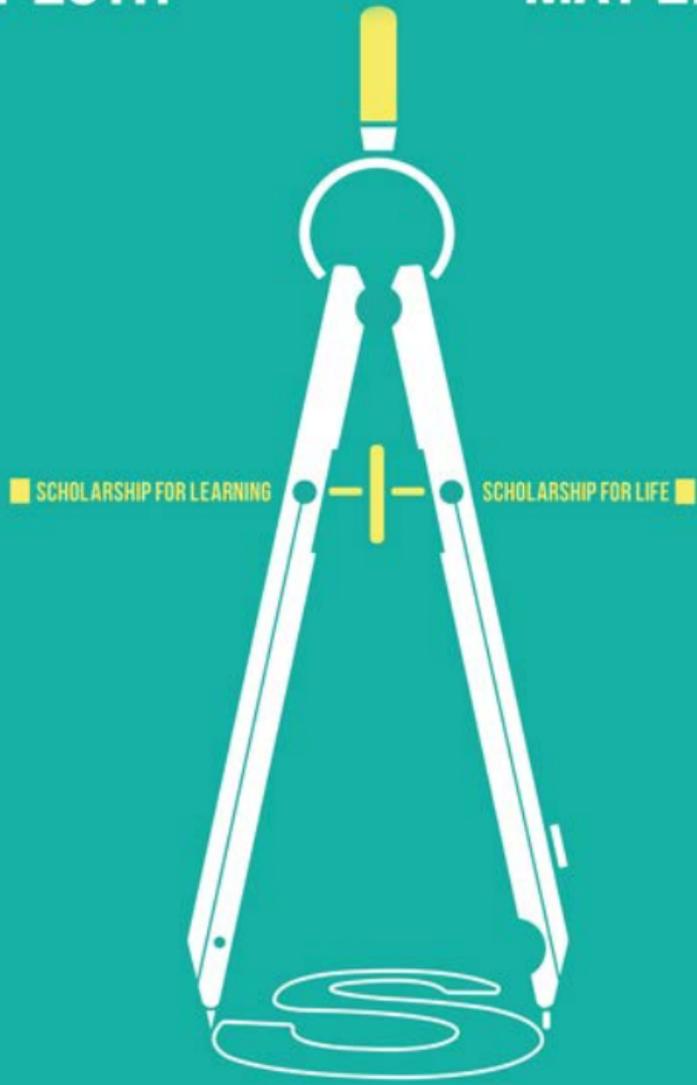


SOURCE 2016

PROGRAM AND PROCEEDINGS

MAY 18TH

MAY 19TH

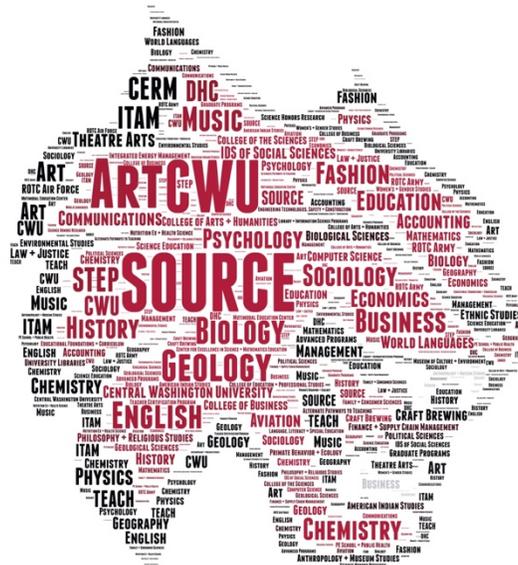


SOURCE 2016

SYMPOSIUM OF UNIVERSITY RESEARCH AND CREATIVE EXPRESSION

PROGRAM AND PROCEEDINGS

21ST ANNUAL CONFERENCE
MAY 18TH & 19TH, 2016



CELEBRATING EXCELLENCE IN RESEARCH, SCHOLARSHIP,
AND CREATIVE ACTIVITIES

CENTRAL WASHINGTON UNIVERSITY

SPONSORED BY

School of Graduate Studies and Research
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Domino's Pizza

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About SOURCE

This year, SOURCE celebrates the 21st year of annual multidisciplinary conferences dedicated to student scholarship at Central Washington University.

SOURCE is the longest-running student symposium in Washington State. The goals of SOURCE are to:

Celebrate the depth and diversity of scholarly inquiry and creative expression at Central Washington University.

Offer Students a professional forum in order to sharpen their presentation skills and communicate professional standards.

Promote students' professional development by providing evaluation and feedback on student presentations in accordance with rigorous professional expectations.

Promote excellence in pedagogy by providing an opportunity for faculty to mentor students through all the steps involved in presenting their work, including creating a research idea, designing and conducting research, and developing and delivering a presentation.

Create a sense of excitement about scholarship and promote life-long learning by encouraging people from within and outside the University to attend students' presentations and learn about current developments across multiple academic disciplines.

Foster partnerships between higher education, industry government, and the local community by inviting representatives from diverse fields to partake in evaluating student presentations.

Attract the attention of employers to the excellence of students at Central Washington University.

Allow opportunities for further development of mentoring relationships and skills.

Promotes a sense of community and inclusivity by encouraging students from all disciplines to participate and by recognizing that, while facilitating students' professional development is our priority, presentations by faculty and staff are welcome.

Elevate student accomplishment and recognize the excellence of undergraduate and graduate research at Central Washington University.

Recognize works of creative expression as valuable research activities with cultural significance alongside more traditional research.

Promote entrepreneurial spirit by encouraging students to develop and exhibit their business plans.

Educate the University, Town, and Region about the resources and work available through Central Washington University.

President's letter



May 13, 2016

On behalf of Central Washington University, I welcome you to the 2016 Symposium Of University Research and Creative Expression. SOURCE is CWU's largest, multidisciplinary event and is also the longest running university-associated student symposium in our state. This year marks a significant milestone, as it is our first two-day SOURCE. The growth of SOURCE has been nothing short of phenomenal in terms of both participation and attendees.

The first event, held 21 years ago, showcased the work of 23 undergraduate students. By 2015, that number had increased to 550 presenters and their work was seen by 4,300 attendees. Even more presentations, and attendance, is expect this year, which is the reason we have—by necessity—expanded to a two-day event. Actually, SOURCE is four days in length, as there are smaller, but no less important, companion events at our campuses in Des Moines and Lynnwood.

Regardless of location, SOURCE allows us to celebrate the tremendous quality, quantity, and diversity of creative achievements, research, and scholarship produced by our undergraduate and graduate students, faculty, staff, and alumni. There will be oral and poster presentations, along with performances involve the sciences, history, literature, and educational research, as well as creative writing, music, theatre, and art. SOURCE further sets itself apart through inclusion of area elementary, middle, high school, and Running Start students, along with community members, who take advantage of an atypical opportunity for them to also present their scholarly endeavors.

Through the years, SOURCE has relied on dedicated faculty and staff, who mentor students in research, scholarship, and creative projects; students who utilize their time, energy, and intellectual curiosity to complete projects; and committed university personnel and student volunteers who labor behind the scenes. Last year, 70 volunteers and more than 100 judges, who offered their invaluable professional feedback to our presenters, selflessly offered their time and expertise to facilitate SOURCE. We expect a like number this year and I want to express my gratitude to each and every one of them for their vital efforts.

As in past, SOURCE 2016 has received key contributions from administrators, notably Dr. Anne Egger; director of the Office of Undergraduate Research, and generous financial contributions from university academic and administrative units, individuals, and corporate and community sponsors. I also want to thank this year's 27-member SOURCE committee, comprised of faculty, staff, and students representing all areas of the university, which was chaired by Jamie Gilbert. I am very appreciative of its efforts. It is through such contributions that SOURCE is now routinely regarded as one of the premier events of its kind.

Again, welcome to SOURCE, a two-day community celebration of which we all can—and should—be very proud.

Sincerely,

James Gaudino
President

Office of the President

400 East University Way • Ellensburg WA 98926-7501 • Office: 509-963-2111 • Fax: 509-963-3206
Office location Barge Hall Room 314 • E-mail: CWU_President@cwu.edu • Web: www.cwu.edu/president

EEO/AA/TITLE IX INSTITUTION • FOR ACCOMMODATION E-MAIL: CDS@CWU.EDU

SOURCE KEYNOTE

THE FUTURE OF ENVIRONMENTAL LEARNING

SURC THEATRE, WEDNESDAY, MAY 18TH, 4:00 PM

Dr. Mitchell Thomashow is currently a Fellow at Philanthropy Northwest where he dedicates his time to promoting awareness of sustainability, community, and place. Thomashow devotes his life to promoting ecological awareness, sustainable living, creative learning, and improvisational thinking.



Sponsored by The Office of Undergraduate Research & SOURCE, and the Associate Provost's Office.

SOURCE KEYNOTE

THE IMPORTANCE OF CULTURALLY RESPONSIVE EDUCATION

SURC THEATRE, THURSDAY, MAY 19TH, 4:00 PM

Dr. Curtis Acosta has taught high school for nearly 20 years, in Tucson Arizona, where he has developed and taught for the renowned Mexican American Studies program. He is an award winning educator and has been featured in the documentary Precious Knowledge, The Daily Show with John Stewart, and his classes were subject of multiple profiles by CNN, The New York Times, and the Los Angeles Times amongst many other media outlets.



Sponsored by The Office of Undergraduate Research & SOURCE, and the Services & Activities Committee



We Congratulate All 2016 CWU Symposium of University Research & Creative Expression Participants!

Your curiosity, determination and hard work inspire us!

Through a unique, public-private partnership, Washington state is helping to grow a skilled, homegrown workforce who will foster innovation, drive our economy, and fuel a brighter future through the Washington State Opportunity Scholarship.

Scholars in the fields of STEM (science, technology, engineering and mathematics) and health care can receive up to **\$22,500** in scholarship funding as well as professional development and skills-building support.



2017-18 Application
Available January.
Learn more at
waopportunityscholarship.org



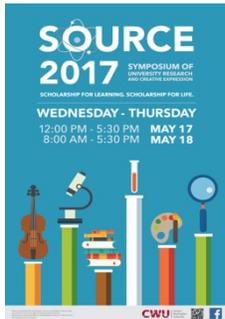
MANASTASH

MASS INCARCERATION: BLACK AND BROWN LIVES MATTER

CENTRAL'S STUDENT-RUN LITERARY MAGAZINE

AVAILABLE MAY 19TH

Come join us at SOURCE
12:40 - 2 p.m. SURC 301



**Don't forget to
vote for your
favorite poster
for SOURCE
2017!**

STUDENT-RUN,
AWARD-WINNING,

PULSE

MAGAZINE

VISIT US AT SOURCE TO
HEAR HOW IT'S ALL DONE.

MAY 19 2:10-3:30
SURC 301

DON'T FORGET TO CHECK OUT THE LATEST ISSUE
AND EXCLUSIVE CONTENT AT CWUPULSE.COM



CWU PULSE MAGAZINE

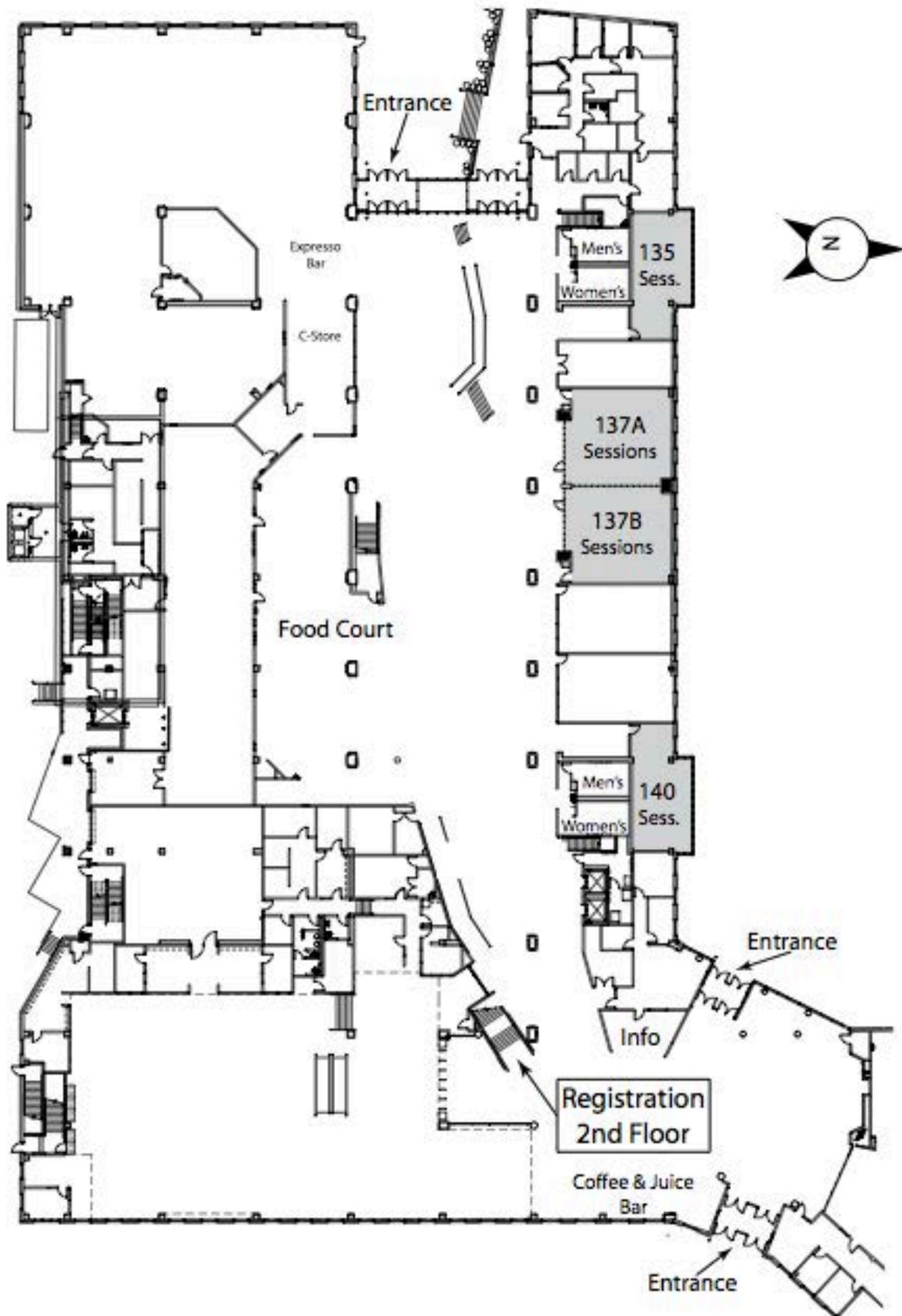


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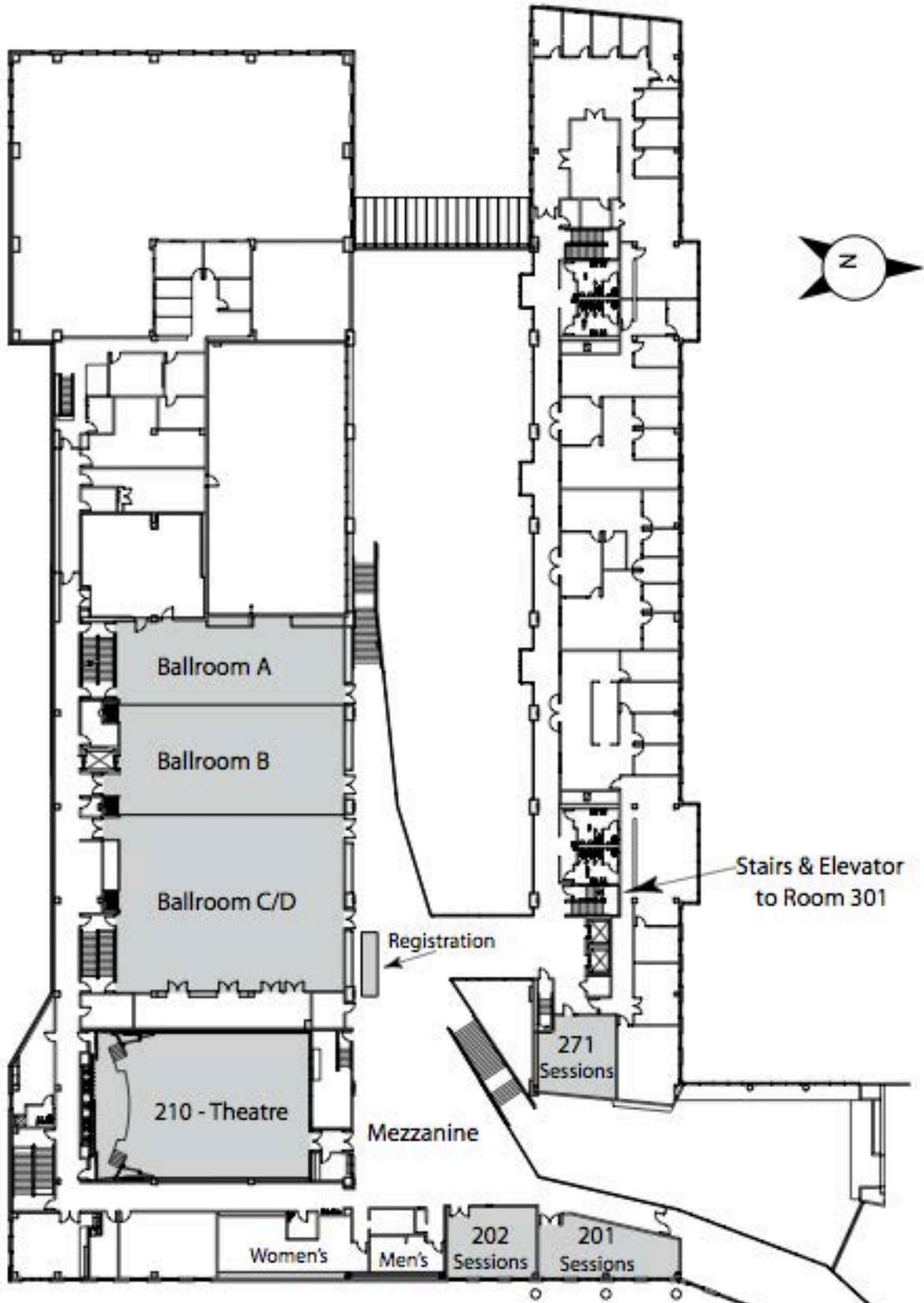
PULSEMAGAZINE

STUDENT UNION AND RECREATION CENTER MAP (First Floor)



STUDENT UNION AND RECREATION CENTER MAP

(Second Floor)



STUDENT FASHION SHOW

The CWU Apparel, Textiles and Merchandising program is proud to present THE FASHION SHOW, the 20th annual spring fashion show. Come see the latest trends featured in our ready-to-wear categories. Fourteen student designers will be presenting their original lines that feature an array of styles, details and textiles. Brought to you by the FCSA 381 Fashion Show Production class and original student designs created in FCSA 488 Fashion Line Development.

Featuring two shows on Saturday, June 4, at 3:00 p.m. (doors open at 2:00 p.m.) and 7:00 p.m. (doors open at 6:00 p.m.) in the Milo Smith Tower Theater in McConnell Hall on the CWU campus. A silent auction will precede each show with proceeds supporting next year's fashion show, student field experiences, and student scholarships. For more information email Professor Andrea Eklund at aeklund@cwu.edu. Show details can also be found on the Apparel, Textiles and Merchandising Facebook page.



BUSINESS PLAN COMPETITION

The Institute for Innovation and Entrepreneurship (I4IE) Business Plan Competition is generously sponsored by the Herbert B. Jones Foundation. All CWU students were encouraged to enter a business plan in the competition. Five finalists present their oral presentations at SOURCE. The 1st place winner will receive \$5,000, the 2nd place winner will receive \$3,000 and the 3rd place winner will receive \$2,000. The winners will be announced at the SOURCE awards ceremony on May 25 at noon in the SURC Pit.

JUDGES:

Sandy Wheeler – Serial Entrepreneur including; Trissity, Chapters, Bowflex
David McDonnell - SCORE Board Member, Retired Owner - Right hardware Co.
Doug Webster – Director of Product Development, Treetop
Bill Provaznik – Director, CWU Institute for Innovation and Entrepreneurship

MUSICAL WELCOME

With the mentorship of Dr. John Neurohr in the Music Department, the CWU Trombone Choir will usher in the Fashion Show on the SURC Mezzanine. The CWU Trombone Choir students frequently win awards and receive recognition at auditions, music festivals, and professional engagements. The CWU Trombone Studio is recognized as one of the preeminent collegiate trombone studios in the entire Pacific Northwest region. It currently boasts a large studio of 24 music majors, and consists primarily of undergraduate students. They just returned from performing in Arlington, VA. Learn more at: <https://www.cwu.edu/music/trombone-choir>



SCHOLARLY SHOWCASE

Interested in research opportunities or support for your research or scholarship at Central? Check out the following tables in the 1st floor during SOURCE (in the hallway parallel to the food court – next to US Bank):

- The Science Honors Research Program,
- The Academic & Research Commons at Brooks Library,
- ScholarWorks at Brooks Library
- William O. Douglas Honors College
- The Center for Excellence in Science and Mathematics Education (CESME)
- McNair Scholars Program
- Washington State Opportunity Scholarship
- Graduate Student Association
- Undergraduate Research Club
- The Primate Awareness Network.

PROGRAM AT A GLANCE

WEDNESDAY, MAY 18th, 2016

Room 135 Room 137A Room 137B Room 140 Room 201 Room 202 Room 271 Room 301 Ballroom B Theater Ballroom C/D

SOURCE HYPE throughout the first floor of the SURC

MUSICAL WELCOME & FASHION SHOW in the SURC PIT (Brand New this Year!)

11:00-12:00														
12:00-12:30														
12:30-12:40	10 MINUTE BREAK													
12:40-2:00	1													7
	COMPUTER SCIENCE													ART, MUSIC, WORLD LANGUAGES
2:00-2:10	10 MINUTE BREAK	Poster Session #1 & Creative Works 12:40-2:40												
2:10-3:30	8													14
	BUSINESS, ITAM													WORLD LANGUAGES DEPARTMENT ALUMNI
3:30-4:00	30 MINUTE BREAK													
4:00-5:00	KEYNOTE SPEAKER, DR. MITCHELL THOMASHOW in the SURC Theater*													

Dr. Mitchell Thomashow will speak about the Future of Environmental Learning. Thomashow is currently a Fellow at Philanthropy Northwest, with an emphasis on building social capital, intellectual leadership, and organizational effectiveness in promoting sustainability, community engagement, ecological awareness, diversity and inclusion, place-based solutions, public education, and the arts.

**The Keynote Speaker session will be live-streamed and recorded to facilitate viewing by online students*

POSTER SESSION #1 – TOPICS:

- BUSINESS
- ECONOMICS
- COMPUTER SCIENCE
- NUTRITION, EXERCISE, & HEALTH SCIENCES
- PHYSICAL EDUCATION, SCHOOL, & PUBLIC HEALTH

CREATIVE WORKS:

- ART
- APPAREL, TEXTILES, & MERCHANDISING
- MUSIC

PROGRAM AT A GLANCE – THURSDAY, MAY 19th, 2016

	Room 135	Room 137A*	Room 137B	Room 140	Room 201	Room 202	Room 271*	Room 301	Ballroom B	Theater	Ballroom C/D										
8:00-8:30											Poster Set-Up										
8:30-9:40											Poster Set-Up										
9:40-11:00	16	17	18	19	20	21	22	15	23	24	Poster Session #2 8:30-10:30										
												PRIMATE BEHAVIOR & ECOLOGY	LAW & JUSTICE: MASS INCARCERATION PANEL	BIOLOGY	NUTRITION, EXERCISE, AND HEALTH SCIENCES	MATH, ECONOMICS	AEROSPACE STUDIES	PSYCHOLOGY, SOCIOLOGY	BUSINESS PLAN COMPETITION (9:00-12:00)	WORLD LANGUAGES: AMERICAN SIGN LANGUAGE	THEATRE ARTS
11:00-11:10											Poster Set-Up										
11:10-12:30	25	26	27	28	29	30	31		32	33	Poster Session #3 & Constructed Objects 11:00-1:00										
	HISTORY: FOOD PANEL	LAW & JUSTICE: SUPREME COURT PANEL	BIOLOGY	CHEMISTRY	GEOGRAPHY	AEROSPACE STUDIES	PSYCHOLOGY		THEATRE ARTS	THEATRE ARTS, FILM & VIDEO STUDIES											
12:30-12:40											Poster Set-Up										
12:40-2:00	34	35	36	37	38	39	40	41	42	43	Poster Set-Up										
	HISTORY	POLITICAL SCIENCE: COMPARATIVE POLITICS PANEL	ANTHROPOLOGY & MUSEUM STUDIES, RESOURCE MANAGEMENT	CHEMISTRY	PHYSICS, GEOLOGY	AEROSPACE STUDIES	PHILOSOPHY & RELIGIOUS STUDIES	MANASTASH	DANCE PERFORMANCE & EDUCATION	FILM & VIDEO STUDIES											
2:00-2:10											Poster Session #4										
2:10-3:30	44	45	46	47	48	49	50	51		53	Poster Session #4 1:30-3:30										
	HISTORY	POLITICAL SCIENCE: LATINO STUDIES PANEL	ANTHROPOLOGY & MUSEUM STUDIES, AFRICANA & BLACK STUDIES	BIOLOGY	MATH & SCIENCE EDUCATION, PESH	ENGLISH: TRANS-NATIONAL LITERATURE PANEL	ENGINEERING TECHNOLOGY, SAFETY & CONSTRUCTION	PULSE													
3:30-4:00																					
4:00-5:00																					
	KEYNOTE SPEAKER, DR. CURTIS ACOSTA in the SURC Theater* Dr. Curtis Acosta will speak about Culturally Responsive Education. Acosta is a former Tucson, AZ, schoolteacher who developed and taught a Mexican American studies curriculum. He now advises other communities on developing Mexican American and ethnic-studies programs through the Xicano Institute for Teaching and Organizing.																				
	<i>* All sessions in room 137A and 271 and the keynote Speaker session will be live-streamed and recorded to facilitate viewing by online students</i>																				
	POSTER SESSION #2 – TOPICS: BIOLOGY CHEMISTRY ENVIRONMENTAL STUDIES GEOGRAPHY GEOLOGICAL SCIENCES RESOURCE MANAGEMENT					POSTER SESSION #3 – TOPICS: ENGINEERING TECHNOLOGIES, SAFETY, & CONSTRUCTION PHYSICS MATHEMATICS ANTHROPOLOGY & MUSEUM STUDIES CULTURE & RESOURCE MANAGEMENT PRIMATE BEHAVIOR & ECOLOGY					POSTER SESSION #4 – TOPICS: COMMUNICATION EDUCATIONAL FOUNDATIONS & CURRICULUM ETHNIC STUDIES FAMILY AND CONSUMER SCIENCES HISTORY LAW & JUSTICE POLITICAL SCIENCE PSYCHOLOGY SOCIOLOGY	MUSIC PERFORMANCE 52 WILL BE HELD IN THE MUSIC BUILDING CONCERT HALL FROM 9:40 – 11:00 am									
	ELLENSBURG HIGH SCHOOL WALTER STROM MIDDLE SCHOOL																				

Monday, May 16

SOURCE at the Des Moines Center
Higher Education Center (Building 29)

Poster Session – 5:00–8:00 pm

Lobby

- 1 "Egg" cellent Egg Strength *Alexandra Chipman*
- 2 Global Climate Change: Public Perception of Scientific Reality *Josue Chavez, Trevor Carslay*
- 3 Heating a home using compost *Valdemar Lodholm*
- 4 Socioeconomic Segregation and the Location of Assisted Living Facilities in WA State *Miranda Anderson*
- 5 Uneven development and Community Development Block Grants *Stefan Turner*
- 6 What do theocracy and democracy have in common? *Khodadad Kaviani*

Tuesday, May 17

SOURCE at the Lynnwood Center
Snoqualmie Hall

Poster Session – 5:00–8:00 pm

Lobby

- 1 Implementation Life Cycle of Management Information Systems *Sara Ciuk, Jared Gunderson, Jessica Berg, Ferdinandus Haris*
- 2 Analyzing Natural Disaster Risk for Supply Chain Operations *Van Huynh, Todd Jewell, Matthew Holland*
- 3 The Impact of Globalization on Supply Chain *Karma Lhaden, Zhihong Lin, Kelvin Kwandy*
- 4 Fender's Built-to-Order strategy *Jacob West-Ugartechea, Larry Thompson, Joshua Reichert*

Wednesday, May 18

Opening Event

12:00–12:30 PM **Musical Welcome and Fashion Show** **SURC Pit**

Workshops

12:40–2:00 PM **How to get started in research and scholarly work** **Room 301**

During this workshop, you will learn what it means to “do research” in any field, describe your own interests and where they might take you in scholarly work, practice strategies for approaching potential faculty mentors, and learn about opportunities for funding your work and travel to present your work. Appropriate for students at all levels, from freshman to seniors.

2:10–3:30 PM **Writing the statement of purpose for graduate school applications** **Room 301**

In this workshop, we will have a general introduction about applying to grad school and the nature of the statement of purpose. Then we will practice writing and give feedback to each other in disciplinary sub-groups. You will leave the workshop with the beginnings of your graduate school application and strategies for writing and getting feedback.

Alumni Panels

2:10–3:30 PM **English Department Alumni Panel** **Room 140**

Five recent English Alumni will discuss their developing careers. Because they are successfully negotiating today’s job market, they have valuable insights for our current students.

2:10–3:30 PM **Philosophy and Religious Studies Alumni Panel** **Room 201**

Whether you intend to pursue a career in academia, law, or public service, these graduates know how to navigate the challenges of your chosen path. Join us for an entertaining and candid conversation about how you can put your philosophy degree to work

2:10–3:30 PM **Life & Work after Graduation: Advice from Communications Alumni** **Room 202**

A goal of the panel is to give advice to our communication students about what they can do to prepare for what happens after graduation from Central. Panelists will tell their own stories and talk about things they wish they had known when they were a student but no one ever told them.

2:10–3:30 PM **Life & Work after Graduation: Advice from WL Alumni** **Theater**

The speakers will talk about the value of their WL degree(s) (Spanish, Japanese, and French) for work and life. They may tell their own story and talk some about things they wish they had known when they were students but no one ever told them.

Keynote Speaker

4:00–5:00 PM **Mitchell Thomashow: *The Future of Environmental Learning*** **Theater**

Environmental Learning is at a crossroads. How do campuses and communities address the extraordinary environmental challenges of the next several decades?

Oral Sessions – 2:10–3:30 pm

Session 8: BUSINESS and ITAMChair: *Chet Claar***Room 135**

- 2:10 PM Is Your Identity Protected? *Jackson Muhirwe*
 2:30 PM College of Business Methods of Recruiting Female Students *Mallory Icenhower, Richard Miller, Marisol Sanchez, Monica Alcantar-Castro, Cherelle Demps*

Session 12: LIBRARY AND INFORMATION SCIENCEChair: *Maureen Rust***Room 271**

- 2:10 PM Demystifying the Research Process *Sean Lind, Elizabeth Brown*
 2:30 PM Getting to Know Altmetrics *Julie Carmen*
 2:50 PM Reflecting the diversity of Hispanic cultures in children's and young adult collections
Ginny Blackson

Poster Session 1 – 12:40–2:40 pm

Room 137A & B

- 1 Millennials and the Workforce *Carina Ulkekul*
 2 Does diversity within top management teams lead to a better performance for multinational firms?
Myles Wesener
 3 An Analysis of Union Growth and Future Trends *Emily King*
 4 IHS Tour of Israel 2015 *Ben Harbaugh*
 5,6 Intertwined: Art and Chemistry (II) *Tarra Hall*
 7,8,9 The Nature of Our Nature *Krista Zimmerman*
 10 Blood Lactate and Ventilatory Responses to Shallow-Water Exercise In Males *Jerusalem Tesfaye, Mitchell Fisher, Michael Dohrman, Karen Roemer, Debra D'Acquisto*
 11 Anomalous arterial pattern of human upper limb: A cadaver case study *Joseph Galindo*
 12 Applying machine learning to predict stock value *Joseph Lemley, Yishui Liu, Dipayan Banik, Sadia Afroze*
 13 Washington State Public School Bus Fuel Conversion Possibility *Connor Courtney*
 14 Equilibrium Pricing in Cherry Markets *Foster Peebles*
 15 Economic Research on US Debt, Common Stock and Welfare *Rachel Mahnke, Cassie Koefod, Connor Courtney*
 16 Progressive Discipline *Meghan Caldwell*
 17 Wage and Hour Violations *Erin Wieldraayer*
 18 Social Media and the Hiring Process *Sarah McCafferty*
 19 Benefits and barriers of the harm reduction approach for injection drug users. *Arianne Sandel*
 20 Investigating the Effects of Oliggo-Fiber Inulin on Chocolate Fudge Brownies *Katie St John, Rotana Radwan, Sandra Valencia*
 21 The Effects of Using JustFiber® White Wheat Fiber to Increase the Servings of Fiber in Duncan Hines Moist Deluxe Carrot Cake *Carl Bender, Madison Henke, Lauryn Searles*
 22 The Effect Of Farm-To-School Participation On Childhood Obesity *Hannah Brzozowski, Nicole Stendell-Hollis, Dana Ogan, Tim Englund*
 23 What's For Lunch In Chennai, India! *Alejandra Calderon, Heather Gerrish, Hannah Brzozowski*
 24 Nutrient Intake of Elite Canadian and American Athletes with a Spinal Cord Injury *Heather Gerrish, Kelly Pritchett, Dana Ogan, Robert Pritchett*
 25 Heart rate and metabolic response to head-out water immersion in humans *Michael Dohrman, Mitch Fisher*

- 26 Emulsified Mint Cod Liver Oil is an Acceptable Source of Vitamin D in Boxed Brownies *Anna Eide, Katelyn Newkirk, Hannah Hugo*
- 27 Cardiometabolic responses to self-regulated shallow water exercise: A gender comparison *Mitchell Fisher, Debra D'Acquisto, Karen Roemer, Jerusalem Tesfaye, Michael Dohrman*
- 28 Tierra De Sienna *Briana Nelson*
- 30 Spirit High *Amanda Fronckowiak*
- 31 Alcohol consumption and use of protective behaviors among Central Washington University students: Are there any gender differences? *Marie Betts, Jill Hoxmeier*
- 32 Assessing the Need for Chemical Dependency and Co-occurring Mental Health Needs on Campus *Marie Betts*
- 33 Sustainability of Plastic Water bottles on the CWU Campus *Kimberly Todd*
- 34 Stopping Female Genital Cutting in Nigeria *Nicole Field*
- 35 Foodborne Illness: Salmonella Heidelberg Causes Multistate Outbreak in the United States *Yarizel Herrera*
- 36 Religiosity and Health *Katie Kleeberger*

FASHION SHOW POSTERS

- 37 TRI *Thomas Waldron*
- 39 Kingly *Emily Olson*
- 40 Novia *Maria Zepeda*
- 42 The Jungle Book *Jesse Leaupepe*
- 43 Veni Vidi Vici *Emma Mahr*
- 45 In Defense Of Being Average *Tina Beamon*
- 46 Tierra Ajena *Yoalis Perez*
- 48 Serendipity *Lauren Abrams*
- 49 Modern Heroine *Justyna Henderson*
- 51 Flannel Outbreak *Joshua Perez*
- 52 Set the Tone *Alissa Leach*
- 54 Skye *Rachael Wescott*

Thursday, May 19

Business Plan Competition – 9:00 am–12:00 pm

Finalists:	Kevin Kalb	<i>Fire</i>	Room 301
	Zach Howard, Alex Thiong'o, Samuel Mariga, & Tyler Lehto	<i>Flightbites</i>	
	Sy Danton	<i>AutoMed</i>	
	David Swanson	<i>Lapsea</i>	
	Sydney Edmundson & Ivan Villareal	<i>Crunch-Time</i>	
	Clayton Webster	<i>Mobile Mocha</i>	

Oral Sessions – 9:40–11:00 am

Session 16: PRIMATE BEHAVIOR & ECOLOGY	Chair: <i>Lori Sheeran</i>	Room 135
9:40 AM	Seasonal Differences in the Intestinal Parasites of the Saddleback Tamarin (<i>Saguinus weddelli</i>) <i>Krista Banda</i>	
10:00 AM	Human-Monkey Interactions: 12 Years of Fieldwork on Tibetan Macaques at the Valley of the Wild Monkeys, Mt. Huangshan, China <i>Lori Sheeran</i>	
10:20 AM	Play in immature Tibetan macaques: Location preference and causes of bout termination at Mt. Huangshan, China <i>Kaitlin Wright</i>	
10:40 AM	A comparison of social behaviors of Tibetan macaques (<i>Macaca thibetana</i>) near provisioned food sources and natural food sources <i>Brianna Voight</i>	
Session 17: MASS INCARCERATION PANEL	Moderators: <i>Chuck Reasons, Roger Schaefer</i>	Room 137A
9:40 AM	Mass Incarceration, Race, and the War on Drugs <i>Jordan Segura-Mitchell, James Segura-Mitchell</i>	
10:00 AM	Economics of Mass Incarceration <i>Christine De Leo</i>	
10:20 AM	La Familia Latina and Mass Incarceration <i>Ashley Garcia</i>	
10:40 AM	Collateral Consequences of Mass Incarceration <i>Hauke Harfst, Nina Caldwell</i>	
Session 18: BIOLOGY	Chair: <i>Paul James</i>	Room 137B
9:40 AM	Autumn floods and winter snow: Understanding seasonal movement and habitat use of resident Westslope Cutthroat Trout in Cascade mountain streams <i>Chas Lawson</i>	
10:00 AM	Seasonal Microhabitat Selection of Young-of-the-year Bull Trout, <i>Salvelinus confluentus</i> , in a Drought Year <i>Ashton Bunce</i>	
10:20 AM	Testing the forage selection of the American pika (<i>Ochotona princeps</i>) to advise vegetation plans for connectivity corridors <i>Carly Wickhem, Kristina Ernest, Lisa Shipley</i>	
10:40 AM	Natural History of a Terrestrial Turtle (<i>Rhinoclemmys rubida perixantha</i>) in a Tropical Dry Forest <i>Taggart Butterfield, Daniel Beck</i>	
Session 19: NUTRITION, EXERCISE, & HEALTH SCIENCES	Chair: <i>David Gee</i>	Room 140
9:40 AM	Obesity and Related Risk Factor Prevalence Among Ethnic Groups in the United States <i>Kayla Thomas</i>	
10:00 AM	A Better Anthropometric Index of Abdominal Obesity and its Association on the Prevalence of Diabetes among Asian Americans <i>Yu Xiao</i>	
10:20 AM	Carbohydrate Mouth Rinse and High Intensity Intermittent Exercise <i>Garet Simpson</i>	
10:40 AM	Effects of Oversized Running Shoes on Sagittal Plane Kinematics and Kinetics during Running <i>Kevin Aubol</i>	

Session 20: MATH & ECONOMICS Chair: *Dominic Klyve* **Room 201**

- 9:40 AM An Analysis of The Mathematical Relation between Major and Minor Triads *Linzy Mutch*
 10:00 AM Ellensburg Weather: A Time-Series Forecasting Model *Madelyne Weber*
 10:20 AM The Economic Impact of the Exempt Water Well Moratorium and Creation of Water-Banks in Kittitas County *Kaleb Javier*
 10:40 AM A Comparison of Implied Risk Free Rates and Treasury Rates *Jesse Wehlast, Anthony Fish, Arjun Thapar*

Session 21: AEROSPACE STUDIES Chair: *Amber Johnson* **Room 202**

- 9:40 AM How President Lincoln's Leadership Traits Apply to Modern Day Leaders *Lianne Nguyen, Kylee Garcia*
 10:00 AM The Military and Leadership Legacy of Alexander the Great *John Gossett, Ben Drake*
 10:20 AM General Robin Rand: How his leadership style affects those around him *Andres Velez, Sarah Beck, Alex Renfrow*

Session 22: PSYCHOLOGY & SOCIOLOGY Chair: *Susan Lonborg* **Room 271**

- 9:40 AM Effect of Prior Trauma Exposure on Alpha Amplitude, Heart Rate, and Self-Reported Negative Affect *Gina DeNoble, Chris Buchanan, Susan Lonborg*
 10:00 AM The Effects of Sexism on Working Memory Performance in Women *Sydney Jensen*
 10:20 AM Differences in College Students' Attitudes towards Heterosexual and LGBT Homeless Youth *Jonathan Clinkenbeard*
 10:40 AM Relationship Ties In College Students *Alicia Brito*

Session 23: AMERICAN SIGN LANGUAGE Chair: *Jer Loudenback* **Ballroom B**

- 9:40 AM Feast Your Eyes! *Two performances in American Sign Language (ASL)*
 The Five Chinese Brothers *Selena Addison, Veronica Benavides, Mykaela Catano-Lee, Ariana Cooks, Megan Courter, Sarah Foy, Lacey Goldsby, Amanda Huffstetler, Brittany Lancaster, Austin Lowell, Megan Macarthur, Meghan Osborn, Bailee Rogers, Mitchell Vanderman, Taylor Vetter*
 Individual Creative Works *Micaela Clark, Micaiah Davis, Celena Gilbert, Kaiti Klepec, Laura Leist, Stephanie Main, Meghan Osborn, Kaleb Payne, Vianey Rivas*

Session 24: THEATRE ARTS Chair: *Geraldine O'Mahony* **Theater**

Each presentation in this session is 40 minutes.

- 9:40 AM Love Transcends *Ryan Anderson*
 10:20 AM Montjoie Palestine *Jordan Talbot, Carmen Taylor Uding, Hannah Chandley, Shawn Kaufman, Sarah Hoot*

Session 52: MUSIC PERFORMANCE Chair: *Gayla Blaisdell* **Concert Hall, Music Building**

- 9:40 AM A Romantic Interpretation of J.S. Bach's *Contrapunctus I* from *The Art of Fugue* *Sami Abdul-Wahid*
 10:00 AM Creating and Performing a Composition for Tuba and Piano *Joel Ragona*
 10:20 AM Becoming a Queen: The Analysis and Interpretation of Libby Larsen's *Try Me, Good King* *Caitlin Stave*
 10:40 AM Jack of All Trades *Sabrina Juhl*

Oral Sessions – 11:10 am–12:30 pm

Session 25: Apples, Sugar & Jail Food: The Business & Politics of Food Mod: *Marji Morgan* Room 135

- 11:10 AM Apples to Apples: How the Washington Apple Industry took control of the national apple market between 1950 and 1960 *Kyle Scott*
- 11:30 AM The Impact of American Sugar Interests in Hawaii *Grant Harley*
- 11:50 AM Wartime Jail Food *Kaycee Jackson*

Session 26: SUPREME COURT PANEL Moderator: *Robert Claridge* Room 137A

- 11:10 AM Evolving Sense of Justice: *Montgomery v. Louisiana* *Kailey Anthony*
- 11:30 AM *Betterman v. Montana* *Elizabeth Sayre*
- 11:50 AM The Stop and a Warrant: Which Comes First? *Utah v. Strieff* *Katie Carnell*
- 12:10 PM *Weary v Cain: The Supreme Court's New Direction* *Thomas Burford*

Session 27: BIOLOGY Chair: *Lucinda Carnell* Room 137B

- 11:10 AM Expression of Claudin Genes in Polycystic Ovarian Syndrome *Sean Gadson*
- 11:30 AM Developing a worm model to study effects of serotonin selective reuptake inhibitors on behavior *Tykayah Baird*
- 11:50 AM The development of eDNA sampling for use in surveying Oomycetes for amphibian and fish conservation using nanopore sequencing *Doug Bennett*
- 12:10 PM An Extendable Software Package for Determining the Effects of Developmental Interactions on Evolutionary Trajectories *Elizabeth Brooks, Filip Jagodzinski*

Session 28: CHEMISTRY Chair: *Dion Rivera* Room 140

- 11:10 AM Effect of Various Parameters on Bromate Formation During Drinking Water Ozonation *Gaheishi Aldowis*
- 11:30 AM Dose-Dependent Inhibition of Succinoxidase by Buckminsterfullerene (C₆₀) *Juan Flores, Carin Thomas, Zach Miller*
- 11:50 AM Rethinking the rainbow: Utilizing a classic pH demo for ocean acidification education *Eamonn Clarke*
- 12:10 PM Kinetic decay of a polymer/ink complex as an oxygen indicator *Becca Hoene*

Session 29: GEOGRAPHY Chair: *Megan Walsh* Room 201

- 11:10 AM Using ESRI Story Maps to Present Spatial Temporal Information *Trinity Turner*
- 11:30 AM Water Stress and Mitigation in the Thames River Basin *Megan Cline*
- 11:50 AM Why Now? A case study of split estate and fracking activity in Garfield County, Colorado *Janessa Zucchetto, Elvin Delgado*
- 12:10 PM Two Holocene sagebrush-steppe fire records at the wildland-urban interface, eastern Cascades, WA *Dusty Pilkington*

Session 30: AEROSPACE STUDIES Chair: *William Phipps* Room 202

- 11:10 AM Professionalism as an essential component to effective leadership *Reid Eliason, Christina Black*
- 11:30 AM The Importance of Effective Conflict and Change Management in a Military Environment *Reed Lefler, Brandon Tucker, William Eris*
- 11:50 AM Importance of Mentorship *Brian Anker*

Session 31: PSYCHOLOGYChair: *Marte Fallshore***Room 271**

- 11:10 AM Reliability and Validity of the Circumplex Religious Orientation Inventory (CROI) *Steven Isaak, Jesse James, Mary Radeke*
- 11:30 AM Does the Safe Space Project Create Safe Spaces for Latinx Students? *Ayla Medina Ulloa*
- 11:50 AM Addressing HIV/AIDS Stigma at the Community Level *Katie Kleeberger*
- 12:10 PM College Students' Perceptions of Rape *Dorothy Moore, Marte Fallshore*

Session 32: THEATRE ARTSChair: *Jay Ball***Ballroom B**

- 11:10 AM Destroying Christian Masculinity on Sarah Kane's *Blasted* *Elba Sanchez*
- 11:30 AM Muse on the Margins: Rediscovering the Plays of Sor Juana Inés de la Cruz *Kevan Gardner*
- 11:50 AM Finding Frank: Searching for a Coded Surrogate in Tennessee Williams' *In the Bar of a Tokyo Hotel* *Robert Hanson*
- 12:10 PM A Refined Fête: Edgar Allan Poe's Application of Mikhail Bakhtin's *Carnavalesque* *Alexis Renfro*

Session 33: THEATRE ARTS/FILM & VIDEO STUDIESChair: *Jennifer Green***Theater**

- 11:10 AM Gamer Girl: A Student Driven New Work *Ashley Baker, Zachary Mysliwicz, Megan Courter, Wayne Ogle, Greg Scheopner*
- 11:50 AM Evolution of Film Criticism *Bailee Wicks*
- 12:10 PM Portrayals of Trans Characters in Pedro Almodovar's Cinema: From *Law of Desire's* Tina Quintero to *All About My Mother's* Agrado *Sarah Clinger*

Oral Sessions – 12:40–2:00 pm

Session 34: HISTORYChair: *Jason Knirck***Room 135**

- 12:40 PM Skinned Shin in the Kootenai War: Violent Rhetoric in A Peaceful Conflict *Patience Collier, Catherine Graham*
- 1:00 PM Fish Heads and Fishing Strikes: Cultural and Economic Agency of Native Women in Northwest Salmon Canneries *Patience Collier*
- 1:20 PM Fidel Castro and Los Barbudos: How Facial Hair Became the Symbol of a Revolution *Luke Pearsons*
- 1:40 PM Stalin's identities *Sophie Andarovna*

Session 35: COMPARATIVE POLITICS PANELModerator: *Gilberto Garcia***Room 137A**

- 12:40 PM Great Britain vs. Ireland: Who is the Stronger State? *Sydney Sullivan*
- 1:00 PM Israel and New Zealand: A Comparison of Two Parliamentary Democracies *Katie Klein*
- 1:20 PM Comparative Politics: Cuba and Venezuela *Elvia Verduzco*

Session 36: ANTHROPOLOGY & MUSEUM STUDIES, REMChair: *Mark Auslander***Room 137B**

- 12:40 PM Narrative Seductions: Myth, Magic, and the Missing Audience *Nicolas Crosby*
- 1:00 PM Engaged Buddhism and a Universal Climate Change Ethic *James King*
- 1:20 PM Parrots: The Dinosaurs That Forgot To Die *Katie Childs*
- 1:40 PM Sustainable Safari Practices: Education, Impacts and the Quality of Experience *Ryan Tarver, Ken Cohen*

Session 37: CHEMISTRY Chair: *Todd Kroll* Room **140**

- 12:40 PM Progress toward Aza-decannulation by Four-Carbon Homologation *Jonathan Adams*
 1:00 PM Oxo-amination of highly functionalized heterocycle-bearing alkenes *Andrian Basargin*
 1:20 PM An Investigation of Anthelmintic Components of *Dalea pogonathera* (Fabaceae) *Haley Wolhart, Blaise Dondji, Kaitlin Deardorff*
 1:40 PM Identification of proteins that interact with neocortical arealization factor Emx2 *Cody Gillman*

Session 38: PHYSICS & GEOLOGY Chair: *Erin Craig* Room **201**

- 12:40 PM General Relativity and Cosmological Models *Jason Arakawa*
 1:00 PM Runaway Stars as a Possible Source of the Elliptical Ring Structure in NGC 7538 *Jason Arakawa*
 1:20 PM Computational model of microtubule transport in axons *Howard Yeung, Anand Rao, Nathan Kuwanda, Peter Baas*
 1:40 PM Communicating seismic hazards to the Ellensburg community *Eamonn Clarke*

Session 39: AEROSPACE STUDIES Chair: *Amber Johnson* Room **202**

- 12:40 PM Ethical Leadership within the Military *Anna Morris*
 1:00 PM The Effect of Motivation in Leadership *Robert Savino, Ariana Linse, Scott Leeming*
 1:20 PM How do Ethics Impact Leadership in the USAF? *Drew Houghton*
 1:40 PM Motivational Theory and its applicability in real world experiences *Alexander Mathison, Omar Freemire, Thomas Lenell*

Session 40: PHILOSOPHY & RELIGIOUS STUDIES Chair: *Matthew Altman* Room **271**

- 12:40 PM The Art of Well-Regulated Freedom: Rousseau and Cortázar *Braden Goveia*
 1:00 PM Issues of Identity for the Human Person *Zachary Korsgaard*
 1:20 PM What's Wrong With Morality *Alysia Rogers*
 1:40 PM Ecofeminism: The Link between Women and Nature *Jacquelyn Stroud*

Session 41: MANASTASH SHOWCASE Chair: *Xavier Cavazos* Room **301**

Presenting works from: *Ryan Bailey, Donson Curtiss, Shaylynn Gould, Emily James, Haley Lindsley, Jennifer Marsh, Tranell Mayfield*

Session 42: DANCE PERFORMANCE/EDUCATION Chair: *Therese Young* Room **Ballroom B**

- 12:40 PM Life, After, A Dance Requiem: The process of writing and producing a work for dance *Krista Connelly*
 1:00 PM Convolutions *Jacquelyn Johnson*
 1:20 PM History of Teacher Education: A Reader's Theatre *Sharryn Walker, Brita Williams, Susana Flores, Ian Loverro, Janet Finke*

Session 43: FILM & VIDEO STUDIES Chair: *Melissa Johnson* Room **Theater**

- 12:40 PM The Evolution and Application of Violence in Cinema *Jacob Heflin*
 1:00 PM Gender and Genre *Kristen Moerdyk*
 1:20 PM "Friends" and Television's Cultural Influence on America in the 1990s *Brily Walked*
 1:40 PM Buster Keaton's Comedic Innovations *Tyler Templeton*

Oral Sessions – 2:10–3:30 pm

Session 44: HISTORYChair: *Brian Carroll***Room 135**

- 2:10 PM The Buddha's Basic Teachings and Pedagogy *Hideki Takei, Yoko Allen*
 2:30 PM Reasserting Masculinity in Colonial Uganda: Kabaka Mwanga II and his fight against the British
Haleigh Downing
 2:50 PM American Cinema in the 1950s in relation to conformity and the real/ideal *Claudia Trevitt*
 3:10 PM At Home on Land and at Sea: Nineteenth Century American Sailors' Tattoos as Evidence of
 Sailors' Dual Cultural Membership *Pamela Stephenson*

Session 45: LATINO STUDIES PANELModerator: *Gilberto Garcia***Room 137A**

- 2:10 PM Liberation Theology: A Theology for the People *Omar Manzo*
 2:30 PM Comparative Study of Health Care Systems in Cuba and Mexico *Estela Cervantes*
 2:50 PM Recruitment Policies For Latino Collage Students *Deysi Contreras*
 3:10 PM US Hispanic Leadership Institute: Educate, Inspire, and Advocate in the Latinx Community
Maira Gutierrez, Cruz Juarez, Adriana Guijarro, Yazmin Aguilar, Armando Ortiz

Session 46: ANTHROPOLOGY/BLACK STUDIESChair: *Mark Auslander***Room 137B**

- 2:10 PM Queer Modifications *Nicole Phillips*
 2:30 PM 10 Years of Service: Subversion of the American Dream and Working-Class Ideology Through
 Punk Rock *Elizabeth Seelye*
 2:50 PM Field Work among Q'eqchi' Mayas in Semuc Champey, Alta Verapaz, Guatemala *YiShan Lea*
 3:10 PM Multicultural and Trapped *Sayana Lombard-Chappell*

Session 47: BIOLOGYChair: *Robert Weaver***Room 140**

- 2:10 PM Extracts of the plant *Dalea* spp. are active against the Hookworm, *Ancylostoma Ceylanicum*
Brianda Cardenas, Blaise Dondji, Gil Belofsky
 2:30 PM *Ex vivo* Assessment of the anthelmintic activity of Natural Plant Products on Hookworm
Kaitlin Deardorff, Kiah Jones, Brianda Cardenas, Shannon Fulkerson, Cassandra Ripley
 2:50 PM *Trypanosoma cruzi*: Vectors, parasite strains, and hosts within the dry tropical forest in Jalisco,
 Mexico *Uyen Nguyen, Daniel Beck, Analiese Wenger*
 3:10 PM Range expansion of an introduced population of checkered whiptail lizard (*Aspidoscelis*
neotessealta) in Grant County, Washington *Robert Peterson, Dawn Snow, James Walker*

Session 48: MATH, SCIENCE, & HEALTH EDUCATIONChair: *Jill Hoxmeier***Room 201**

- 2:10 PM Studying Engagement based on the Math Activity of Set *Kassandra Guajardo, Brandy Wieggers*
 2:30 PM Science Education Through Online Video *Trevor Taylor*
 2:50 PM Parent-child communication about sexual health issues: What we know and what we need to
 know *Lindsey Bates*
 3:10 PM Use of alcohol among college students: Do student athletes at CWU drink more than non-
 student athletes? *Kelly Cronic*

Session 49: TRANSNATIONAL LITERATURE PANELChair: *Paulus Pimomo***Room 202**

- 2:10 PM Trade and Tourism in Aphra Behn's *Oroonoko* *Anne Dennon*
 2:30 PM Rita Dove's *The Darker Face of the Earth*: Dismantling Slavery from the Inside *Elliot Staats*
 2:50 PM Nadine Gordimer's *The Pickup*: A Counter-Colonial Journey into the Arab World *Alexis*
Renfro

Session 50: ENGINEERINGChair: *Greg Lyman***Room 271**

- 2:10 PM Occupational Safety and Health Educators Salary and Qualification Survey *Sathyarayanan Rajendran, Zack VanZanten, Dan Dorn*
- 2:30 PM Hogue Wind Turbine Monitoring System *Michael Waytuck*
- 2:50 PM Associated Schools of Construction Student Competition: Team Preparation and Benefits to the Careers of Participants Now Employed *David Carns, Warren Plugge*
- 3:10 PM Cyber Security Awareness *Toni Hunt*

Session 51: PULSE SHOWCASEChair: *Jennifer Green***Room 301**

- 2:10 PM Finding the Pulse of Print: How the Student Staff of Pulse Magazine Made the Transition from Online to Print *Angelica Bartorelli, Bailey Williams, Brielle Rutledge, Mackenzie Loete, Vanessa Cruz, Heidi Thaemert, Ashytn Mann, Mindi Riggerberg*

Session 53: FILM & VIDEO STUDIESChair: *Justin Beckman***Theater**

- 2:10 PM Hardship Withdrawal *Evan Catlin, Zane Perry, Shay LaPierre, Cory Henderson, Kory Hollingsworth*
- 2:30 PM Collage *Shay LaPierre*
- 2:50 PM Tabbie *Jonathan Glover, Catherine Johnson, McKenzie Lakey, Julian Smart*

Keynote Speaker

4:00–5:00 PM

Curtis Acosta: *Culturally Responsive Education***Theater**

Acosta is a former Tucson, AZ, schoolteacher who developed and taught a Mexican American studies curriculum. He now advises other communities on developing Mexican American and ethnic-studies programs through the Xicano Institute for Teaching and Organizing.

 Poster Session 2 – 8:30–10:30 am

- 1 Effect of Carbon Dioxide on Ocean Acidification and Coral Calcification *Sarah Janssen*
- 2 Icequakes and ocean tide near the grounding line at Beardmore Glacier, Antarctica *L. Jade Cooley, Howard Conway, Michelle Koutnik*
- 3 Coastal Stratigraphy and Hazard Identification near Oak Harbor, northeast Whidbey Island, Washington *Brian Ostrom, Breanyn MacInnes*
- 4 Real-Time GPS seismic monitoring of the Cascadia Subduction Zone *Jesse Senko*
- 5 Investigating Taphonomic Changes of Deposits and Modeling of the 2010 Maule Earthquake and Tsunami in South Central Chile *Alexandra Ruiz*
- 6 Mapping Landcover and Tsunami Runup Following a Landslide Tsunami in Taan Fjord, AK *Colin Bloom*
- 7 The Spatial Distribution and Origins of Sandstone Monoliths in the Swauk Watershed, Kittitas County, WA *Rebeca Becerra, Daniel O'Dell*
- 8 Channel flow studies using driftwood density analysis in Elger Bay, Camano Island, WA *Jasmine Bates, Clairissa De La Vergne, Rebeca Becerra*
- 9 Dextrally offset tuff-filled paleovalleys of the Central Walker Lane: A field-based study *Peter DUBYOSKI*
- 10 Fault Slip Rates Along the Petrified Springs Fault, Gabbs Valley Range, Nevada *Zac Bales*
- 11 Likely source for nitrate of atmospheric origin in the groundwater of the lower Yakima Valley *Dallin Jensen*
- 12 A study of the effects of stream restoration on the hyporheic zone of Reecer Creek *Samuel Smith, Brandon Thurnau*
- 13 Metamorphic Evolution of Dulan Eclogites *Vaughan Gilmore*
- 14 Effects of Testosterone on Ovarian Follicle Counts in Two Strains of Mice *Heather Mahurin, Tatyana Pisarenko*
- 15 The Effects of Excess Dihydrotestosterone on Adipose and Uterine tissue in a PCOS Mouse Model *Sierra Wenz*
- 16 Effects of plant extracts with anthelmintic activity against mammalian cells *Kiah Jones, Kaitlin Dearthoff, Cassandra Ripley*
- 17 Assessment of antiparasitic potentials of the Plant *Dalea* spp (*Fabaceae*) against the hookworm *Ancylostoma ceylanicum* *Lindsay Engels*
- 18 Western Spruce Budworm frass inputs affect heterotrophic metabolism of a headwater coniferous stream *Natalie Levesque*
- 19 Efficiency of Coliform Removal in a Composting Toilet *Tanner Urlacher, Jose Corona, Holly Pinkart*
- 20 Does Western Spruce Budworm herbivory change catchment-stream connectivity by altering soil carbon and nitrogen dynamics? *Izak Neziri*
- 21 Monitoring Multiple Cryptic Species in Altered and Restored Habitats in the Snoqualmie Pass I-90 Corridor Using Environmental DNA *Kayleigh Mullen*
- 22 Micro-habitat and characteristics of leaf-cutter ant trails *Anna Hood, Connor Arnold, Kristen Crawford, Natalie Levesque*
- 23 Response of Leaf cutter ants (*Atta mexicana*) to trail disturbance in a tropical deciduous forest in Mexico *Tykayah Baird, BreAnna Douglas, Christopher Johnson, Robert Peterson*
- 24 Foraging Preferences of the Leaf-cutter Ant *Atta mexicana* *Jessica Baker, Joseph Chase, Caitlin Haisman, Brandy Rogers*
- 25 The Effect of Organic Matter on Hyporheic Nitrification Rates in Taneum Creek *Sarah Clark, Sarah Olden*
- 26 Late-season cold hardiness of overwintering adult wasps in the family *Vespidae* (*Dolichovespula maculata* & *Polistes dominula*) *Logan Kral, Shawn Corrigan*
- 28 Gluttonus for Gluten: Wheat Protein Effect on MCF-7 Cell Growth and Morphology *Hannah Pederson, Heather Gerrish, Tania Aybar, Jessica Mackiewicz*
- 29 Effects of low temperatures on digestion and metabolism of the Northern Pacific Rattlesnake (*Crotalus oreganus*) *Samantha Tidd*

- 30 Contribution of Irrigation Canals to the Water Quality of Two Streams in Kittitas County, Washington
Arlene Castro, Kristell Hallsson
- 31 The Effects of Phthalate Exposure on the Neuroblastoma 2A Cell Line *Natalie Bergstrom, Hannah Dowdell, Veronica Hernandez*
- 32 Using *C. elegans* as a Model Organism to Study the Behavioral Effects of the Antidepressant Cymbalta *Omar Martinez*
- 33 Using Flow Cytometry to Measure Macrophage Phagocytosis of Fluorescent *E.coli* *Naomi Bryant, Catherine Treichel*
- 34 Expedient access to highly functionalized iodoarylated lactams: Application to the synthesis of macrocyclic enamidynes *Brandon Mansker*
- 35 Expedient construction and functionalization of allylic β -pipecolines by [4 + 2] cycloaddition of 1,3-azadienes and glutaric acid *Monique Khim*
- 36 Expedient, scalable, and modular synthesis of cyclic α -halo enamides and their synthetic applications *Spencer Langevin*
- 37 Impact of Hurricane Patricia on Trees in a Tropical Dry Forest of Mexico *Katie Hovenkotter, Aaron Balagot, John Schutz, Christopher Smith*
- 37 Modular access to polycyclic N,O-heterocycles using a highly functionalized allylic morpholinone *Katie Hovenkotter*
- 38 One-shot access to allylic morpholinones by annelation of 1,3-azadienes with diglycolic anhydride *Lindsey Kotlarz*
- 39 Synthetic Applications of a Versatile Piperidine-Derived Lactamoyl Ester *Hannah Braunstein*
- 40 Towards the Synthesis of Novel 1,3-Azaborines as Potential Hiv-1 Protease Inhibitors *Katherine Norris, Edward Magner, Roberto Rodriguez, Sierra Hoover*
- 41 Toward the synthesis of possible antibiotic products derived from lasalocid A *Diana Baluca, Eamonn Clarke, Morgan Sessions*
- 42 Computational Modeling of the Dehydrogenation of Ethane Catalyzed by Iridium Nanocatalysts *Russell Kato, Joseph Jiang, Prasuna Gummagatta*
- 43 Method Development for the Simultaneous Detection and Quantification of Organic Acids in Juices and Wines *Collin Meharg*
- 44 Study of the Influence of Polyelectrolytes on the Color Change of Indicator Dyes in Plastic Films. *George Olson, Nick Bettinson*
- 45 Toxic doses and effects of the manufactured nanomaterial Buckminsterfullerene on mouse liver cells in culture *Utshaha Maharjan, Zach Miller*
- 46 Bull Kelp Distribution in Northern Puget Sound, 1870-2000 *Luke Stilwater, Anthony Gabriel*
- 47 Updating the Projectile Point Chronology of Two Columbia River House Feature Sites: Hole-in-the-Wall-Canyon and French Rapids *Matt Johnson*

ELLENSBURG HIGH SCHOOL POSTERS

- 48 Strawberry Farms Forever *Jeff Hashimoto, Logan Davis, Miranda Nover, Sichen Liang*
- 49 A Plant-Based Diet: Healthy You, Healthy Planet *Jeff Hashimoto, Quinton Gasper, Ryan Creech, Owen Canterbury*

WALTER STROM MIDDLE SCHOOL POSTERS

- 50 Bugs are insects but not all insects are bugs! *Trish Griswold, Conner Hilberg, Jake Kelly*
- 51 Check Your Temperature: In the Open and Under a Tree *Trish Griswold, Harley McPhillips, Gretchen Huston*
- 52 Chittery-cheap: Where to eat? *Trish Griswold, Amaya Smith, Brook Wolf*
- 53 Drip Drip: How Much Rain Can You Get? *Trish Griswold, Beth Schilling, Josie Larned*
- 54 How far does sound travel in the open and in the forest? *Trish Griswold, Jacob Isatolo, Dylan Cook*
- 55 Tweet! Tweet! Where do Birds Prefer To Eat? *Trish Griswold, Tiffany Pink, Hennasy Reeves*

 Poster Session 3 – 11:00 am–1:00 pm

CONSTRUCTED OBJECTS

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|----|---|--|
| 1 | Analysis of Wind Turbine Configurations | <i>Junior Lenseigne</i> |
| 2 | Automated Core Feeder System | <i>Sergio Flores Velez</i> |
| 3 | Inverted Pendulum | <i>Cameron Gordon, Kyung Kim</i> |
| 4 | Orchard Bin ATV Trailer | <i>Neil Leitz</i> |
| 5 | ATV Rack Extension | <i>Trista Smith</i> |
| 6 | 1/10th Scale Multiple Apple Box Lift | <i>Kyle Burlingame</i> |
| 7 | Suspension for Electrathon Vehicle | <i>MacKenzie Angeledes</i> |
| 8 | Effects of Sustained Damage on Photovoltaic Panel Performance | <i>Peter Zencak</i> |
| 9 | Solar Thermal Collector and Mobile Stand | <i>Hazel Tickner, Tyson Nakamura</i> |
| 10 | Icarus: Non-Invasive Angle of Attack Indicator | <i>Robert Gread</i> |
| 11 | Truss Alignment Tool | <i>Jason Hedin</i> |
| 12 | Electric-Powered Tree Pruner | <i>Erich Heilman, Thomas Wilson, Daniel Gibson</i> |
| 13 | Conversion Casting Adapter Hub | <i>Joseph Coup</i> |
| 14 | Jeep WJ Multipurpose Oversize Spare Tire Carrier | <i>Caleb Marrs</i> |
| 15 | Multi-Use Fireline Hand Tool | <i>Bruce Bernard</i> |
| 16 | Pneumatic Leg Extension | <i>David Sedano</i> |
| 17 | Thermodynamics Air Motor Torque Measuring Device | <i>Jose Bejar</i> |
| 18 | ASME mini RC Baja Drivetrain | <i>Mike Cox, Jason Moore</i> |
| 18 | Rider Aid, e-bike kit | <i>Song Wang</i> |
| 19 | Automotive Hub Stand Design | <i>Peter Noh</i> |
| 20 | Vertical farming | <i>Taylor Fish</i> |
| 21 | The Prosthetic Finger | <i>Jose Garcia</i> |
| 22 | Testing RFID readers and RFID blocking products | <i>Paul Niman</i> |
| 23 | Rotor Pole Lifting Device | <i>Baylie Johnson</i> |
| 24 | Using Negative Feedback in a Tube Amplifier | <i>Jed Callarman</i> |
| 25 | Portable Die Cast System | <i>Brad Barringer</i> |
| 26 | Shellfish Bag Cutting Device | <i>Trevor Reher</i> |
| 27 | Paper Airplane Building Machine | <i>Abdullah Alshahrani, Hassan Bujayli, Abdullah Aldakhail</i> |
| 29 | Bicycle Lock Combining Flexibility and Strength | <i>Zachary Uhrich</i> |
| 30 | Torque Measuring device | <i>Logan Dearing</i> |
| 31 | Ultra light split board binding | <i>Jared Van Putten</i> |
| 32 | Dynamometer Stabilizer | <i>Derek LaMarche</i> |
| 33 | Flag Raising Device | <i>Joshua Quintero</i> |
| 34 | Torque vs RPM of Electric Motors | <i>Eli Westbay</i> |

POSTERS

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|----|---|---|
| 35 | Locomotion Physics of a Cheetah | <i>Eli Westbay</i> |
| 36 | High Altitude Balloon Observations & Measurements During the 2017 Total Solar Eclipse | <i>AJ Harpring</i> |
| 37 | Modeling Energetic O ⁺ Ions Interacting With Titan's Atmosphere | <i>Theodore Jimson, Mike Smith</i> |
| 38 | Computational Model of Brownian Motion of Biomolecules in Crowded Cellular Environments | <i>Jessica Carder</i> |
| 39 | Tracking Microtubules Along an Axon | <i>Brianna Owen, Howard Yeung</i> |
| 40 | Central Washington University 2015 Cultural Resource Management Archaeological Field School on Washington Department of Fish and Wildlife Lands | <i>David Davis, Jennifer Calabro-Pecora, Maxim Morton</i> |
| 41 | A Zooarchaeological Analysis of the Mesa 12 Site: Preliminary Results | <i>Justin Fitzpatrick</i> |
| 43 | Aye Aye: <i>Daubentonia madagascariensis</i> | <i>Helen Anderson</i> |
| 44 | Enclosure use by a singly-housed spider monkey (<i>Ateles fusciceps</i>) | <i>Jake Funkhouser</i> |

- 45 Visitor Effects on Chimpanzee (*Pan troglodytes*) Behavior at Chimpanzee Sanctuary Northwest, Washington, US *Allison Farley*
- 46 A Statistical Analysis of the Spatial and Temporal Components of the Sunrise Ridge Borrow Pit Site (45PI408), Mt. Rainier, Washington *James Brown, Caitlin Limberg, Anne Parfitt, Patrick Lewis*
- 47 Analysis of Stone Tool Assemblage Diversity and Structure from the Marymoor Site (45-KI-9) *James Brown, Tyler Stensland, James Chatters*
- 48 Determining Human Age Using the Coronal Pulp Cavity Index: Bioarchaeology on Barbuda, West Indies *Megan McCollum*
- 49 Kandi: A Study of Rave Culture Through Jewelry *Brianne Shaw*
- 50 Shots Fired: Simple Methods of Lifting Fingerprints *Allegra Simms, Jenna Plotnikoff*
- 51 Who we are is why we win: A Museum Education Plan for the *Husky Clipper* *Katie Childs, Skyler Crady*
- 52 Social Health Spending in Washington: An Applied Analysis of Social and Health Spending in Washington State for 2014 *Madelyne Weber, Brayana Coryell*
- 53 Mathematical Modeling of Competition and Coexistence of Phytoplankton Species *Luke Campbell*
- 54 Classroom demonstrations improve students' conceptual understanding of physics *Adam Teig*

Poster Session 4 – 1:30–3:30 pm

- 1 A Comparison of Education Systems of the United States and Finland *Andrea Blatner, Madison Doty, Madison Pfeil, Connor Fobes*
- 2 Classroom Management for Students with Disabilities *Aunna Colter*
- 3 Groupthink and Nazi Germany *Elizabeth Rasmussen*
- 4 Billy Murray, the Phonograph, and Forgotten Memories of American Recorded Music *Erika Naficy*
- 6 Liuzhou City's Fantastic Stones *Weiwen Huang*
- 7 A Comparative Study of Agricultural Modernization between China and the USA, France, the Netherlands, Japan, and Israel *Jing Huang*
- 8 Analysis of Chinese Local Government Significant Policy Making Process *Zhou Yu*
- 9 Regenerating Old Industrial Cities *Qiong Liang, Bin Mo*
- 10 A Different War: Vietnam in Film *Derek Flint*
- 11 American Exceptionalism and the Vietnam War *Josh Sanders*
- 12 The Many Faces of The Vietnam War *Aaron Hardy*
- 13 Vietnam Dehumanization *Joseph Bauer, Drew Houghton, Brent Evans, Chris Meyers, Camrin Johnson*
- 14 Vietnam: The Home Front *Kevin Zwink, Dylan Call*
- 15 The Place Of God Before And After The Vietnam War *Samuel Coleman, Rex Wirth*
- 16 Donald Trump, winning the Viet Nam War and making America great again *Jackson Berry*
- 17 Reforming government statistics in China *Dongyin Wei*
- 18 Underground Infrastructure: Planning, Development and Revitalization *Guoliang Meng*
- 19 Patterns of Governance and Transportation Infrastructure *Wenjie Du*
- 20 Kittitas County Water Budget Neutral Mitigation *Nick Richardson*
- 21 Professional by Day, Roller Derby Super Hero by Night *Andrea Eklund, Barbara Masberg*
- 22 Parent-child Relationships, Religion, and Substance Use *Natalie Porter, Kathleen Huckins*
- 23 The Effects of Microaggressions on Minority Students' College Experiences *Taylor Adams, Katy Mendoza, Daysi Mendez, Tanya Zambrano*
- 24 Gender Bias in Student Evaluations of Instruction *Erika LaCarney, Emma Paradise, Tom Henderson*
- 25 Women's Lives Matter: Women of Color and Police Brutality *Sheena Wu, Samantha Zuno, Felycite Guerra, Desiree Mix*
- 26 The Impact of Gender, Age, and Political division on Parenthood *Jessica Murillo-Rosales*
- 27 Undocumented Children & The American Foster Care System *Cynthia Moreno*

- 28 Native Lives Matter *Kayla Murphy*
- 29 Latino Lives Matter? Donde Esta el Movimiento que da Valor a las Vidas Latinas? (*Where is the Latino Lives Matter Movement?*) *Scott Villa, Romario Solano, Israel Garcia*
- 30 Domestic Terrorism *Lianne Nguyen*
- 31 Black Lives Matter *Gianni Glover*
- 32 Political and Personal Self-efficacy and Engagement in Activist Behaviors *Jenny Pham*
- 33 The Effect of Scent on Sleep-dependent Memory Consolidation *Jenny Pham, Brandi Forgey, Alisyn Cundiff, Jesse James*
- 34 Analyzing Whether Reading or Listening to Biblical Passages Affects Perceptions of Deity
Lexie Pope, Steve Isaak, Justin Guzman
- 35 Correlations between Religious Orientations, Death Attitudes, and Life Meaning *Steven Isaak, Jesse James, Mary Radeke*
- 36 The Relationship Between Parental Discipline and Aggression in Children *Laura Gutierrez*
- 37 P200 Brain Wave and Visual Working Memory in Musicians and Non-Musicians *Viktoriya Broyan, Ben Richardson*
- 38 Power and deceit: Resource control frames and subordinate competence combine to predict the ability to detect deception *Kendra Key, Romario Solano, Jose Garcia*
- 39 Correct vs. Incorrect Identification of Facial Expressions Under a Time Constraint *Deidra Dudney, Natasha Omura*
- 40 The Influence of Peppermint on Productivity in the Workplace *Lauren Cooper*
- 41 A Cultural Comparison of Two Facial Inference Studies *Janine Swiney, Anthony Stahelski, Mary Radeke*
- 42 A School Mental Health Issues Survey From the Perspectives of Washington State School Psychologists *Shayla Tiffany*
- 43 Interactions Between Teacher Efficacy and Student Behavior in Elementary Schools Adopting Positive Behavior Supports *Jordan Nitcy*
- 44 Passion and Motivation in MMORPG Players *Charissa Blackmore*
- 45 The effects of question-present versus item-present conditions on acquisition of mands
Paige Thornton
- 46 The effects of animal environments on perception and the relationship to environmental conservation
Carolina Montenegro
- 47 The Effects of Feedback Sequence on Cognitive Performance *Travis Pyle*

ACKNOWLEDGMENTS

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Josh Jones, Carol Carrothers, and Christy Camarata

KEYNOTE SUPPORT

Bernadette M.E. Jungblut, Susanna Flores, Xavier Cavazos, Alma Rodriguez, Meghan Johnson, Armando Ortiz

SPECIAL THANKS

To Dr. Carla Jellum and students in the Event Planning specialization classes in the Recreation and Tourism Program, Department of Family and Consumer Sciences. Also, thank you to Emily Duplessis and the students from the Event Planning classes in the Department of Communication.

In particular, we are grateful for the work of our two SOURCE Event Planning Practicum Students, Denise Jarnecke and Amanda Hamilton.

The Event Planning specialization prepares students for positions in special events coordination and operation, lodging sales and marketing, convention centers, destination marketing organizations, tourism planning, recreation and sports center, and many others. SOURCE is grateful for their energy and expertise, especially on the day of the event.

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SPECIAL THANKS TO OUR ALUMNI AND COMMUNITY JUDGES

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Come tour the new Science Phase II building before it opens to the public

Tour times are:

Wednesday, May 18, 2016: 1:00 pm and 2:30 pm

Thursday, May 19, 2016: 9:00 am, 1:00 pm, and 2:30 pm

If you would like to go on the tour, please meet our Tour Ambassador on the East SURC Patio at the times shown above.



KAIROS QUARTET



Mozart Quartet K.575 & Brahms Viola Quintet Op.111 with guest violist Jessica Jasper

Wednesday, May 18th at 7pm
Recital Hall, CWU Music Department
free admission



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After attending our Keynote speaker Mitchell Thomashow's presentation from 4 -5 pm Wednesday, May 18, visit one of our local venues for dinner and then return to campus to the Music Building to witness the performance of the amazing Kairos Quartet at 7 pm.



PROGRAM COVER DESIGN

Senior graphic design student, Wai Wong, is this year's SOURCE poster designer under the direction of Professor Glen L. Bach in the Department of Art. The SOURCE poster and program cover is one of many academic service learning projects that students undertake in Professor Bach's curriculum.

**SEE YOU NEXT YEAR
AT SOURCE 2017!
MAY 17TH & MAY 18TH**