technology of dye-sensitized solar cells with the proprieties of ferritin has the potential to revolutionize the market of solar energy.

Presenter(s): Khem Narayan Poudel

Other Authors: David Schurig, Neal Patwari

Title: Security Imaging Using Wifi based Channel State Information

Affiliation: University of Utah

Abstract: This paper presents a novel Wi-Fi based investigation system that uses a wireless channel state information (CSI) about recent past activities for security imaging. The proposed system explores a physical layer channel state information using 30 sub carriers for different position, pose, size, and speed of violated object. This system uses both magnitude and phase values with frequency and spatial diversity based Multiple Input Multiple Output (MIMO) system to specify unique activity.

We Propose that if a crime is committed, investigators download channel state information records form nearby receivers, and reconstruct the image of recent state on similar boundary condition and multipath propagation model using computational imaging techniques. We conducted the experiment using off-the-shelf IEEE 802.11 devices and analyzed using full wave simulation in CST microwave studio. Our results form extensive experiment and simulation demonstrate the overall investigation can be improved compared with existing approaches and achieve better identification, which is important for many application in security, search and rescue.

Presenter(s): Khem Narayan Poudel
Other Authors: Santosh Pokhrel,
Title: FDTD: A Powerful Tool In Computational Electromagnetics
Affiliation: University of Utah

Abstract: The Finite-Difference Time-Domain (FDTD) method is a powerful tool for modeling any types of electromagnetic (EM) applications. It employs second order finite centered approximation to both temporal and spatial derivatives in solving the Maxwell's equations in time domain. These equations incorporate the compatible parameters (permittivity, permeability and conductivity) to solve EM problems in any media such as homogeneous-inhomogeneous, dispersive-nondispersive and isotropic-anisotropic. The approximated solution obtained thereafter, must be stable in both space and time, to avoid attenuation and undesirable growth of wave. This can be achieved through the proper selection of Courant stability factor(S). This factor is defined as the ratio of product of wave velocity and time step to spatial grid length.

The progress in FDTD highlights the year 1966 when Yee proposed a space and time staggering grid(Yee cell). Then in 1994, Berenger's split field formulation of Maxwell's equations laid the foundation for Perfectly Matched Layer(PML). This novel technique helps to solve the problem in unbounded regions by creating an absorbing boundary layers. These boundaries are especially designed to absorb plane waves of any polarization, frequency and angle of incidence completely without reflection. The FDTD is applied to problems across the EM spectrum varying from Very low frequency (VLF) to the optical frequency range. The most common applications include communication, ionospheric remote sensing, earth modeling, global positioning system, radar, hypothesized earthquake precursors and space weather effects on the near-Earth environment.

Presenter(s): Zakk Rhodes
Other Authors: Gene Ware
Title: A Comparison of Solar Tracking Algorithms Utilized by the SAM Instrumentation
Affiliation: Utah State University

Abstract: The Sun and Aureole Measurements (SAM) tracker is a ground-based measurement system for atmospheric particles that tracks the solar disk and records data about the sun halo, aureole, and upper-level atmosphere. In order to take accurate images from which to extract the atmospheric and solar data SAM must track the Sun within a low margin of error. This can be accomplished through implementing a few different methods of analyzing the image data to find the solar disk and correcting the tracker mount angles to more precisely align SAM with the solar disk. The comparison of three possible algorithms for locating the solar disk is discussed: the pixel-average method, Canny-edge detection with a Hough parametric transform analysis, and the current process used by Visidyne, Inc.

Presenter(s): Zachary Spurrier
Other Authors: Stephen Whitmore, Sean Walker, Stephen Merkley
Title: Throttled Launch-Assist Hybrid Rocket Motor for an Airborne NanoSat Launch Platform
Affiliation: Utah State University

Abstract: This document details the design, integration, and testing of a throttled launch assist hybrid rocket motor for an airborne nano-launch platform. Gaseous oxygen and additively-manufactured ABS are used as the propellants. This study establishes the requirements for this launch assist propulsion system, develops the system design features, developments a closed-loop proportional throttle control law. The detailed end-to-end system design is presented. Initial static tests were performed with a cylindrical fuel port to verify system functionality and establish a baseline for the propellant regression rate and optimal O/F ratio. Subsequent tests are performed using a helical fuel port to increase the volumetric efficiency of the system and allow operation near the optimal O/F condition. Multiple restarts of each system configuration are demonstrated. Results of both open- and closed loop throttle tests are presented.

Presenter(s): Gene Ware

Other Authors: Doran Baker, Zakk Rhodes, Mark Norman, Alireza Ghasempaur

Title: The Impact of Circumsolar Radiation on CSP Renewable Energy Harvesting

Affiliation: Utah State University

Abstract: A significant amount of the solar radiation harvested by Concentrated Solar Power (CSP) plants occurs in the circumsolar region around the solar disk. The energy in this region appears to be primarily due to the forward scattering of the energy from the solar disk. Scattering mechanisms are reviewed and applied to CSP power generation. Circumsolar measurement using the Sun and Aureole Measurements (SAM) instrument is discussed.

PHYSICAL SCIENCE ORAL PRESENTATIONS

Presenter(s): Brian Knaeble

Other Authors: Jingyi Huang, Thomas Vitti

Title: Basic Statistical Adjustment

Affiliation: Westminster College

Abstract: Causal effects can be estimated from observational data using Bayesian networks, which are directed acyclic graphs representing conditional dependencies between random variables. Here we consider simple networks each made from three dichotomous variables. For each network we condition on the third variable to produce an adjusted estimate for the effect of the first variable on the second variable. We conduct statistical simulations to demonstrate unbiased estimation and bias amplification, and we assess the sensitivity of bias amplification to network parameters. Results are organized for easy reference and improved intuition about appropriate and inappropriate adjustment.

Presenter(s): Bill Bynum

Other Authors: Brian Knaeble, Gano Hasanbegovic, Garret Wilcox

Title: How Much Less is More? The Predictive Consequences of Overfitting

Affiliation: Westminster College

Abstract: The law of parsimony, or Occam's Razor, states that given competing hypotheses that equally explain the phenomena at hand, one should choose the hypothesis with the fewest assumptions. Statistician R. A. Fisher reminds scientists each data set contains a natural amount of information that cannot be increased through ingenious statistical models. Mathematician John von Neumann claims that with four parameters he can fit an elephant, and with five he can wiggle its trunk. In statistics, a model with more explanatory variables than justified by the sample size is said to be overfit, violating the law of parsimony. Overfit models can predict poorly because they have modeled noise rather than underlying relationships between variables. To avoid overfitting there is a rule of thumb for regression stating that the number of observations must be at least ten times the number of explanatory variables. To evaluate this claim with respect to prediction accuracy as measured with mean square error (MSE) we have conducted statistical simulations. The simulations have been carried out under a variety of assumptions and the results are tabulated for easy reference.

Presenter(s): Chin-yah Yeh

Other Authors:

Title: Schrödinger equations with 1-D potential wells

Affiliation: Salt Lake Community College

Abstract: Wave mechanics has been proved to work in general but the hydrogen atom is about the only case where the result of wave mechanics has an exact match with real world phenomenon. Here we raise a few basic questions about why wave mechanics works. Why do we have dimension 3 in our physical space? Why do we end up using the Hamiltonian as the operator in the Schrödinger equation? Hence, the Schrödinger equations of 1-D particles with the following Hamiltonians shall be tested.

a) $H(p,q) = p^2/(2m) + k|q|$; b) $H(p,q) = p^2/(2m) + k |\ln |q||$; c) $H(p,q) = p^2/(2m) - k(\exp(-|q|/a))/|q|$.

Presenter(s): Margaret Miles

Other Authors: David D. Allred, R. Steven Turley, Benjamin D. Smith, Joseph B. Muhlestein, Stephanie Thomas

Title: Experimentally determined optical constants for yttrium oxide in the extreme ultraviolet

Affiliation: Brigham Young University

Abstract: A need for accurate, experimentally-determined optical properties of yttrium oxide has grown since alternating layers of aluminum and yttrium oxide have been computed to be a good candidate for high reflectance at 30.4 nm (the wavelength produced by the 2p to 1s transition in He+). Specifically, a knowledge of yttrium oxide's optical properties in the extreme ultraviolet could benefit fields where use of extreme ultraviolet radiation has intensified - such as production of more powerful computer chips, astrophysics, and imaging of protein structures. We've determined the index of refraction of yttrium oxide using reflectance measurements at the Advanced Light Source. We've compared those measurements to an index of refraction calculated using atomic scattering factors for the component elements. From analysis of our measurements, it appears that the independent atom approximation breaks down near 30.4 nm. In comparing our data to previous measurements for single-crystal yttrium oxide, it also appears that physical characteristics of the yttrium oxide significantly affect the index of refraction.

Presenter(s): Charles J. Simon

Other Authors: Don R. Davies, H. Laine Berghout

Title: Density Functional Theory Investigation of Polycyclical Peroxide Stability

Affiliation: Weber State University

Abstract: Polycyclic peroxide compounds have been of interest recently for their antimalarial activity. The synthesis of stable peroxide compounds can be challenging, thus making computational determination of the stability of promising compounds advisable. We use density functional theory to gauge the stability of one such peroxide, 2,3,10-trioxabicyclo[5.2.1]decan-4-ol. A intramolecular hydrogen bond between the two rings of this bridged bicyclic compound is anticipated to contribute to the stability of the molecule. Based on coordinate scans of the hydroxyl dihedral bond angle at the B3LYP/6-311+G(2d,p) level of theory, we estimate the strength of this intramolecular hydrogen bonding interaction at 8.6 kcal/mol, considerably above the 5-kcal/mol typical for R-O-H---O=C-R'. Decomposition of similar peroxide compounds proceeds via homolytic bond cleavage of the O-O bond. We will share our continuing work on this system including studies of the activated complex for homolytic peroxide-bond cleavage and the unusually large intramolecular hydrogen-bond energy.

Presenter(s): David D. Allred

Other Authors: R. Steven Turley, Spencer Willett, Stephanie Thomas, & Michael Greenburg

Title: First step towards Allowing Aluminum's Far UV Reflectance to be Accessible for Broadband VUV for Space-based Instruments

Affiliation: Brigham Young University

Abstract: In four years NASA will be in the midst of its decadal review, establishing priorities for the 2020s. Very likely one of the chief astrophysical missions will contain a LUVOIR (large UV optical IR) telescope. This space-based observatory will likely contain the largest mirrors ever flown and will probe the cosmos seeking to address key questions of the origin, current status and evolution of our universe. These investigations will profit from a truly broad-band mirror. Thus, the reflective coating will almost certainly be aluminum. To be viable, the top surface of such a space-mirror needs to be bare without the tarnish layers that naturally form. We will discuss our research into protecting as-deposited aluminum mirrors before atmosphere exposure with a robust, protective layer, or layers, that potentially can be easily, and cleanly, removed once the mirror system is in space without marring the mirror surface nor redepositing material removed from the protective layer on the mirror or other spacecraft components. This could open up the 11-15eV band for space-based astrophysics without sacrificing IR, visible and UV reflectance. We will report on two systems. First, protective polymer films that can be readily vacuum deposited and later be completely removed with a hydrogen plasma. Second, inorganic films that can be evaporated to coat the aluminum immediately after its deposition, before it comes in contact with air, and which can be expected to reevaporate in space, when heated mildly.

Presenter(s): Brandon K. Wiggins

Other Authors: Joseph M. Smidt, Jarrett L. Johnson

Title: Emission from Newborn Supermassive Black Holes in the Early Universe

Affiliation: Brigham Young University

Abstract: The COSMOS survey recently discovered what is now the brightest known Lyman alpha emitter to date. This source is a young galaxy in the early universe which appears to be devoid of spectroscopic evidence of any elements other than hydrogen and helium. While some believe we may have observed the first galaxy hosting rare first-generation stars, evidence is mounting that the source represents instead the powerful glow of a newborn supermassive black hole. In this paper, we summarize efforts to model the creation of this galaxy ab initio and follow the collapse of a large, atomically cooled halo with radiation hydrodynamical cosmological simulations. These state-of-the-art calculations include chemistry and x-ray feedback allowing us to model the growth of a large black hole with greater fidelity than previous works. We post-process the simulation to obtain emission from the black hole and glowing cosmic web in an attempt to reproduce observed signals and comment on the viability of interpreting this new COSMOS survey galaxy as the first ever observed direct collapse black hole. Our discussion includes a brief introduction to supermassive black hole growth and large-scale structure formation in the early universe for audiences beyond our field.

SOCIAL SCIENCE ORAL PRESENTATIONS

Presenter(s): Daniel Poole

Other Authors:

Title: Indirect Health Effects of War

Affiliation: Salt Lake Community College

Abstract: This study examines the impact of armed conflict on female and male adult cardiovascular disease mortality. Indirect health consequences of war have not been given enough attention in social science research. The depletion of resources, access to health care, and general disruption to every day life during times of armed conflict create excess stress and burdens which increase deaths caused by cardiovascular disease. I use a variety of data to measure demographic,

developmental, and conflict related outcomes spanning a forty-year period from 1960-2000 in more than one hundred countries. I find that all types of armed conflict increase cardiovascular disease mortality rates among females and males across countries and over time, with the effect being greater on females.

Presenter(s): Josh Smith

Other Authors: Ryan Yonk

Title: Quality of Life and Direct Democracy

Affiliation: Utah State University

Abstract: We explore the relationship between quality of life and direct democracy. We measure quality of life by creating our own index that includes indicators of public safety, health, economic development, infrastructure, and education. Although direct democracy in the United States is limited by the growing influence of interest groups and political parties, ballot measures remain one indication of citizen preferences through direct democracy. Thus, we use ballot measures as an indicator of direct democracy. To explore the relationship between quality of life and direct democracy, we employ simple statistical tests. We find that citizens with a higher quality of life tend to prefer the status quo, rather than voting for a change to the existing policy structure. Citizens in states with higher quality of life tend to vote against ballot initiatives and fewer ballot initiatives ultimately become law in high quality of life areas. These findings imply that, in the case of ballot initiatives, quality of life has a significant impact on voter turnout. Our research reveals interesting patterns surrounding how and why citizens engage in the democratic process.

Presenter(s): L. Brock James

Other Authors:

Title: Effects of Roman Imperialism on Central European Populations

Affiliation: University of Utah

Abstract: Using paleodemographic data gathered from European skeletal assemblages dating from between the Iron Age and the Early Medieval periods, we attempt to draw conclusions about whether the benefit of Roman Imperialism, primarily public works such as sanitation and military protection, outweighed the epidemiological impact of an increased susceptible population size due to increased trade and freedom of travel for Roman citizens. While basic epidemiological theory would indicate that the sudden increase in susceptible population size should have been followed by outbreaks of epidemic disease, we propose that this impact was softened by the effective infrastructure of the Roman state. To test this conclusion, our data set has been subdivided into three temporal groups: Iron Age (pre-Roman), Roman, and Early Medieval (post-Roman). Demographic data will be used to create a hazard analysis of death during these periods in an attempt to see changes in the overall "shape" of death, using skeletal pathologies as a proxy for quality of health, in an attempt to judge the quality of public health before, during, and after Roman occupation.

Presenter(s): Shadman Bashir

Other Authors:

Title: Depleted Uranium Munitions and the Mind of the Killer Robot

Affiliation: Dixie State University

Abstract: Depleted uranium munitions are the tip of a tank busting spear. They are great for penetration of heavy armor, and they are excellent kinetic energy weapons. Are they dangerous to the enemy? Yes. Are they dangerous to all of us? This paper is a brief study of the myth and reality of the Depleted Uranium munitions, and their use in military and civilian environments, in order to find the answer to this question. The second part of the paper extends the issue of Depleted Uranium Munitions to killer robots, and the use of such weapons by enhanced Artificial Intelligence within the conventional and unconventional theaters of war and conflict.

Presenter(s): alithia zamantakis
Other Authors:
Title: The Death of Hetero/Homo
Affiliation: University of Utah

Abstract: This paper is a theoretical examination of the ways in which sexuality, love, and desire are not merely abstract, innate concepts but have very real consequences as weapons in the process of abjection, particularly of trans, nonbinary, and gender nonconforming individuals. As gender is illegible and fluidly defined, it becomes impossible to dictate that one's attraction is oriented toward men, women, masculinity, femininity, and/or androgyny. Ultimately, individuals are attracted or not attracted to particular body parts, personality traits, values, and life goals. None of these can be attached to a particular (a)gender as anyone of any (a)gender can have any number of these qualities. What then does it mean to have a discourse, as well as a movement, around conceptions of heterosexual and homosexual identities that deny such a reality? The answer to this question—the erasure and eradication of particular bodies—calls for the death of hetero and homo, allowing the rethinking of these terms and ideas. This shifts from a place where certain genders are abjected and silenced to a place where all genders are equally affirmed, no one identity superimposed over another. This is not an argument for attraction to all bodies and all beings. However, it is an examination of a discourse of sexuality that is posited on fixed and concrete notions of gender and the ways in which this discourse is used to abject trans, nonbinary, and gender nonconforming bodies.

Presenter(s): Nathan G. Caplin
Other Authors:
Title: Survival: The Evolution of Jewish Identity in the 20th Century
Affiliation: Snow College

Abstract: While reflecting on his civil rights leadership, Martin Luther King, Jr. observed “the art of alliance politics is more complex and more intricate” than most of its participants understand. The principle Dr. King observed was true for the Jewish and African American alliance from post-WII through the mid-1960s. An often overlooked cause for the dissolution of Black-Jewish alliance is the transformation of Jewish Americans from ethnic minority to nearly assimilated “white” during the 20th Century. This paper explores the evolution of Jewish ethnic identity in the context of Black and Jewish cooperation and divergence in their quest for equal rights.

Presenter(s): Tashelle B. Wright
Other Authors:
Title: Survival: Exploration of African American Health Priorities
Affiliation: Westminster College

Abstract: Health disparities among the African American population are greater than those of whites and other ethnic groups. African Americans live on average 8 years less than non-Hispanic White Americans. African American population in Utah is 1.3%, the smallest minority group in the state, approximately 40,000 residents. In Utah, we have the added challenges of lack of cohesion and self-identity, which other states with larger African American populations do not experience. With a lack of African American networks, outside of churches, health disparities are increasingly difficult to address. In order to address the health priorities of Utah's African American population, we need to identify what the African American community view as priorities. The present study used an exploratory approach and sought to establish a community task-force to network and advocate on behalf of the African Americans in Utah. This study also determined the self-identified concerns of African American community members. Working in conjunction with the Utah Office of Health Disparities, I identified and contacted African American community leaders. We were able to establish a task-force of 22 people. I developed a survey to distribute in person, at the Juneteenth festival in Utah. The survey asked African American community members to self-identify their top three priorities. There were 66 survey participants (N=66). The top three African American priority themes selected were mental health, healthy eating choices and obtaining an

education. These surveys were further analyzed to determine the relationships between demographic variables. There was no statistical significance between genders. Age only played a role in the category of criminal justice. The older generation are more likely to select criminal justice as a priority ($p=0.0501$). With this information, we can now take action in the most areas viewed most important to the African American community in Utah.

Presenter(s): Amy Blommer Sophia Garcia

Other Authors: Claire Short, and Eric Amsel

Title: Becoming Psychologically Literate: Responding to Those with Symptoms of Depression

Affiliation: Westminster College

Abstract: Over 1000 participants were electronically presented with the following open-ended scenario: "Your friend or close family member shares with you that he or she has been feeling down lately. The person reports a loss of interest in activities he or she used to enjoy and instead just stays at home, often sleeping for long periods of time. The person has seen a general practitioner to get a checkup, and the person received a clean bill of health. But the person still wants your advice. What advice would you give this person? Please be detailed." Participant responses were coded for the level of psychological literacy (PL) expressed on a 0 - 2 point scale. No PL responses showed no awareness of the possibility of a mental health disorder, recommending instead self-medicating activities. Partial PL responses recognize the potential of a mental illness by recommending the person seek a second professional opinion, but continue to offer suggestions for self-medicating activities. Complete PL again involves the recognition of a potential mental illness but without any self-medicating advice. PL scenario responses were scored reliably (inter-rater reliability = .95). The assessment was valid demonstrated by higher PL scenario scores being correlated with participants' a) ratings conceptualizing depression as a mental illness (as opposed to a mental weakness), b) skills to identify depressed individuals, and c) greater general background in psychology. PL scenario scores were higher for Psychology Majors than for Minors and for Minors than for those who were neither majors nor minors. Scores were also higher for Sophomores/Junior and Seniors than for Freshmen. Finally, PL scenario scores were higher for Psychology Majors than for a group of non-college educated adults. Results suggest that psychological literacy can be trained, and its development in psychology students may be important for community mental health.

Presenter(s): Hui-Tzu Grace Chou

Other Authors: Ron Hammond

Title: Finding Meaning in Serving Others: Factors Predicting College Students' Self-Perceptions of Being an Adult

Affiliation: Utah Valley University

Abstract: This study examines the impact of finding meaning in serving others on self-perceptions of being an adult among college students between 18 and 25 years old. Using probability sampling, current and former students of a state university in Utah were selected to participate in an online survey in the summer of 2014. A total of 572 respondents met the age requirement and completed all the survey questions. The results of a multiple regression indicate that those who are depended upon by others and those who find meaning in serving others are more likely to perceive themselves as adults than their counterparts. This study also found that the self-perception of being an adult is related to whether respondents had moved out of their parents' home, had gotten married, and were financially independent.

Presenter(s): James C Brau

Other Authors: Hannah L. Brau

Title: Positive Psychology Holistic Determinants, Testosterone Treatment, and Veteran Happiness

Affiliation: Brigham Young University

Abstract: In this study we design a survey instrument and construct a data panel from the responses of a sample of US veterans. As part of the survey, we estimate the level of happiness each veteran exhibits using the Oxford Happiness Questionnaire. The Oxford scale consists of 29 questions and uses a Likert scale that ranges from a low of one to a high of six. The average is typically around 4.3 (Hills and Argyle, 2002). The average happiness score for my sample of 76 veterans is 3.73. After measuring the happiness level, we ask 30 additional questions driven by the literature to determine the factors of veteran happiness. Next, we conduct Spearman Correlation tests, t-tests for equality of sample mean divided on the median of the happiness score, and a multivariate ordinary least squares model with all of the explanatory factors. We find significance for: four holistic happiness variables (faking happiness (+), spending money on loved ones (-), listening to music often (+), and using technology often (-)); one demographic variable (Age (+)); six military-related variables (active duty service (+), years of service (-), months deployed (-), service in Iraq (+), Afghanistan (+), Korea (+)); and two intervention variables (psychotherapy (-), exercise (+)). Testosterone treatment is not statistically significant.

Presenter(s): Alecia Hunter

Other Authors: Ryan Bosworth, and Ahsan Ulkibria

Title: Behavioral Economics and the Value of a Statistical Life

Affiliation: Utah State University

Abstract: Behavioral economics suggests that the majority of the people underestimate large risks and overestimate small risks. The U.S. Environmental Protection Agency's (EPA) uses the Value of a Statistical Life (VSL) estimate in a cost-benefit analysis for regulating different environmental hazards. The EPA defines the VSL as "how much people are willing to pay for small reductions in their risks of dying from adverse health conditions that may be caused by environmental pollution." The EPA's VSL is currently calculated at about \$8.7 million using stated preferences and revealed preferences studies. In this paper, we find evidence that the VSL may be overestimated due to behavioral biases (mainly misperceptions of risks) found in the VSL's preference studies. A second finding is that policymakers are also vulnerable to behavioral biases, which is often overlooked before policy is drafted. Using behavioral economic theories, including Prospect Theory and Framing Effects, we support our hypothesis in the example of the EPA's VSL estimate: People often misperceive risks, and policymakers are also prone to similar behavioral biases.

Presenter(s): John Hill

Other Authors:

Title: Intelligence-Led Policing

Affiliation: Salt Lake Community College

Abstract: Intelligence-Led Policing (ILP) is one of the newest proactive strategies in contemporary law enforcement. It is a research-based policing model built around the assessment and management of risk. ILP serve as guide to operations, rather than operations guiding intelligence. It is believed as agencies collect, evaluate, and disseminate information, that a comprehensive "network of intelligence" is created, which proponents hope, when used effectively, will cause a significant decrease in crime. This researcher analyzes Intelligence-Led Policing with a special emphasis on its role in tactical and strategic planning for police patrol operations. The researcher theorizes that ILP can be utilized to assuage recently increasing tensions between the police and the community, as intellect and information initiate police activity in a manner preferable to more discordant tactics, such as "stop and frisk."

Presenter(s): Thomas C. Terry

Other Authors:

Title: Framed Couplets: Agenda Setting, the Bumper Sticker Effect, and How Candidate Name Pairings Predict Winners and Losers in Presidential Elections, 1840-2012

Affiliation: Utah State University

Abstract: Vice President John Nance “Cactus Jack” Garner colorfully quipped, “The vice-presidency isn’t worth a pitcher of warm piss,” while journalist Bill Vaughan added, “The Vice-Presidency is sort of like the last cookie on the plate. Everybody insists he won’t take it, but somebody always does.” Whether urine or cookie, a presidential candidate has to offer the job to someone. Traditional wisdom suggests a presidential candidate should select a vice president to shore up perceived weaknesses in his/her credentials, such as in foreign policy; to balance (or counterbalance) issues of age, religion, or geography; to heal intraparty rifts; or to deliver electoral vote-rich states. However, the choice of a vice presidential running mate is far simpler than any of the complex host of metrics and rationales that often goes into a vice presidential decision. In fact, the answer is so straightforward it fits onto a bumper sticker. Picking the proper pairing of names, more than any other vice presidential variable, may be the key to victory. What this research study terms the Bumper Sticker Effect model has predicted the winning candidate in 41 of the last 44 presidential elections (93.2 percent). It is based on the differential in letter length between the presidential and vice presidential candidates’ last names. To be successful, the presidential winner’s name must either exceed that of his/her running mate or be no more than two letters shorter. Cognitively, voters appear to perceive that the presidential candidate is somehow diminished in stature when the VP’s name dominates that of the prospective president. The losing Gore/Lieberman (4 letters vs. 9 letters) and winning Eisenhower/Nixon (10-5) pairings are prominent examples of this phenomenon.

Presenter(s): Huiying W. Hill

Other Authors:

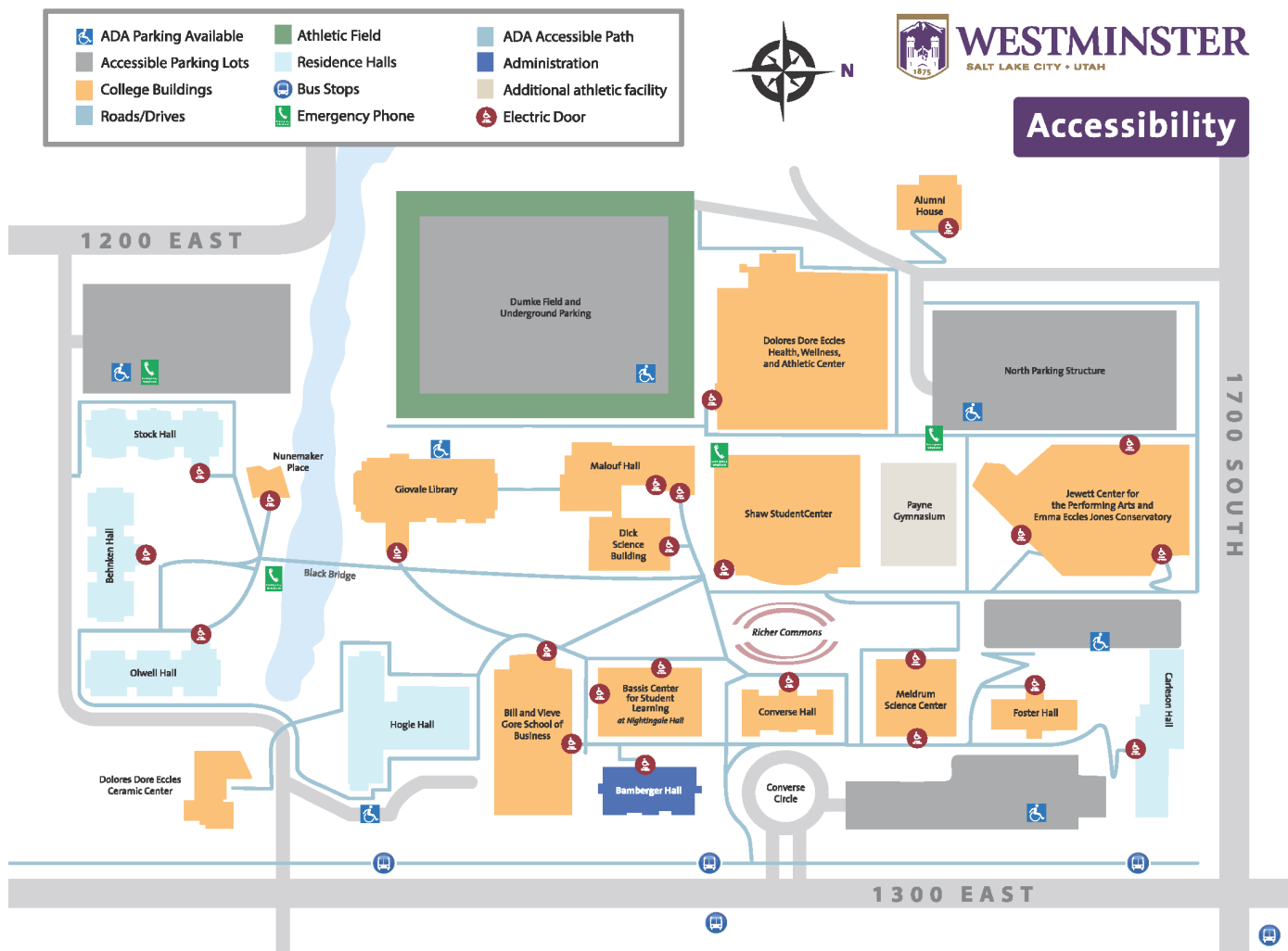
Title: The New Normal: The Chinese Response to Terrorist Threat in Xinjiang China

Affiliation: Weber State University

Abstract: The purpose of this paper is to explore how the Chinese government (Xinjiang government) deals with security issues in Xinjiang Uighur Autonomous Region after numerous attacks, killings and bombings instigated by some extreme Uighur Muslim groups which was inspired and trained by the Taliban and other extreme Islamic groups in Central Asia. The author went to Urumqi, the capital city of Xinjiang, and another city -- Korla to conduct this research in May 2015. The preliminary findings from this study are multi-folded:

- 1). There has been a significant policy change/shift after the new governor – Zhang Chunxian, who replaced Wang Lequan for his inefficient dealings with the 7.5 riots in Xinjiang in 2009.
- 2). There are also heavy presentations of armed forces everywhere in Xinjiang.
- 3). Metal detectors are placed at entrances of all the public arenas, such as in hotels, restaurants, department stores, malls, even public squares.

The author conducted some interviews to the citizens in both cities as well. The purpose is to find out how ordinary people react to these inconvenient devices and how do they cope with all the measures of security in their daily lives. Some governmental officials and public security/ legal personnel were also unofficially interviewed. In the United States, we also face more and more threats from extreme Islamic groups and ISIS members. This study might shine some lights on this issue and Americans might learn what we might face in the future; and how our daily lives might be altered in facing those threats and preventing terrorist acts from happening. The major methods used in this study are personal interviews, observations and secondary sources.



All parking will be open during spring break. Conference attendees can park anywhere on campus without a parking pass (all parking permit signs can be disregarded during spring break week). Referring to the campus map (www.westminster-college.edu/campus_map), the closest parking will be in the Northwest Parking structure (Lot B). Right after passing the Jewett Center, drive into the Northwest structure from ramps on both 1700 S. and 1200 E. Enter the Jewett Center (Building # 18) from any level of the parking structure.

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