Dear Student Researchers, Faculty Mentors, and Guests,

Welcome to NAU’s 6th annual university-wide Undergraduate Symposium. For the first time, the Symposium is being held here in the Walkup Skydome. Around you are the research, engineering design, creative endeavors, and scholarly work of students from all of NAU’s colleges and professional programs, and clearly we need a “big tent” to encompass the range of scholarly accomplishments displayed here.

These projects are the result of faculty-student collaborations -- collaborations that underscore NAU’s commitment to an outstanding educational environment for undergraduate students. Not only do these collaborations demonstrate NAU’s reputation for first rate undergraduate research and creative work, but they also highlight the innovative capacity of our student body.

NAU gratefully acknowledges all the sponsors who have provided support to the students’ projects including many government agencies, private foundations and businesses. We are most grateful to the donors who help support this event. Last, and most importantly, we thank the family and friends of the students who have provided both moral and financial support to share these bright and enthusiastic students with NAU.

Please join me in celebrating our students’ achievements with their peers, professors, and the University and Flagstaff communities, and congratulate all of the student presenters and their faculty mentors on these diverse and exciting projects!

Sincerely,

John D. Haeger
President
Dear Student and Faculty Colleagues and Guests,

Today NAU is celebrating its 6th annual university-wide Undergraduate Symposium which showcases our undergraduate students’ efforts in research, scholarship and artistic endeavors. Through the enthusiastic efforts of faculty and student collaborations, this Symposium has grown over the years to now fill the Walkup Skydome. I am excited that NAU is highlighting the diversity of our undergraduate students’ scholarship and creative outcomes under one roof, and I applaud our students’ academic and creative achievements.

Thank you for joining me and the NAU and Flagstaff communities in congratulating these students and wishing for their future success.

Sincerely,

William Grabe, Ph.D.
Vice President for Research
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Abstracts and index available at nau.edu/symposium

College Abbreviations

CAL College of Arts and Letters
CEFNS College of Engineering, Forestry, and Natural Sciences
COE College of Education
CHHS College of Health and Human Services
FCB The W.A. Franke College of Business
SBS College of Social and Behavioral Sciences
UC University College
All College of Arts and Letters (CAL) special events for the Undergraduate Symposium listed below are in the Performing/Fine Arts Building (#37) on the NAU campus. All events are free unless marked “$admission.” Most tickets can be purchased through NAU Central Ticketing or at the door.

**Tuesday April 23, Thursday April 25, and Friday April 26: Bachelor of Fine Arts Show**
- 10am – 5pm
- Beasley Gallery

**Tuesday, April 23, 2013: NAU Jazz Final Spring Concert**
- Featuring student combos and big bands
- 7:30pm
- Ardrey Memorial Auditorium

**Wednesday, April 24, 2013: NAU Symphonic Band Concert**
- 7:30pm
- Ardrey Memorial Auditorium
- $admission

**April 24 – 28, 2013: NAU Theatre presents “Pride and Prejudice”**
From the novel by Jane Austen, adapted for the stage by Joseph Hanreddy & J. R. Sullivan. A timeless tale of wit, romance and the battle of the sexes – this adaptation is so much fun!
- Wednesday – Saturday, 8:00pm; Sunday, 2:00pm
- Clifford E. White Theatre
- $admission

**Thursday, April 25, 2013: School of Music Honors Recital**
- 11:15am
- Ardrey Memorial Auditorium

**Friday, April 26, 2013: NAU Percussion Ensemble Concert**
- 7:30pm
- Ardrey Memorial Auditorium

**Saturday, April 27, 2013: Vocal Jazz Concert**
- 7:30pm
- Ardrey Memorial Auditorium

**Sunday, April 28, 2013: Spring Festival of Choirs**
- 3:00pm
- Ardrey Memorial Auditorium
- $admission
The W. A. Franke College of Business: Special Events for the week of April 22-26

Title: The Small World: Global Business Research

There are two events in The W. A. Franke College of Business that precede NAU’s Undergraduate Symposium on Friday, April 26, 2013.

Thursday, April 25, 2013
2:00pm – 3:45pm
Gardner Auditorium (Room 101, Bldg. #81, NAU South Campus)

• Oral Presentation Competition
One formal business presentation will be heard from each major in the college (Accounting, Computer Information Systems, Economics, Finance, Management, Marketing, Hotels and Restaurant Management, International Hospitality Management). Each 7-minute presentation must contain original work by the students - an analysis of a problem, a creation of a business or marketing plan, a study conducted by the students, etc., demonstrating an addition to the scholarship of the field. In addition, the presentations should be related to the international theme.

A panel comprised of local business leaders and/or prominent alumni will determine the prize-winners: 1st place: $600; 2nd place: $300; 3rd place: $100

• Bloomberg Businessweek Writing Competition
The W. A. Franke Bloomberg Businessweek Prize for Excellence in Writing will be awarded to the undergraduate winners of a competition held for the purposes of encouraging and rewarding the writing and critical thinking skills of The W. A. Franke College of Business students. Students review an assigned Businessweek article, then draft a 1-page executive summary and a 1-page business memo updating the article topic.

Submissions are judged on quality of writing, effectiveness as a stand-alone overview of the article, and accuracy of content. Winners of the 1st place ($250), 2nd place ($150), and third place ($75) prizes will be announced at the beginning of the Oral Presentation Competition on Thursday, April 25th.
NONPOSTER LISTINGS

Morning Session

Abstracts and index available at nau.edu/symposium

➤ Skydome College of Arts and Letters Tables

9:00am-11:00am - Creative Projects
Rhetoric of Food and Travel Writing 1 - CAL, English
Sam Meyer, Jessie Gould, Teddy Gardner, Meghan Kelly, Nigel Stevens

➤ duBois Agassiz

8:30am - Oral Presentation
40 Qt. Cooler Design - CEFNS, Mechanical Engineering
Dominic Albano, Federico Martolini, Danny Miller, Dirk Prather, Bander Almazroua

8:55am - Oral Presentation
Alternative Power Source for Dental Hygiene Device - CEFNS, Mechanical Engineering
Jin Niu, Jiaqi Xie, Francisco Heath, Ningbiao Jiang, Nizar Almansouri

9:20am - Oral Presentation
Design of Material Testing Fixture - CEFNS, Mechanical Engineering
Randy Jackson, Matt Garcia, Jeremy Mountain, Qian Tong, Hui Yao

9:50am - Oral Presentation
Transformer Condition Assessment - CEFNS, Electrical Engineering
Andrew Morin, Richard Barnes, Kenny Elgin, Scott Lederhos, Kyle Wiedeman

10:15am - Oral Presentation
Reduction of Harmonic Distortion in Off-Grid Power Systems - CEFNS, Electrical Engineering
Zachary Ulibarri, Ahmed Habib, Jacob Lamb

10:40am - Oral Presentation
Insulin Dosimeter for Pets Using Apple® Products - CEFNS, Electrical Engineering
Joel Ressell, Adam Raterink, Garrison Pope, Kyle Crockett, Sam Bloomfield

11:05am - Oral Presentation
Urban Electric Vehicle for Efficient Green Transportation - CEFNS, Electrical Engineering
Stephen Aranda, Aniza Brown, Derek Benallie, Brendan George, Micheal Young, Justin Cummings

➤ duBois Fremont

8:30am - Oral Presentation
Alternative Power Source to Draw Underground Water - CEFNS, Mechanical Engineering
Beau Drumright, Nathan Heckathorne, Grant Masters, Patrick Schimmelbauer, Emerson Jones

8:55am - Oral Presentation
Nestlé Purina Dryer Efficiency Improvements - CEFNS, Mechanical Engineering
Nathan Kish, Daniel Andenmatten, Brandon Hoffman, Chris Simpson, Pengfei Wu
9:20am - Oral Presentation
Harnessing Wind Energy From Recycled Materials - CEFNS, Mechanical Engineering
Katherine Carroll, Margo Dufek, Andrew McCarthy, Leanne Willey

10:40am - Oral Presentation
Solar Autoclave for Rural Areas - CEFNS, Mechanical Engineering
Kyle Godwin, Blake Lawrence, Eric Brettner, Adam Compton, Yuchen Liu

9:50am - Oral Presentation
NAU Portable Rain Room - CEFNS, Mechanical Engineering
Crispin Herrera, Dane Eccles, Charles Manchen, Bryce Smith, Marcus Tallman, Blake Willmes

11:05am - Oral Presentation
Christmas Ornament Display Structure - CEFNS, Mechanical Engineering
Ryan Palmer, Miles Roux and Dolores Gallardo

10:15am - Oral Presentation
Release Lanyard Redesign - CEFNS, Mechanical Engineering
David Lofgreen, Andrew Baker, Timothy Haynes, Styson Koide, Carly Siewerth, Christopher Temme

➤ duBois Meadows

8:20am - Oral Presentation
Enumerating Sockeye Smolt in Chilkoot River, Haines, Alaska - CEFNS, Earth & Environmental Sciences
Will Hickman

9:00am - Oral Presentation
Community Sustainability and Non-profit Organizations - CEFNS, Earth & Environmental Sciences
Betty Lou Booz

8:30am - Oral Presentation
KARES Educational Youth Garden - CEFNS, Earth & Environmental Sciences
Dean Buttacavoli

9:10am - Oral Presentation
How do YOU define Sustainability? - SBS, Political Science
Brett Smith

8:40am - Oral Presentation
Community Outreach with Friends of Flagstaff’s Future - CEFNS, Earth & Environmental Sciences
Kevin Kirchmeier

9:20am - Oral Presentation
Sustainable Landscape Maintenance Internship - CEFNS, Earth & Environmental Sciences
Emily Gaddo

8:50am - Oral Presentation
Hydroclimatic Variability Inferred from Subannual Sediment Pulses in Lake Linnévatnet, Svalbard - CEFNS, Geology
Dion Obermeyer, Darrell Kaufman

9:30am - Oral Presentation
Friends of Flagstaff – Outreach Internship - CEFNS, Earth & Environmental Sciences
Christian Booz

9:40am - Oral Presentation
Makauwahi Cave Reserve Internship - CEFNS, Sustainability
Mary Coulombe
10:00am - Oral Presentation
**Sustainable Landscape Maintenance Project**  
- CEFNS, Earth & Environmental Sciences  
Robert Helmkamp

10:10am - Oral Presentation
**Putting Flagstaff Sustainability Plans in Context** - CEFNS, Earth & Environmental Sciences  
Eric Nolan

10:20am - Oral Presentation
**Mexican Gray Wolf Reintroduction** - CEFNS, Earth & Environmental Sciences  
Jacquelyn Davis

10:30am - Oral Presentation
**Farm to Fork on Northern Arizona University Campus** - CEFNS, Sustainability  
Jessica Eliason

10:40am - Oral Presentation
**Kind Vines Sustainability Report** - CEFNS, Sustainability  
Lindsey Nicks

10:50am - Oral Presentation
**Assessing Water Rights for National Forest Springs** - CEFNS, Geology  
Ian Hanf

11:00am - Oral Presentation
**Integrating Art and Science Methodologies: Creating Artifacts that Re-evaluate Ecosystem Relationships on the Milwaukee River** - CEFNS, Earth & Environmental Sciences  
Nolan Bade

11:10am - Oral Presentation
**Friends of Flagstaff’s Future Internship** - CEFNS, Earth & Environmental Sciences  
Karri Contreras

11:20am - Oral Presentation
**Internship at Phoenix Comicon** - CEFNS, Earth & Environmental Sciences  
Elliot Hosch

11:30am - Oral Presentation
**Microorganisms in Vermicompost Tea** - CEFNS, Biological Sciences  
Eileen Meinel

･･･ duBois Room A ･･･

8:30am - Oral Presentation
**Radio Inter-Module Communication Testing** - CEFNS, Electrical Engineering  
Wachs Kurtis, Harper Alfred, Daniel Baronsky, Nicholas Rowe, McKenzie Schmidt

8:55am - Oral Presentation
**ArchSim: Real-Time Model-based Architectural Simulation** - CEFNS, Computer Science  
Brandon Phillips, Davis Zanot, Mike Austin

9:20am - Oral Presentation
**Localization Functionality for MCM, a Mobile Commerce Application** - CEFNS, Computer Science  
Kimberly Oyama, Chihiro Sasaki, Daren Rodhouse, Blayne Kennedy

9:50am - Oral Presentation
**NAU Fitness Mobile Application** - CEFNS, Computer Science  
Kenneth Shaw, David Koenig, David Marcus, Abdulaziz Abdulfatah

10:15am - Oral Presentation
**Project Mjolnir: Plasticity Modeling Software with MATLAB** - CEFNS, Computer Science  
Thomas Wilkins, Doug Freeman, Luke Tytor

10:40am - Oral Presentation
**ISIS Pipeline Infrastructure** - CEFNS, Computer Science  
Kolby Chien, Isaac Pitterle, Cody Thompson

NONPOSTER LISTINGS: MORNING SESSION  ●  9
duBois Southwest Room

8:30am - Oral Presentation
Evaluation of New Bridge for the Flagstaff Urban Trail in Picture Canyon - CEFNS, Civil and Environmental Engineering
Stephanie Atchison, Courtney Biggar, Kevin Lasky

8:55am - Oral Presentation
Complete Civil Engineering Site Plan and Design for a Proposed Hualapai Museum - CEFNS, Civil and Environmental Engineering
Jorge Hernandez, Ian Braun, Andrew Halley, Haikal bin Maamor

9:20am - Oral Presentation
Hazard Evaluation of an Abandoned Dam in the Kaibab National Forest - CEFNS, Civil and Environmental Engineering
Diwei Chen, Paul Garrett, Wen Cui

9:50am - Oral Presentation
Alternative Landfill Capping System - CEFNS, Civil and Environmental Engineering
Amy Anderson, John Jowers, Daniel Hamill, Gabe Murray, Nathaniel Lail

Skydome Stage A

8:30am-8:45am - Oral Presentation
Psychological Reflections: An Ordered Reality in Painting. - CAL, Art History
Jenna Pichnarcik

8:45am-9:00am - Oral Presentation
Native American Painting During the 20th Century: A Study of an Imposed Cultural Locus - CAL, Art History
Rush Moore
9:30am-9:45am - Oral Presentation
Ritual and Religion in Holocaust Photography: Lodz Ghetto 1939-1945 - CAL, Comparative Cultural Studies
Elisabeth Fry

9:45am-10:00am - Video
The World's Largest Navajo Weaving - CAL, Museum Studies
Emily Moxley

10:00am-10:15am - Oral Presentation
The Representation of African Americans in Film Noir: Whitewashing the Screen - UC, Comparative Cultural Studies
Xena Olsen

10:15am-10:30am – Oral Presentation
Rediscovering Identities: Improving Arcosanti through Arts Marketing - CAL, Arts & Cultural Management
Alexa Kaumaya

10:30am-10:45am - Oral Presentation
Flagstaff's Mexican Community in the Early 20th Century - CAL, History
Sarah Snelling

10:45am-11:15am - Oral Presentation
Life and Death in the Bedzin Ghetto: An Interdisciplinary Holocaust Research Project - CAL, Humanities
Paisley Green, Michael Combrink, Mikayla Cutlip, Mia Aguirre, Elisabeth Sorg, Elisabeth Fry, Gerald Lamb, Gabriella Perez-Mendoza, Gabrielle Mortellaro, Blaze Valencia, Justin Bigelow, Gage Williams

11:15am-11:45am - Oral Presentation
The Influence of Pitch Proximity on the Aesthetic Judgment of Unfamiliar Melodies - CAL, Music
Richard Virgo

11:45am-12:00pm - Video
Yuma Just Food & Immigration Trip - UC, Public Relations
Morgan Descourouez, Kim Curtis

➤ Skydome Stage B

9:00am – Creative Writing 1: Fiction and Creative Non-fiction - Oral Presentations

Always Enough – Honors Program, Honors
Leigh Kimble

The Way Nancy Smiles - Honors Program, Honors
Kelsey Hontz

She Will - Honors Program, Honors
Kaitlyn Ebel

Walls - Honors Program, Honors
Grant Vavra

Just do it! - Honors Program, Honors
Kaitlynne Piepiora

Everything is Permitted - Honors Program, Honors
Elizabeth Nichols

10:00am – Politics, Nations, and People 1: Mexico, Afghanistan, South Korea, Chechnya - Oral Presentations & Video

Somos Humanos - Honors Program, Honors
Jordan Morales

Pillars of Instability - Honors Program, Honors
Gregory Wilson

NONPOSTER LISTINGS: MORNING SESSION • 11
Exploding the Collective Structural Imaginarium: The Black Widows of Chechnya as Actors on the International Stage – Honors Program, Honors
Blaise Caudill

Land of the Morning Calm - Honors Program, Honors
Genevieve Burns

11:00am – Indigenous Peoples: Problems and Solutions - Oral Presentations

➤ Skydome Stage C

9:00am – Resistance and Activism 1: Gender, Sexuality, and Social Movements - Oral Presentations
Feminism and Antifeminism - Honors Program, Honors
Xavier Petty

Women’s Rights - Honors Program, Honors
Austin Schroeder

Marriage Equality - Honors Program, Honors
Allison Tussing

Transgender Rights - Honors Program, Honors
Cayden Cupper

AIDS/Act Up - Honors Program, Honors
Monica Gallegos

10:00am – Resistance and Activism 2: Youth Arts, and Free Speech Movements - Oral Presentations
Rock Music - Honors Program, Honors
Austin Shannon

Musical Theater - Honors Program, Honors
Michael Phillips

Toolset of Reconciliation: The Economies of Modern Native American Reservations - Honors Program, Honors
Violet Skilsky

Native American Healthcare - Health and Human Services, Honors Program, Honors
Natalie Cravens

Ka ‘Aina i ka Pono: the Loss and Pursuit of Hawaiian Sovereignty - Honors Program, Honors
Jalen NeSmith

Punk Music - Honors Program, Honors
Kristina Simpson

Hacktivism - Honors Program, Honors
Meagan Waltz

Reggae and Jazz - Honors Program, Honors
Sarah Matthews

Berkeley Free Speech - Honors Program, Honors
Carlos Zaragoza

11:00am – Resistance and Activism 3: Governments, Economies, and Better Societies - Oral Presentations
WWII Nazi Resistance - Honors Program, Honors
Chris Wieduwilt

Resisting Communism - Honors Program, Honors
Peter Massey

Justifying Dictators - Honors Program, Honors
Christian Loritz
North Korea and Protest - Honors Program, Honors
Eileen Baker

Anti Consumerism - Honors Program, Honors
Torrey Gross

Skydome Stage D

9:00am – We Are What We Eat (and Do): Food, Exercise, and Stress Management - Oral Presentations

Butter vs. Margarine - Honors Program, Honors
Joy Noriega

Anti-Aging Effects of Aerobic Exercise - Honors Program, Honors
Todd Stratton

Communication Strategies and Stress Management Techniques for Unpaid Caregivers of Individuals with Dementia or Alzheimer’s Disease - Honors Program, Honors
Amanda Schmiester

10:00am – Science and Mathematics - Oral Presentations

Impact Crater Analysis of Southcentral Arabia Terra, Mars – Honors Program, CEFNS, Astronomy
Margaret Landis

The Impact of Invasive Plant Species on Carbon Storage and Reservoirs – Honors Program, CEFNS, Earth & Environmental Sciences
Carly Farr

Economic Disparity and Civil Unrest - Honors Program, Honors
Derek Young

Trees of Irreducible Numerical Semigroups – Honors Program, Mathematics, Honors
Taryn Laird

The 1919 Solar Eclipse Presentation – Honors Program, Physics, Honors
Lindsay Dye

11:00am – Being Human: Work, Play, Think, and Learn - Oral Presentations

Legalizing Prostitution in American Society - Honors Program, Honors
Kaitlin Byrne

The Life You Are Given - Honors Program, Honors
Morgan Wilcox

Roidball - Honors Program, Honors
Matt Brunskill

Binary Thinking: Humanity’s Construction – Honors Program, Communication
Dakota King

Experiential Education: The Difference Between Learning and Truly Understanding – Honors Program, CEFNS, Honors
Madeline Friend
Luncheon for CEFNS Presenters, Faculty Mentors, and Judges

Speaker
Dr. Con Slobodchikoff, NAU
Professor Emeritus and Author of Chasing Dr. Dolittle: Learning the Language of Animals

11:30am-1:30pm
duBois Ballroom

LUNCH

➤ Skydome College of Arts and Letters Tables
11:30am-1:30pm - Creative Projects
Rhetoric of Food and Travel Writing 2 - CAL, English
Shea Lenkaitis, Alexandria Peterson, Stacy Roome, Jessica Patino, Julya Walters

➤ duBois Ballroom
11:30am-1:30pm – Luncheon for CEFNS Presenters, Faculty Mentors, and Judges (see above)

➤ Skydome Stage E
12:00pm-1:00pm – Honors Convocation and Awards Ceremony

Abstracts and index available at nau.edu/symposium
AFTERNOON SESSION

➤ Skydome College of Arts and Letters Tables

2:00pm-4:00pm - Creative Projects
**Rhetoric of Food and Travel Writing 3** - CAL, English
Jessie Gardner, Christopher Harnois, Christina Emig, Chelsea Drake, Wuke Zhou

**Walmart Wedding** – CAL, Theatre
Kimberly Speer

➤ duBois Agassiz

1:30pm - Oral Presentation
**Elk Ridge Ski Area: Poma Lift Stick** - CEFNS, Mechanical Engineering
Megan Cawley, Kristin Coady, Liam Andrus, Amy Cook, Yaohui Wang

1:55pm - Oral Presentation
**An Improved Foot and Ankle Prosthetic Design** - CEFNS, Mechanical Engineering
Audrey Ford, Matthew Anderson, Chris McLaughlin, Matthew Petney, Edwin Tenney

2:20pm - Oral Presentation
**Separation Connector Improvement for Orbital Sciences Corporation** - CEFNS, Mechanical Engineering
Luis Herrera, Koll Christianson, Zheng Lian, Shaun Shultz

2:50pm - Oral Presentation
**Small-Scale Solar Irradiance Measuring Device** - CEFNS, Mechanical Engineering
Allison Venezia, Nick Jurik, Timothy Tormey, Joseph Cavaretta, John Hills, Peter Journell

3:15pm - Oral Presentation
**Combined Heat and Power System** - CEFNS, Mechanical Engineering
Ryan Christie, Ronald Stepanek, Cory Donavon, Jason Dikes, Joseph Mudd, Nathan Duray

➤ duBois Fremont

1:30pm - Oral Presentation
**Automated Mirror Cover for NPOI** - CEFNS, Mechanical Engineering
Miles Dehlin, Leland Doyle, Salazar Grey, Katherine Hewey, Paul Owen, Rogelio Blanco

1:55pm - Oral Presentation
**Quick Change Electrical Connection** - CEFNS, Mechanical Engineering
Campbell Lauren, Nick Schafer, Michael Donelson, Aaron Hansen, Erin Grenko

2:20pm - Oral Presentation
**The Wright Stuff Aircraft Design** - CEFNS, Mechanical Engineering
Adam Nelessen, Brandon Perez, Aaron Lostutter, Jacob Vincent, and Zev Vallance
2:50pm - Oral Presentation
Supermileage: Frame, Fairing, and Steering - CEFNS, Mechanical Engineering
Callie Adair, Sabrina Brown, Sean Danton, Ben Reinert, Dylan Pratt

3:15pm - Oral Presentation
Supermileage: Engine and Drivetrain - CEFNS, Mechanical Engineering
Alexander Townsley

➤ duBois Meadows

1:35pm - Oral Presentation
Sea Turtle Migration Study in Uruguay - CEFNS, Earth & Environmental Sciences
Bryn Merrell

1:45pm - Oral Presentation
Summer Internship With Arizona Game and Fish - CEFNS, Earth & Environmental Sciences
James Murray

1:55pm - Oral Presentation
LA County Public Health - CEFNS, Earth & Environmental Sciences
Uche Okwuokei

2:05pm - Oral Presentation
Erwinia tracheiphila as a Biological Control of Canada Thistle (Cirsium arvense) - CEFNS, Forestry
Patricia Rees, Bo Stevens

2:15pm - Oral Presentation
2700 Years of History in Coastal Sagescrub, Southern California - CEFNS, Earth & Environmental Sciences
Johnathan Rice

2:25pm - Oral Presentation
Measuring Habitat Loss in Southwestern Nicaragua - CEFNS, Earth & Environmental Sciences
Stevens Bo

2:35pm - Oral Presentation
Promoting Sustainability Through Recycled Crafts: Engaging Children in the Community - CEFNS, Earth & Environmental Sciences
Hannah Stitzer

2:45pm - Oral Presentation
Advancing Energy Efficiency on a Federal Level, Interning for the U.S. Department of Energy - CEFNS, Earth & Environmental Sciences
Kyle Thornton

2:55pm - Oral Presentation
Understanding Communication Channels in Non-Profit Organizations, interning with Willow Bend, Environmental Education - CEFNS, Earth & Environmental Sciences
Jasmine Terrazas

3:05pm - Oral Presentation
Southeast Alaska: A Learning Experience - CEFNS, Earth & Environmental Sciences
Helena Van Winkle

3:25pm - Oral Presentation
Nature Education in Southeast Alaska - CEFNS, Earth & Environmental Sciences
Kiersten Wilber

3:55pm - Oral Presentation
Sustainable Landscape Maintenance Project - CEFNS, Earth & Environmental Sciences
Sean Canterbury

4:05pm - Oral Presentation
Community Supported Agriculture: The Need for More Public Exposure - CEFNS, Earth & Environmental Sciences
Jennifer Cody
4:15pm - Oral Presentation  
**Environmental Compliance at Nellis Air Force Base** - CEFNS, Earth & Environmental Sciences  
Zachary Daley

4:25pm - Oral Presentation  
**Morphological Differences between Fish from a Wastewater Effluent Pond Compared to a Reference Lake** - CEFNS, Biological Sciences  
Kevin Daniels

4:35pm - Oral Presentation  
**Interactions of Rabies Host Species** - CEFNS, Biological Sciences  
Elise Dillingham, Jesse Maestas

4:45pm - Oral Presentation  
**Defining Personality Through the Observation of Phoenicopterus ruber** - CEFNS, Biological Sciences  
Olivia Drummond

4:55pm - Oral Presentation  
**Project Assessment of Structures Certified by the Coconino County Sustainable Building Program** - CEFNS, Earth & Environmental Sciences  
Molly Groyer

5:05pm - Oral Presentation  
**Comparison of Soil Microbial Communities of Native and Non-Native Grasses** - CEFNS, Earth & Environmental Sciences  
Sarah Hamilton

> **duBois Room A**

1:30pm - Oral Presentation  
**Online Scholarship Application** - CEFNS, Computer Science  
Samuel Olson, Colin Gray, Alex Mazzeo, and Nicole Williams

1:55pm - Oral Presentation  
**Group Wrangler: A Web-based Group Management System** - CEFNS, Computer Science  
Michael McCormick, Greg Andolshek, Alex Koch

2:20pm - Oral Presentation  
**Application of MR Fluid in a Bike Suspension System** - CEFNS, Electrical Engineering  
Michael Doty, Adrian Ortega, Ryan Olson, Waleed Alzahrani

2:40pm - Oral Presentation  
**Geological Data Transmitter** - CEFNS, Electrical Engineering  
Joel Jarpe, Kaitlyn Patterson, Adam Rogers, Tyler Lee

3:15pm - Oral Presentation  
**BeagleBoard Capstone Redesign** - CEFNS, Electrical Engineering  
Robert Reynolds, Maria Espinola-Romero

3:40pm - Oral Presentation  
**Ionization Break Down of Carbon Dioxide Vehicle Emissions** - CEFNS, Electrical Engineering  
Michael Fisher, Matthew Wray; Adam Skinner

Abstracts and index available at nau.edu/symposium
1:30pm - Oral Presentation
**PCI Big Beam 2** - CEFNS, Civil and Environmental Engineering
Jessica Kettelkamp, Jessica Kettelkamp and Danny Washburn

1:55pm - Oral Presentation
**American Society of Civil Engineers Student Competition Steel Bridge Design Team 1** - CEFNS, Civil and Environmental Engineering
Calvin Ing, Michael Bechtel, Ryan Mahar

2:20pm - Oral Presentation
**Obstacle Wall Design for the NAU Challenge Course Team 2** - CEFNS, Civil and Environmental Engineering
Selina Gilbertson

2:50pm - Oral Presentation
**Prestressed Concrete Institute Big Beam Design Student Competition Team 2** - CEFNS, Civil and Environmental Engineering
Junfeng Qian, Qi Wang, Shiyu Wang

3:15pm - Oral Presentation
**American Society of Civil Engineers Student Competition Steel Bridge Design Team 2** - CEFNS, Civil and Environmental Engineering
Majun Zhou, Long Li, Clinton Harris

3:40pm - Oral Presentation
**ASCE Concrete Canoe: Night Fury** - CEFNS, Civil and Environmental Engineering
Sara Watts, Kelli Rider, Elise Cheever, Jonathan Brusnahan, Naser Aljaberi

➤ **Skydome Honors Program Tables**

4:00pm-5:00pm - Exhibit
**College's Tiring Venture** - Honors Program, Honors
Kaele Cooper

4:00pm-5:00pm - Exhibit
**Life Through My Lens** – Honors Program, CAL, Art
Hannah Schroeder

➤ **Skydome Stage A**

12:15pm-12:45pm - Oral Presentation
**Mainpat Interdisciplinary Project** - CHHS, Health and Human Services
Rebecca Scranton, Caitlin Magoffin, Maria DiCosola, Jillian Curtis, April McCue, Mikaela Ray

1:00pm-1:40pm - Performance
**Echoes of Flagstaff** - CAL, Theatre

1:45pm-2:00pm - Oral Presentation
**The Enduring and Culturally Relevant Image of Mother Ireland in the Plays of John B. Keane** - CAL, Theatre
Annamarie Carlson

2:00pm-2:15pm - Oral Presentation
**Action and Compassion: Aristotle on Political Science** - CAL, Philosophy
Kyle Beloin, Coren Frankel
2:15pm-2:30pm - Oral Presentation
*Designing a Home for the ADHD User* - CAL, Interior Design
Edan Maoz

2:45pm-3:00pm - Oral Presentation
*Exchanging Gases Between Algae and Biogas in a Life-Support System* - CEFNS, Civil and Environmental Engineering
Vivianna Gamez Molina

3:15pm-3:30pm - Oral Presentation
*A Way to Clean by Being Green* - CEFNS, Earth & Environmental Sciences
Joseph Hill

3:30pm-3:45pm - Video
*Behind the Scenes at Digital Bolex* - SBS, Electronic Media and Film
Kent Wagner

3:45pm-4:00pm - Video
*Orchestrating Community* - SBS, Electronic Media and Film
Mary (Mardi) Devolites

4:00pm-4:30pm – Video
*Nose Bleed* - SBS, Electronic Media and Film
Jeremy Scott

4:30pm-4:35pm – Video
*LAIT* - SBS, Electronic Media and Film
Alex Leefers

➤ Skydome Stage B

1:00pm – *Literature and Linguistics: From Dead Languages to Harry Potter* - Oral Presentations

*Teaching Ancient Languages in Schools* – Honors Program, CAL, English, Honors
Nicole Thurston

*Postmodernism in Slaughterhouse-Five* - Honors Program, Honors
Phoebe Hughes

*The Power of Faith in The Laramie Project* - Honors Program, Honors
Jennifer Hill

*The Language of Harry Potter* - Honors Program, CAL, English, Honors
Kristina Guice

*American Women in the Sherlock Holmes Short Stories* - Honors Program, Honors
Margaret Landis

2:00pm – *Creative Writing 2: Poetry, Creative Non-fiction, and Fiction* - Performances

*Untitled* - Honors Program, CAL, Music Performance, Honors
Robert Hallman

*Tormentor* - Honors Program, CAL, English, Honors
Alexis Rigoni

*Memoir of the Subconscious* - Honors Program, Honors
Hunter Hahn

*Why the Dead Man Loves Hot Tea: Several Poems* – Honors Program, CAL, English, Honors
Siobhan Manrique

*Incinerated Revenge* - Honors Program, Honors
Patrick Warfel

Abstracts and index available at nau.edu/symposium
A Hero’s Journey Through Styles - Honors Program, CAL, English, Honors
Cheyenne Bramwell

Slam Poetry - Honors Program, CAL, English, Honors
Jackson Morris

3:00pm – Bond Girls, Bond Villains, and James Bond: The Issues behind the Icons - Oral Presentations
Bond Villains “Black Claws, Orange Sunburns, and White Cats: A Catalogue of Villainous Props” - Honors Program, Honors
Alexis Rigoni

The Perverse: Sociopathic Tendencies of the Bond Villain - Honors Program, Honors
Michelle Webber

Skydome Stage C

1:00pm – Contemplation, Compassion, Community 1: Pro-Social Behavior - Oral Presentations
Quiet Ego and Sociality - Honors Program, Honors
Liz Tomaschko

Self Compassion and Mental Illness - Honors Program, Honors
Jacob Spencer Avila

Balancing Compassion and Conflict - Honors Program, Honors
Carl Thomson

Emotion and the Absurd in Literature - Honors Program, Honors
Samuel Kirschbaum

Gender and Compassion - Honors Program, Honors
Courtney Haasch

Dualism in Humans - Honors Program, Honors
Kevin McLaughlin

2:00pm – Contemplation, Compassion, Community 2: Cultural Diversity and Global Community - Oral Presentations
A Single Human Sound - Honors Program, Honors
Eric Allred

Buddhist and Navajo Spirituality - Honors Program, Honors
Alexandra Clitso

Ego and Compassion /Individualism and Collectivism - Honors Program, Honors
LeAndra Marris

Innovations and Global Community - Honors Program, Honors
Chelsie Kekaula

Raoul Silva: Reinventing Evil in ‘Skyfall’ - Honors Program, CAL, Electronic Media and Film, Honors
David Scandura

Bond Girl or Bond Animal? - Honors Program, Honors
Johanna Saucedo

Lesbian Bond Girls: Bond’s Greatest Challenge and Conquest - Honors Program, Honors
Margaret Landis

M. Q. Moneypenny, and Leiter: Bond’s Close Friends and Associates - Honors Program, Honors
Colton Ames

The James Bond Theme Song - Honors Program, Honors
Ryan Monahan
**Labeling and Separateness** - Honors Program, Honors
Makenna Sowards

**Humor and Happiness across Cultures** - Honors Program, Honors
Jacob Weaver

3:00pm - **Contemplation, Compassion, Community Interconnections: Nature and Nurture** – Oral Presentations

**Quiet Ego Psychology** - Honors Program, Honors
Richard Frische

**Teaching or Experience?** - Honors Program, Honors
Chase Winstead

**Human’s Best Friend** - Honors Program, Honors
Zoey Tonn

**People, Plants, and Spirituality** - Honors Program, Honors
Kendra Petersen

➤ **Skydome Stage D**

1:00pm – **Pay It Forward: Making a Difference through Writing** - Oral Presentations

**Poetry Workshop: Body Image & Media** - Honors Program, Honors
Alysha Leyva, Sara Ditmanson

**Female Sex-Positivity** - Honors Program, Honors
Samantha Kruse

**Positive Notes – Pass Them On** - Honors Program, Honors
Allison Griffin

**Shaping the Future** - Honors Program, Honors
Dalton Davidson

**Snow** - Honors Program, Honors
Mekenzie Dyer

2:00pm – **Music, Entertainment, and the Entertainment Industry** - Oral Presentations

**Neocasticismo Y Algo Mas: Rodrigo’s “Concierto de Aranjuez”** – Honors Program, CAL, Music, Honors
Alejandro Estrella-Lopez

**A Magical World of Inspiration** - Honors Program, Honors
Kaitlynn Piepiora

**Virtual Games as Art** – Honors Program, CAL, English, Honors
Michael Longley

4:00pm – **Politics, Nations and People 2: Africa, Egypt, and Germany** - Oral Presentations

**Conservation and Poverty: Successful Compromise in Central and Southern Africa** – Honors Program, Honors
Lauren Badertscher

**Causes of Egyptian Revolution** – Honors Program, SBS, Political Science, Honors
Kelsey Cvach

**The Role of Literature in Nazi Germany** – Honors Program, Honors
Leigh Kimble

**Emotional Expressions across Species** - Honors Program, Honors
Vivian Jordan

**Holistic Healing** - Honors Program, Honors
Alexandra Vlachos
Chopin on Bass – Honors Program, CAL, Music Performance, Honors
Robert Hallman

3:00pm – AWP Writer’s Conference: How Writers Write - Oral Presentations- Honors Program, Honors
Sarah Humphries, Alex Messina, Carrie Bindschadler, Jered Kral, Eric Susak

➤ Skydome Stage E

3:00pm - Performance
Shadow Puppets - CAL, Theatre
Annie Ballesteros, LeighAnna Deming, Sarah Goewey, Megan Hansen, Willie Hines, Zanden Hogrelius, Chelsea Karnes, Emily Luna, Devon Mahon, Jake McCormick, Stephanie Nguyen, Rosemary Sweet

4:00pm-4:30pm – Rhetoric of Food and Travel Writing - CAL, English
Sam Meyer, Jessie Gould, Nigel Stevens

Abstracts and index available at nau.edu/symposium
POSTER LISTINGS
Session I: 9:00am – 11:00am

CAL

Creating the Ultimate Boutique Hotel Experience in Revelstoke, BC - Interior Design
Mackenzie Hunt - Display board [96B]

NAU-Yavapai Civic Forum - Earth & Environmental Sciences
Aaron Whitlatch, Patricia Countryman, Aaron Whitlatch, Anthony Everett-Osvog, Sindia Perez, Lynda Chaprnka, Rose Eitemiller - Display board [95D]

Reflections of Flagstaff: An Interactive Photography Exhibit - Comparative Cultural Studies
Margaret Sheble, Erin Carter, Kiran Haynes - Display board [95C]

CEFNS

A Case of Indigenous Specialist Herbivore (Gnophaela Vermiculata) as a Potential Biological Control Agent for an Invasive Weed (Cynoglossum Officinale) - Biological Sciences
Jacob Natseway, Laken Cooper - Display board [16A]

A Next Generation 3D Imaging System for Ballistics Identification - Physics
Michael Bishop - Display board [32C]

A Strategic Plan to Eliminate Plastic Bag Use in Flagstaff - Sustainability
Bryn Merrell, Sean Canterbury, Hannah Stitizer, Kiersten Wilber - Display board [33D]

Techniques of Ceramic Production in Song Dynasty China - Art History
Jose Orduno - Display board [95A]

Bertram Kevin, Maria DiCosola - Display board [CAL EASEL]

Xu Beihong: The Traditional Roots of the Father of Modern Chinese Painting - Comparative Cultural Studies
Meaghan Scott - Display board [95B]

An Improved Foot and Ankle Prosthetic Design - Mechanical Engineering
Audrey Ford, Matthew Anderson, Chris McLaughlin, Matthew Petney, Edwin Tenney - Display board [40A]

Application of MR Fluid in a Bike Suspension System - Electrical Engineering
Michael Doty, Adrian Ortega, Ryan Olson, Waleed Alzahrani - Display board [36C]

Arizona State Climate Change License Plate - Earth & Environmental Sciences
Assessment of Phylogenetic Resolution in a Diverse Panel of Pasteurella Multocida Isolates Using Variable Number Tandem Repeat (VNTR) Analysis - Biological Sciences
Daniel Sanchez - Display board [7A]

Automated Mirror Cover for NPOI - Mechanical Engineering
Miles Dehlin, Leland Doyle, Salazar Grey, Katherine Hewey, Paul Owen, Rogelio Blanco - Display board [41C]

Barbara McClintock’s “Jumping Genes” - Biological Sciences, Honors
Kendal Flegenheimer - Display board [3A]

BeagleBoard Capstone Redesign - Electrical Engineering
Robert Reynolds, Maria Espinola-Romero - Display board [37B]

Characterization of Students’ Quantitative Reasoning Skills in Chemistry - Chemistry & Biochemistry
Katelyn Porter, Nina Porter - Display board [22A]

Combined Heat and Power System - Mechanical Engineering
Ryan Christie, Ronald Stepanek, Cory Donavon, Jason Dikes, Joseph Mudd, Nathan Duray - Display board [38C]

Design of Inhibitors of Methionine Biosynthesis - Chemistry & Biochemistry
Joshua Ellsworth - Display board [20A]

Detection of Heat- and Piperidine-Labile Sites in Plasmid DNA Exposed to Uranium - Chemistry & Biochemistry
Janice Wilson, Diane M. Stearns, Ph.D. - Display board [20C]

Determining the Purification of Angiogenic Proteins (CD47, TSP-1, VEGFR2) - Chemistry & Biochemistry
Rachelle Eddie, Ethan Paddock, Matthew Gage, Ph.D. - Display board [18C]

Development of a More Efficient Synthesis Method for Myriaporone 4 - Chemistry & Biochemistry
Ryan Ray - Display board [21C]

Development of Expression and Purification Protocols for Signaling Proteins Involved in Angiogenesis - Chemistry & Biochemistry
Jacob Milton - Display board [19A]

Do California Halibut Develop Different Escape Responses Between Their Larval and Adult Life Stages? - Biological Sciences
Yordano Jimenez, Alice C. Gibb, Ian MacDonald - Display board [13A]

Efforts to Isolate and Quantify the Siderophore Petrobactin From Various Environmental Bacteria - Chemistry & Biochemistry
Bennet Martinez, Emily Brown - Display board [22C]

Elk Ridge Ski Area: Poma Lift Stick - Mechanical Engineering
Megan Cawley, Kristin Coady, Liam Andrus, Amy Cook, Yaohui Wang - Display board [40C]

Energy Storage Solutions - Mechanical Engineering
Sara Doyle-Lawrence, Jamie Simpson, Alexander Townsley, Cindy Browder, Cornel Ciocanel - Display board [31C]

Erwinia Tracheiphila as a Biological Control of Canada Thistle (Cirsium arvense) - Earth & Environmental Sciences
Bo Stevens, Patricia Rees - Display board [23D]

Evaluation of Molecular Methods of Coccidioides Detection in Clinical Specimens - Biological Sciences
Kristin Wiggins - Display board [15C]

Evaluation of Uranium in Soils Gathered Near Two Abandoned Mine Sites on the Navajo Reservation - Chemistry & Biochemistry
Lister Andee, Marsha Bitsui, Dr. Jani C. Ingram - Display board [19C]
Evidence of Selective Breeding and Habitat Use in Lambis lambis - Biological Sciences
Sarah Raber - Display board [6C]

Examination of Scotch Broom Effects on Soil Chemistry in Washington State, USA - Forestry
Brandon Merz, Karen Haubensak - Display board [28C]

Examining the Effects of Titin in Animal Locomotion Energetics - Biological Sciences
Robert Kay, Kian Bidanjiri, Tasha Harder - Display board [8A]

Factors Affecting the Species Abundance and Richness of Fish in Seagrass in the Saipan Lagoon - Biological Sciences
Erica Alling - Display board [7C]

Finding Unique Genomic Elements in the Bacterial Pathogen Burkholderia Pseudomallei Through Whole Genome Comparisons with Closely Related Species - Biological Sciences
Kenzie Shippy, Kenzie Shippy, Carina Hall, Jason Sahl, Mark Mayo, Rebecca Colman, Jim Schupp, Bart Currie, Paul Keim, Talima Pearson, Apichai Tuanyok, Joseph Busch, David M. Wagner - Display board [16C]

Flagstaff Compost Co. - Earth & Environmental Sciences
Cody Buchanan - Display board [24C]

Gene Regulation of Triiodothyronine During Gonadal Differentiation in Xenopus Laevis - Biological Sciences
Kathryn McLean, Stephanie Wolff, Dr. Catherine R. Propper - Display board [12A]

Genetic Diversity of North American and European Geomyces Destructans Isolates from Bats and Cave Sediment Determined with Multi-Locus Variable Number Tandem Repeat Analysis - Biological Sciences
Lindsey Lovell, Dr. Kevin Drees, Dr. Jeffrey Foster, Katy Parise - Display board [11C]

Genomic Comparisons of a Predicted Antifungal Compound in Burkholderia spp. - Biological Sciences
Sally Statham, Jennifer Ginther, Josh Stone, Chris Allender, Paul Keim, Apichai Tuanyok - Display board [8C]

Genomic Islands in Burkholderia Pseudomallei - Biological Sciences
Joseph Gennarelli, Josh Stone, Chris Allender, Dr. Apichai Tuanyok - Display board [9A]

Genomic Reconstruction of Extinct Common Ancestors - Biological Sciences

Geological Data Transmitter - Electrical Engineering
Joel Jarpe, Kaitlyn Patterson, Adam Rogers, Tyler Lee - Display board [37C]

Group Wrangler: A Web-based Group Management System - Computer Science
Michael McCormick, Greg Andolshek, Alex Koch - Display board [36A]

How do Northern Arizona Herpetofauna Communities Respond to Thinning Treatments and Residual Slash Piles? - Forestry
Dwight Clark, Erika Nowak, Karen Haubensak - Display board [28A]

Hyperplane Arrangements and Linear Syzygies - Mathematics
LouGene Jones - Display board [30C]

Implementing Bird Baths to Counteract the Effects of Reclaimed Water Consumption on Wildlife at Northern Arizona University - Earth & Environmental Sciences
Elise Dillingham, Kevin Daniels - Display board [24D]
Indentification of Absorption Characteristics of Oxygen Ice for Comparison to Icy Celestial Bodies - Astronomy
Weston Maughan, Dr. Stephen Tegler, Dr. Will Grundy - Display board [2A]

Investigations of T-avoiding Elements of Coxeter Groups - Mathematics
Selina Gilbertson - Display board [29C]

Ionization Break Down of Carbon Dioxide Vehicle Emissions - Electrical Engineering
Michael Fisher, Matthew Wray; Adam Skinner - Display board [38A]

Landscape Connectivity: Maintaining Corridors for Wild Animal Movement in Urban Areas, Flagstaff, Arizona - Earth & Environmental Sciences
Jasmine Terrazas, Joseph Hill - Display board [25C]

Lava Dome Viscosity and Associated Structures - Geology
David Unruh - Display board [29A]

LDPC-Encoded System With Min-Sum Decoding - Electrical Engineering
Aniza Brown, Maria Espinola-Romero - Display board [26C]

Mean Crowding of the Leech, Helobdella Stagnalis in a Laboratory Setting - Biological Sciences
Sam Farley - Display board [9C]

Measuring Habitat Loss in Southwestern Nicaragua - Astronomy
Bo Stevens - Display board [1C]

Mentor Graphics Automation - Electrical Engineering
Daniel Roberts - Display board [27A]

Mid-Infrared Variability and Color in Young Stellar Objects - Astronomy
Stephanie Wood, Dr. Kevin Covey - Display board [1A]

Morphological and Behavioral Differences Between a Fish Population from a Wastewater Effluent Pond Compared to a Reference Lake - Biological Sciences
Kevin Daniels, Melanie L. Schroer, Catherine R. Propper - Display board [4A]

Novel Acoustic Technique to Control Bark Beetles - Forestry
Nicholas Aflitto, Richard Hofstetter - Display board [27C]

Online Scholarship Application - Computer Science
Samuel Olson, Colin Gray, Alex Mazzeo, Nicole Williams - Display board [35D]

Purification of Receptor Proteins in the Nitric Oxide Signaling Pathway - Chemistry & Biochemistry
Ethan Paddock, Jacob Milton, Rachelle Eddie, Matthew J. Gage, Ph.D - Display board [21A]

Quick Change Electrical Connection - Mechanical Engineering
Campbell Lauren, Nick Schafer, Michael Donelson, Aaron Hansen, Erin Grenko - Display board [40D]

Reciprocal Transfer Demonstrates Effect of Wastewater Effluent on Reproductive Behaviors in the Leech, Helodbella Stagnalis - Biological Sciences
Shayla Mulhern, Stephen Shuster, Rebecca Beresic-Perrins, Kelsey Banister, Echo Sun - Display board [18A]

River Otters – Possible Ecological Impacts on Threatened Riparian Species of Arizona - Biological Sciences
Jessica Martinez, Nicholas W. Gengler, Kristen J. Fouts, Rachael N. Greer - Display board [10A]

Separation Connector Improvement for Orbital Sciences Corporation - Mechanical Engineering
Luis Herrera, Koll Christianson, Zheng Lian, Shaun Shultz - Display board [42A]
Sir Paul Nurse’s Discoveries on the Regulation of the Cell Cycle - Biological Sciences, Honors
Kayla Wright - Display board [3C]

Small-Scale Solar Irradiance Measuring Device - Mechanical Engineering
Allison Venezia, Nick Jurik, Timothy Tormey, Joseph Cavaretta, John Hills, Peter Journell - Display board [41B]

Soil Microbial Community Response to the Introduction of Pinyon Pine (Pinus Edulis) Seedlings - Biological Sciences
Dreux Patch, DL Patch, AL Krohn, G Allan, CA Gehring - Display board [14A]

Study of Calcium-Dependent Binding of Titin’s N2A Region to Thin Actin Filaments Using Atomic Force Microscopy - Mechanical Engineering
Evan Willis, Dr. Brent Nelson - Display board [32A]

Supermilage: Engine and Drivetrain - Mechanical Engineering
Alexander Townsley - Display board [42D]

Supermilage: Frame, Fairing, and Steering - Mechanical Engineering
Callie Adair, Sabrina Brown, Sean Danton, Ben Reinert, Dylan Pratt - Display board [39B]

The Challenges of Communicating Climate Change Issues to the Public - Sustainability
Daniel Vernon - Display board [33C]

The Demographics, Distribution, and Public Perception of Free-Roaming Dogs on Saipan - Biological Sciences
Adrianna Nimer - Display board [13C]

The Effect of Sewage Effluence on Coral Reefs - Biological Sciences
Natalie Senini - Display board [6A]

The Effects of Abiotic Conditions on Soil Fungal Communities Over a Decadal Timescale - Biological Sciences
Matthew Belus - Display board [14C]

The Effects of Demembranation on Passive Force in Skeletal Muscle - Biological Sciences
Deidra Jensen - Display board [17C]

The Effects of Using De-Icing Chemicals on Flagstaff Roadways - Earth & Environmental Sciences
Olivia Drummond, Jen Cody, Patty Rees, Bo Stevens, Kyle Thornton, Uche Okwuokei - Display board [23C]

The First Female Nobel Prize Winner in Physiology or Medicine, Gerty Cori 1947 - Biological Sciences
Jasmine Garza - Display board [5C]

The Mathematics of the Game Spinpossible - Mathematics
Dane Jacobson, Michael Woodward - Display board [30A]

The Pervious Concrete Research - Civil and Environmental Engineering
Junyi Shan, Dr. Chun-Hsing Jun Ho, Darius Ishaku - Display board [23A]

The Response of Aboveground Net Primary Production to Climate Change in Northern Arizona Grasslands, 2002-2012 - Biological Sciences
Kendra Hart, Bruce Hungate, George Koch, Zhuoting Wu - Display board [17A]

The Role of Small Mammals as Seed Predators in Prairies - Biological Sciences
Vianey Avila - Display board [12C]

The Wright Stuff Aircraft Design - Mechanical Engineering
Adam Nelessen, Brandon Perez, Aaron Lostutter, Jacob Vincent, Zev Vallance - Display board [39D]

Thermal Inertia of Uranian Satellites Surfaces - Physics
Nicholas Kutsop, David Trilling - Display board [33A]
Tim Hunt and the Key Regulators of the Cell Cycle - Biological Sciences, Honors
Amanda Robinson - Display board [4D]

Trees of Irreducible Numerical Semigroups - Mathematics
Taryn Laird, Jose Martinez - Display board [31A]

Use of Shells of an Introduced Invasive Gastropod by Native Hermit Crabs on Saipan - Biological Sciences
Brittani Bulger - Display board [11A]

Using GIS Data to Examine the Health of the Coconino Forest Over a Ten Year Period - Earth & Environmental Sciences
Johnathan Rice, Carly Farr - Display board [26A]

Alternative Treatments for Patellofemoral Pain Syndrome (PFPS) - Athletic Training
Emily White - Display board [78A]

An Assessment of Pre-operative Skin Preparations: Recommended Practice - Nursing
Jessica Cleland - Display board [82B]

Biomechanical Analysis of Running on an Anti-Gravity Treadmill from a Rear View - Health and Human Services
Chelsea Gobster, Cierra Winters, Amanda Anderson - Display board [79D]

Chronic Traumatic Encephalopathy: Implications in Sports - Athletic Training
Carolina Quintana - Display board [78D]

Connecting the Circles and Creating a Path for Native American Student Success - Health Sciences
Miranda Yellowhorse, Erelda Gene - Display board [80C]

Using Thermal Modeling to Determine the Properties of Small Solar System Bodies - Astronomy
Ryan Blackman - Display board [2C]

Where is the Genomic Break that Delineates the High Copy and Low Copy Regions in Pancreatic Cancer Cells? - Biological Sciences
Sara Maltinsky - Display board [10D]

Considerations for Functional Goals Following Total Knee Replacement Surgery - Physical Therapy
Matthew Smith - Display board [83D]

Contact Precautions and Adverse Patient Effects - Nursing
Ricinda Rodriguez - Display board [81A]

Controlling Pain in Postoperative Joint Replacement Patients - Nursing
Addie Hite - Display board [83A]

Dartfish Analysis of De-Weighted Running on an Alter G Treadmill From a Side View - Health and Human Services
Daniel Compton, Zane Morgan, Crystal Olivarez - Display board [80A]

DIS 485: Undergraduate Research Through IHD - Disability Studies
Christina Heitzinger, Kylie Suter, Nicole Flanagan, Meghan Harting - Display board [82D]

Disinfectant Techniques - Nursing
Richelle Benton, Rhiannon Bucher - Display board [82A]
Extracorporeal Shock Wave Therapy: An Alternative to Surgery in Musculoskeletal Conditions - Athletic Training
Cassidy Elliott - Display board [78C]

Mainpat, India: Dental Hygiene Story 2012 - Dental Hygiene
Katie Moynihan - Display board [79B]

NAU Campus Community Collaboration in Mainpat India – Dental Hygiene
Courtney Quinn – Display board [82D]

NPO after Midnight: An Outdated Practice - Nursing
Taylor Coiro, Jessica Gaddy - Display board [81C]

PE Effects on Physical Activity - Physical Education
Araceli Olivas, Meghan Warren, Steve Palmer - Display board [83C]

Phonological Awareness in Spanish ESL Students - Health and Human Services
Ethan Wash - Display board [79C]

Reducing Catheter Related Bloodstream Infections: Which Disinfectant is Most Effective to Clean Needle-Less Access Ports on Central Venous Access Devices, 70% Isopropyl Alcohol or 2% Chlorhexidine in 70% Isopropyl Alcohol? - Nursing
Caitlin Magoffin, Teresa Butman - Display board [81D]

Smoking Cessation and the Effect on Diabetic Hgb A1c Levels - Nursing
Ronnie Bowen - Display board [82C]

Study of Low-Level Lasers - Athletic Training
Amanda Silberschlag - Display board [78B]

The Effect of Using a Foam Roller on Muscle Tightness and Flexibility: A Pilot Study - Athletic Training
Kendra Nez - Display board [79A]

The Pathway of Academic Success Programs for AI/AN Students, How is it Used and Where Does it lead? - Health Sciences
Erelida Gene, Miranda Yellowhorse - Display board [80D]

The Use of .12% Chlorhexidine in the Prevention of Ventilator-Associated Pneumonia - Nursing
Danielle Van Meter, Carolyn Cunningham, Atalie Brumfield - Display board [81B]

To Inflate or Not to Inflate? - Nursing
Amanda Ryan, Nick Rogel, Jalisa Martin - Display board [83B]

Understanding Hopi Perspectives on Tobacco Use and Cancer in Both the Urban and Reservation Populations Through Conducting Focus Group Sessions - Health Sciences
Rebecca Scranton, Erelida Gene - Display board [80B]

➤ HONORS PROGRAM

Enough Water? - Honors
Tyler Lamy, Sidney Michl, Krystal Khuu - Display board [98A]

Making Sense of Smell: Odorant Receptors and the Organization of the Olfactory System - Honors
Susanna Dart - Display board [5D]

Power Prediction Modeling for Wave Energy Devices - Honors
Adam Nelessen - Display board [97D]

Prions: Proteinaceous Infectious Particles - Honors
Tiffany Halvorsen - Display board [4C]
A New Graceful Labeling for Pendant Graphs - Honors
Alessandra Graf - Display board [97B]

The Effect of High versus Low Velocity Training on Muscular Power and Balance in College Aged Women - Honors
Heidi Moyer, Andrew Schwiekert, Nick Magnusson, Dr. Tinna Traustadottir - Display board [Honors Program EASEL]

Action Research and Engaged Learning: AGWA - First Year Seminar
Ellie McTyre, Hannah Christensen - Display board [92A]

Action Research and Engaged Learning: Foodlink Community Gardens - First Year Seminar
Jeffrey Hawkinson - Display board [92D]

Action Research and Engaged Learning: Public Achievement - First Year Seminar
Brian Moody, Erin O’Keefe, Mara Pfeffer - Display board [93C]

Action Research and Engaged Learning: SSLUG - First Year Seminar
Adrah Parafiniuk - Display board [94B]

Creating the Ultimate Boutique Hotel Experience in Revelstoke, BC - Interior Design
Mackenzie Hunt - Display board [96B]

Session II: 11:30am – 1:30pm

Creative Healing at Any Age: Designing an Arts Therapy Center for Older Adults - Interior Design
Jessica Walsh - Display board [96D]

Remodeling the Community Center - Interior Design
Kati Fermaint, Alexandra Brewer - Display board [96C]

Engaging and Reviving a Community: The Development of a Sustainable Community Center in Winslow, AZ - Interior Design
Amy Crockett - Display board [96A]

Successful Aging: Creating the Ultimate Assisted Living Environment for People with Alzheimer’s in Provo, UT - Interior Design
Edith Bojorquez Figueroa - Display board [CAL EASEL]

Abstracts and index available at nau.edu/symposium
Agricultural Water Management - Economics
Andrew Smarzinski - Display board [85A]

An Economic Analysis of Indian Water Rights in Arizona - Economics
Oscar Fernandez - Display board [87B]

Arizona's Most Important Water Uses - Economics
Zack DeMar - Display board [89B]

Behavioral Economics and Water Markets - Economics
William Shainin - Display board [91C]

Bureau of Reclamation and Water in the West - Economics
Matt Villalobos - Display board [86C]

California's Water Management: Present and Future Problems - Economics
Tanis Covarrubio - Display board [89C]

Desalination (Cost Benefit Analysis) - Economics
Ian Laird - Display board [87D]

Desalination and the Rising Cost of Water - Economics
Brett Baumgartner - Display board [88C]

Desalination as a Solution for Water Shortages in the West - Economics
Monica Barnes - Display board [86A]

Desalination in San Diego - Economics
Lixiong Huang - Display board [84A]

Desalination - Economics
Justin Scott - Display board [89A]

Developing a Clearinghouse for Water Transfers - Economics
Corey O’Boyle - Display board [88B]

Energy Water Nexus - Economics
Matthew Weir - Display board [84D]

Expansion of Dunkin' Donuts and Starbucks into India – Marketing
Erika Wedge, MKT 436 class – Display board [FCB EASEL]

Fluoridation Program Cost/Benefit of Water Quality - Economics
Chelsea Hulina - Display board [85D]

Government Intervention and Market Pricing in Efficiency Water Allocation - Economics
Lulan Zhu - Display board [90B]

Indian Water Rights in the Western United States - Economics
Jennifer Tenorio - Display board [90C]

Las Vegas Conservation and Restoration - Economics
Cluff Kellie - Display board [FCB EASEL]

Las Vegas Water Programs - Economics
Cluff Kellie - Display board [88D]

Los Angeles Department of Water and Power's Problem and Solutions - Economics
Mitch Rensel - Display board [91B]

Market Solutions for Municipal Water Pricing - Economics
Steven Brent - Display board [86B]

Navajo Generating Station and the Best Available Retrofit Technology: An Economic Impact on the Navajo Nation - Economics
Roxanne Mcnabb - Display board [FCB EASEL]

Navajo Generating Station's Importance to Our Water - Economics
Joseph Paladini - Display board [84B]
Non-Market Valuation Methods - Economics
Colin Towne - Display board [86D]

Rainfall vs Economic Growth - Economics
Scott Rolik - Display board [90D]

The Feasibility of Increasing Flows from Grant Lake Dam - Economics
Roslynn Runia - Display board [85C]

The Non-Market Valuation of Water - Economics
Peter Stevenson - Display board [91D]

Utilitarian vs. Non-utilitarian Uses of Water in the West - Economics
Avila Barrios - Display board [87C]

Washington and Water Reclamation and Transportation - Economics
Douglas Bast - Display board [87A]

Water Desalination in Southern California: A Cost Benefit Analysis - Economics
Aaron Yurk - Display board [91A]

Water Desalinization - Economics
Ying Zang - Display board [84C]

Water Energy in Nevada and New Mexico - Economics
Shiqi Miao - Display board [89D]

Water Transfers in Western States - Economics
Patrick Buckentin - Display board [85B]

Water/Energy Nexus - Economics
Jingtang Chen - Display board [88A]

Water/Energy Nexus - Economics
Weiqiao Lin - Display board [90A]

Action Research and Engaged Learning: Art Through All Mediums - First Year Seminar
Noah Charles, Josie Harding - Display board [92B]

Action Research and Engaged Learning: H.E.A.L.T.H. - First Year Seminar
Allie Keller, Karly Matthews - Display board [93A]

Action Research and Engaged Learning: Queer and Ally - First Year Seminar
Nina Porter, Abby Davidson - Display board [93D]

Action Research and Engaged Learning: Sustainable Entrepreneurship and Cooperative Economics - First Year Seminar
Kevin Ordean - Display board [94C]

Session III: 2:00pm – 4:00pm

A Sustainable Passive Solar Home for a Veteran with PTSD - Interior Design
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Stable Isotopic Evidence of Ancient Globalization in the Cotahuasi Valley of Peru - Anthropology
Erica Creager, Amanda (Sal) Webber - Display board [45D]

Strengthening Indigenous Relationships Through Language - Applied Indigenous Studies
Merle Begay - Display board [48A]

Students' Texting Behavior: What Role Does Narcissism Play? - Psychology
Perry MacKenna, William Huffman, Ann Huffman, Joseph Barbour - Display board [72A]

Suicide - Applied Indigenous Studies
Candace Harrison - Display board [49C]

Teen Dating Violence - Women's & Gender Studies
Felicia Castagnaro - Display board [75A]

The Control of Birth Control - Women's & Gender Studies
Alexa Pak - Display board [73C]

The Correlation Between Self-Perception and Social Interaction - Psychology
Sydney Roberts, Toni Cisneros - Display board [66D]

The CSI Effect - Criminal Justice
Alexus Anderson, Anisa Padilla - Display board [52C]

The Effect of Communication Methods on Friendship Quality - Psychology
Megan Tucker, Hannah Naumann, Barbara Kozlowski, Rachel Rohrer - Display board [67A]

The Effect of Older Single Women in American Society - Women's & Gender Studies
Felicia Castagnaro - Display board [73B]

The Effects of Audience Size on Nervousness - Psychology
Tayler Hagan, Jennie Long, Greg Robertson, Zach Klinefelter - Display board [61D]

The Effects of Sleep and Depression - Psychology
Will Sands, Josiah T. Huggins, Casey Ellito, Kimmi Philips - Display board [69A]

The Effects of Wild Pollination on Food Security - Geography
Hasley Rolph - Display board [56A]

The Efficacy and Outcomes of ESL Programs in American Public Schools K-12 - Anthropology
Helen Gottschalk, Madelyne Felsch, Kelsie Lawson - Display board [45A]

The Evolution of U.S.-Pakistan Relations - Political Science
Devon Taggart, Alicia Miller, Nicolas Walker, Daniel Iribe, Ethan Gunzel - Display board [57D]
The Feminist Discourse of Self-Defense - Women’s & Gender Studies
Alexa Pak - Display board [76B]

The Food and Mood Connection - Psychology
Briana Sánchez, Lance Lopriore, Chantal Kescoli, Erinn DeMarco - Display board [62C]

The Marginalization of Chicana Identity in Arizona Versus California - Anthropology
Brooke Weber, Lindsey Thurston, Patty Valenzuela - Display board [44A]

The Marginalized Society Outside Poverty - Communication Studies
Steven Extract, Brok Butts, Yassmine Lopez, Kathleen Short - Display board [51D]

The Myth of the American Dream Perpetuating Poverty in the Media - Communication Studies
Rachel Watson, Shelby Wade, Natalie Holmes - Display board [52B]

The Prevalence of Alcohol Abuse and Acquaintance Rape - Women’s & Gender Studies
Tara Butler - Display board [75D]

The Pursuit of Happiness: Poverty in the Media - Communication Studies
Shari Malone, Shari Malone, Kevin Moorhouse, Allison Ritter - Display board [51C]

The Scent of Memory - Psychology
Madalyn Hungate - Display board [62A]

Thumbs Up! - Psychology
Kelli Gillman, Nick Rutherford, Wieland Mego - Display board [64D]

Traumatic Events As Predictors Of Substance Abuse In Adolescents - Psychology
Diamond Parkhurst, Danielle Perry, Emily Wilson, Claire Lower - Display board [60A]

UN Involvement in Genocide - Political Science
Garrett Arvidson - Display board [56B]

Underwater Archaeology - Anthropology
Matteo Ulmer - Display board [SBS EASEL]

Water Quality and Scarcity Issues in the Southwestern United States - Geography
Matt Drain - Display board [55D]

Water Sustainability and Current Warming Trends in the Southwestern United States - Geography
Donald Dugan - Display board [54A]

What are the Affects of Historical Intergenerational Trauma Among the Navajos on the Navajo Reservation - Applied Indigenous Studies
Crystal Littleben - Display board [49B]

What Predicts the “Freshman Fifteen”? - Psychology
Kylie Tabor, Matthew Beyak, Chelsea Glantz, Ginger Haviland - Display board [60D]

What’s Hot - Taken or Not? - Psychology
Marlee King, Celena Leland, Rolando Yazzie, Desyre Diaz - Display board [63D]

Who Owns Your Body? The Politics, Policies, and Implications of the Criminalization of Pregnancy - Anthropology
Emily Dempsay, Michael Combrink - Display board [44D]

Why Disability Studies? - Disability Studies
Cassandra Colombo, Danita Cookston, Meghan Harting, Heather Ramsden, Jennifer Rojas, Samantha Smith, Emily Wallace, Robert Young - Display board [53C]

Women and Crime - Criminal Justice
Taylor Lane, James Maxcy - Display board [52D]

Abstracts and index available at nau.edu/symposium
Action Research and Engaged Learning: Foodlink School Gardens - First Year Seminar
Elizabeth Bechok, Jacob Erickson - Display board [92C]

Action Research and Engaged Learning: Immigration ART - First Year Seminar
Bethany Richter, Stormie - Display board [93B]

Action Research and Engaged Learning: S. N. A. I. L. - First Year Seminar
Allison Baker - Display board [94A]

Action Research and Engaged Learning: WACBAT - First Year Seminar
Madison Ledgerwood, Frankie Beesley - Display board [94D]

Abstracts and index available at nau.edu/symposium
ACCESSIBILITY INFORMATION

Walkup Skydome
• Parking: Lot P66 (SE of the building) is the closest
• Entrance: Accessible entrance E side of building
• Elevator: Yes
• Restrooms: on Concourse level

duBois Center
• Parking: Lot P45 (S of the building) is the closest
• Entrance: Accessible entrance SW side of building
• Elevator: Yes
• Restrooms: on 1st floor

THANK YOU

We wish to thank the faculty, staff, graduate students, judges, volunteers, moderators, and student ambassadors, without whom this event would not have been possible.

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