

10th anniversary
**undergraduate
research
conference
2015**



SOUTHWEST MINNESOTA STATE UNIVERSITY

Wednesday, December 2, 2015

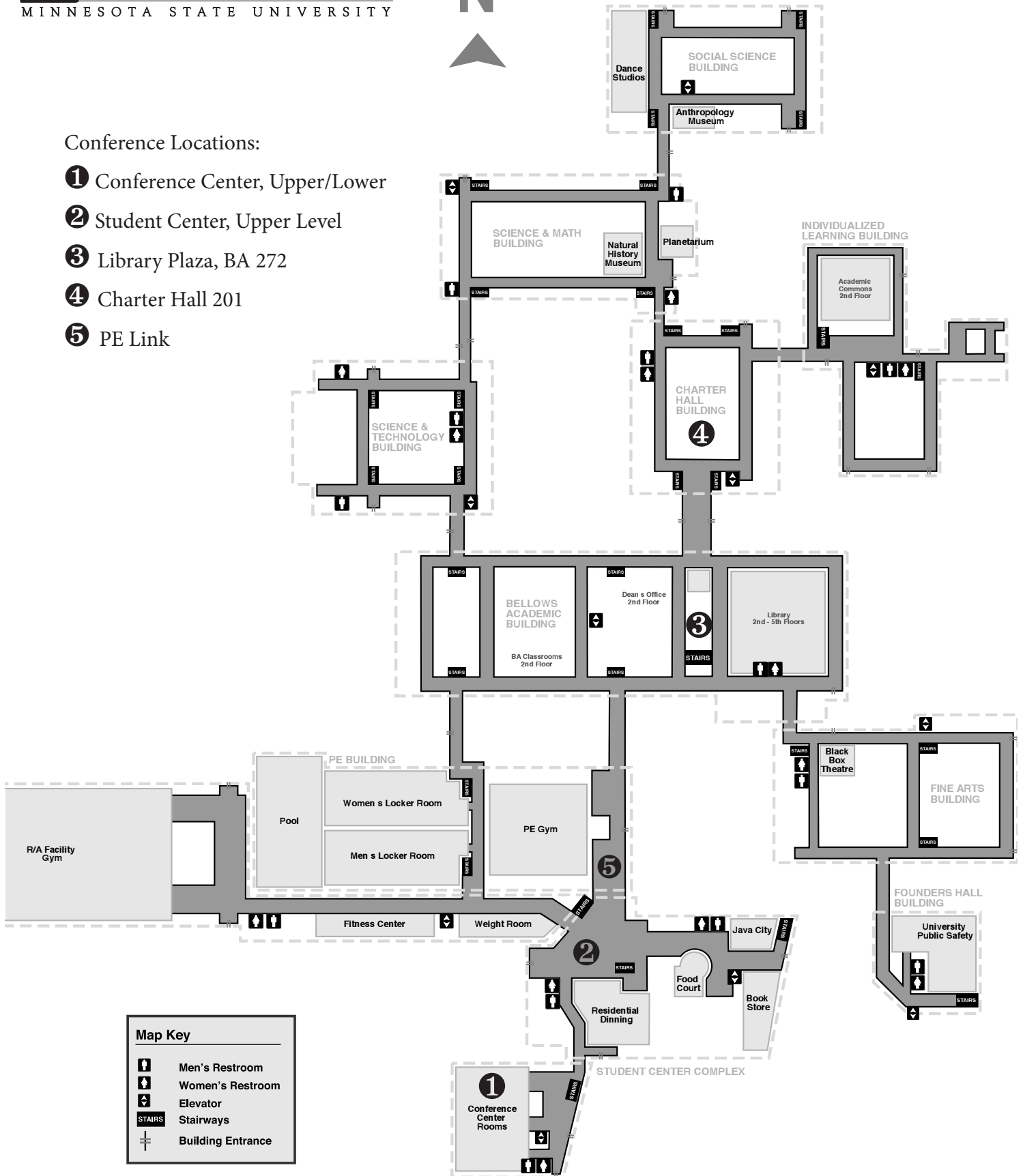
Starting at 8:30 a.m. | SMSU Conference Center

ABSTRACT BOOKLET



Conference Locations:

- ① Conference Center, Upper/Lower
- ② Student Center, Upper Level
- ③ Library Plaza, BA 272
- ④ Charter Hall 201
- ⑤ PE Link



Map Key	
	Men's Restroom
	Women's Restroom
	Elevator
	Stairways
	Building Entrance

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Purpose

The purpose of the Annual SMSU Undergraduate Research Conference is to highlight the original and creative work done by SMSU undergraduate students at a one-day conference to be held annually at the SMSU campus. The public, including the university and Marshall community, friends, parents, alumni, prospective students and employers are all encouraged to attend and enjoy the excitement of intellectual accomplishments of our students.

How the Conference Started

The conference was initiated fall of 2006 by Dr. Emily Deaver, Professor of Environmental Science. After she and Dr. Thomas Dilley conducted an Environmental Science program review in 2005-2006, it was clear that our science students needed more experience conducting research and communicating the results of that research to the broader community. The 1st Annual SMSU Undergraduate Research Conference was designed as a mechanism for SMSU science students to engage in a professional exchange of scientific ideas, as well as a means to showcase and celebrate their hard work and accomplishments. The first year program included 21 oral and 27 poster presentations from science students in Environmental Science, Biology, Physics and Chemistry. Because of the positive feedback from the academic community the conference was expanded to include **all** disciplines across campus. Fall 2007 the 2nd Annual SMSU Undergraduate Research Conference doubled the number of presenters with 13 different programs across campus participating. This year, the 10th year of the SMSU Undergraduate Research Conference, there are 19 different programs participating with 32 different faculty advisors. There are also 210 different undergraduate students presenting 38 orals and 152 poster presentations.

The hope is that the conference will continue to grow each year as we celebrate the intellectual achievements of SMSU undergraduates.

Welcome and Keynote

SMSU Conference Center Upper Level

- 8:30..... Dr. Connie Gores, SMSU President, Opening Remarks
 8:45..... Martin A. Draper, PhD, USDA, National Institute of Food and Agriculture
 Keynote Address: "Education, Research and Critical Thinking:
 Keys to a Progressive Society"

Oral Session A

SMSU Conference Center Upper Level

- 9:45..... Terrance Maier, Environmental Science, Habitat Preferences for Mule and White-Tailed Deer in South Central South Dakota
 10:00..... Devin Ryan, Environmental Science, Seasonal survey of frog and toad species and abundance at multiple sites near Lake Sarah, Southwest Minnesota
 10:15..... Emilee Gutzmer, Meredith Hyatt & Audi Nickel, Biology, Insect Biodiversity: A Comparison of Sweetland Hall Prairies, Marshall, MN
 10:30..... BREAK
 10:45..... Travis Radke, Environmental Science, Summer Roadside Use by White-Tailed Deer near Currie, Minnesota
 11:00..... Caci Lingen Environmental Science, Survey of Pollinators in the ADM-SMSU Wildlife Area Marshall, MN Summer 2015
 11:15..... Claire Sames, Rhiannon Sears & Ashley Millerbernd, Biology, Influence of Temperature and Precipitation on the Prevalence of Lyme Disease in Minnesota
 11:30..... Devin Ryan, Emily Heesch & Marissa Mattson, Biology, Density of Goldenrod Plants With and Without Insect Galls in the SMSU Wildlife Area
 11:45..... Caroline Mukeshimana, Dylan Johnson & Mikaela Cypher, Biology, Isolation of Antibiotic-Producing Microbes from Soil Collected in Marshall, MN
 12:00-1:15 . Jess Rockeman, DC Crowell and Stephanie Wisdom, Creative Writing- Original Works, "Interesting, but Terribly Overrated"
 1:30..... Krishna Ghimire, Environmental Science, Effects of LED Light vs Fluorescent Light on the Growth of Radish Plants (*Raphanus sativus*)
 1:45..... Taylor Buchtel, Catarina Gronau, Casey Hertz & Katlyn Sandbulte, Biology, Comparison of Plant Species in an Old and New Reconstructed Prairie in Southwest Minnesota
 2:00..... Megan Bruns, Loziilo Moyo, Elizabeth Senkyr & Tatum Larson, Biology, Distribution and Abundance of Galls on Hackberry Tree Leaflets
 2:15..... Matthew Kubly, Nicole Cordes & Taylor Schreier, Biology, A Comparison of Earthworm Densities in Four Habitats in Southwest Minnesota
 2:30..... Ellen Johnson, Briana Reiersen, Deewan Bajracharya & Nathan Andresen, Biology, A Summary of Bird Species Occurrence in Southwest Minnesota over a Ten Year Period, 2005 to 2015
 2:45..... BREAK
 3:00..... Jessica Laqua, Political Science, The Effects of the EPA's Water Rule on Minnesota's Farm Economy
 3:15..... Paige Ebner, Danial Slowey, Kaitlyn McCaslin & Jennifer Rye, English Literature, Gender and Fantasy in Children's and Young Adult Literature
 3:30..... Naomi Peterson, Jessica Engebretson, Paul Vold & Zach Bailey, Scientific & Technical Writing, Improvement of Fitness of Traditional Students at SMSU
 3:45..... Daryl Thomas, Megan Will & Katie Wenisch, Scientific & Technical Writing, Healthy Food at SMSU
 4:00..... Dylan Curfman, Dylan Parsons, Jordan Salonek & Sondra De La Cruz, Scientific & Technical Writing, Improving Recycling Initiatives at Southwest Minnesota State University
 4:15..... Amanda Heesch, Corey Gregor & Sara Tews, Scientific & Technical Writing, Fighting Obesity, One Desk at a Time
 5:00..... Awards Ceremony

Oral Session B

SMSU Charter Hall 201

- 9:45..... Taylor Koloc, Hannah Chaddock & Victoria Bensel, Psychology, Discussing the Social and Developmental Challenges of Cerebral Palsy Wheelchair Bound Individuals at SMSU
 10:00..... Kelsey Larson, Sociology, Cohabitation and the Connection to Divorce and Religion
 10:15..... Michael Koch, History, The History of the Chemical Corps
 10:30..... BREAK
 10:45..... Brittany Verhelst, Sociology, Effects of Family Structure on Juvenile Delinquency
 11:00..... Megan Lipetzky, History, The Last War Song
 11:15..... Kyle Havlicek, Theatre, Stage Management and the Stage Manager's Promptbook
 11:30..... Payton Shively, Theatre, How to apply basic contouring for the stage
 11:45..... Victoria Garza, Sociology, MOVED TO POSTER SESSION
 12:00..... LUNCH BREAK
 1:00..... Nicole Cordes, Contemporary Issues-LEP 400, The Effects of Music on Student's Walking Speed
 1:15..... Cole Johnson, Political Science, Railway Transportation System of Greater Minnesota
 1:30..... Sean Kallevig, History, Through the Years: The Town History of St. Leo, Minnesota
 1:45..... Erik Khzmalyan, Political Science, Immigrants in Minnesota: Educational Challenges and Contributions to State Economy
 2:00..... Broderick K. Eveslage, History, Modern History: The 2009 Decision of the ELCA
 2:15..... Benjamin Klotz, History, Racism in the Pacific During World War II
 2:30..... Broderick Goens, History, The Use of POW Camps in Minnesota During World War II
 2:45..... BREAK
 3:00..... Adam Savariego, History, Founding of the Upper Sioux Community
 3:15..... Grady Holtberg, Sociology, Substance Abuse Treatment and the United States Prison System

Poster Presentation Session A

SMSU Conference Center Lower Level

Posters displayed 8:30 am to 5:00 pm,

Authors available at times listed after title

Agronomy, Biology, Computer Science, Economics, Exercise Science, History & Mathematics

- 1..... Briana Reiersen, Biology, An interplay between oxidative stress and autoimmunity in the pathogenesis of vitiligo, Formal 11:30-12:00, Informal 3:15-3:45
 2..... Phil Duerr, Agronomy, The Use of Lettuce Extract as a Natural Herbicide, 10:30-12:00
 3..... Paige Hendrickson & Taylor Holicky, Biology, The allelopathic effect of orange, lemon, and banana peel extract on dry weight and overall height of corn, Paige 2:30-3:15, Taylor 9:45-10:30
 4..... Tiffany Gehl, Exercise Science, Diet and Body Composition of SMSU Women's Basketball Team, 2:30-3:30
 5..... Rebecca Sommer, Biology, Small Interfering RNA as the Silver Bullet for Cancer, Formal 1:30-2:00, Informal 2:00-2:30
 6..... Sara Tews, Exercise Science, Longitudinal Analysis of Ongoing Employee Wellness Fitness Programming, 2:00-3:00
 7..... Amanda Boushek, Mathematics, Mathematics and Music: Actions of Dihedral Groups, 2:00-3:30
 8..... Brett Welsh & Santosh Chaulagain, Computer Science, Restaurant POS System, 1:00-2:30
 9..... Nicole Cordes, Biology, FimH as a critical component in attachment of Uropathogenic *Escherichia coli* and therefore a potential target in development of a treatment, Formal 3:45-4:15, Informal 10:45-11:15
 10..... Cameron Daniels Lawson, Computer Science, Craft Me a Favor Website, 10:30-12:00
 11..... Meghan Johnson & Demi Rorvick, Exercise Science, Fitness of collegiate wrestlers over a competitive season, Meghan 10:15-11:15, Demi 2:30-3:30
 12..... Elizabeth Senkyr, Biology, Anthocyanins in Berries and Effect on Malignant Tumor Development, 10:00-10:30; 1:00-1:30
 13..... Riya Shrestha & Maheshwor Dhungel, Computer Science, RM Point of Sale System (RMPOSS), Riya 10:00-11:30, Maheshwor 9:30-11:00

- 14..... Gabe Langseth & Whitney Burmeister, Exercise Science, The Effects of Distance from Light and Sound Stimuli on Reaction Time, Gabe 1:00-2:00, Whitney 9:45-10:45
- 15..... Ellen Johnson, Biology, The effectiveness of natural predators compared to chemical methods in regulating the population of invasive zebra mussels, Formal 10:30-11:00, Informal 11:15-11:45
- 16..... Lacey Prescott & Ellen Johnson, Biology, The Allelopathic Effects of Oregano on the Height and Dry Weight of Tomatoes, Lacey 11:15-12:00, Ellen 3:00-3:45
- 17..... Daryl Thomas, Exercise Science, Effects of Eccentric vs Concentric Training on the Bicep, 10:45-11:45
- 18..... Dawa Gyalmu Rai, Biology, Mechanism of botulinum toxin A as a treatment in overactive bladder patients, Formal 3:15-3:45, Informal 1:30-2:00
- 19..... Cody Petrowiak, Exercise Science, Static vs Dynamic Stretching Effects on Vertical Jump and "Dunking" Performance of SMSU Basketball Players, 1:30-2:30
- 20..... Chris DiSanto, Biology, The Use of Therapeutic Hypothermia to Improve Neurologic Outcome in Post-Cardiac Arrest, Formal 1:00-1:30, Informal 11:00-11:30
- 21..... Taylor Koloc, Exercise Science, Plyometric and lateral performance in softball players, 11:00-12:00
- 22..... Michael Mattick, Biology, Loxosceles Spider Envenomation: Mechanism of Action of Sphingomyelinase Phosphodiesterase (SMase D) and its Effects on Human Tissue, Formal 9:45-10:15, Informal 2:45-3:15
- 23..... Chidera Ndubuisi, Okeleamaka J. Chukwuyem & Oluchi Olivia Ndubuisi, Biology, Allelopathic Effect of Ginger Rhizome Extract on the Seedling Growth of Lettuce, Chidera 10:00-10:45, Okeleamaka 1:30-2:15, Oluchi 10:45-11:30
- 24..... Ben Spaeth, Computer Science, Vote Helper iOS App, 1:00-2:30
- 25..... Zach Bailey, Computer Science, Iron Fist, 9:30-11:00
- 26..... Chantel Paul, Zachary Specht & Jonathan Cross, Exercise Science, Effects of High-Intensity Interval Training on Body Composition of Wheelchair Athletes, Chantel only 9:45-10:45
- 27..... Zachary Specht, Jonathan Cross & Chantel Paul, Exercise Science, Effects of high-intensity interval training on cardiovascular fitness using a novel wheelchair training system, Zach only 1:00-2:00
- 28..... Jonathan Cross, Zachary Specht & Chantel Paul, Exercise Science, Effects of high intensity interval training on wheelchair pushing kinematics, Jonathan only 10:45-11:45
- 29..... Erin Kamrath, Exercise Science, Foam Rolling and Football Summer Conditioning, 9:45-10:45
- 30..... Spencer Louwagie, Computer Science, Developing a Website For Technology Assistance, 2:00-3:30
- 31..... Kaylee Benson, Mathematics, Mathematical Analysis of Football Scheduling in NSIC Conference, 3:00-4:30
- 32..... Joseph Lilleberg, Computer Science, Developing an Arena Brawler using Unreal Engine 4, 9:30-11:00
- 33..... Jake H. Schueller, Mathematics, NCAA Football BCS Algorithm and Its Flaws, 1:30-3:00
- 34..... Melissa Bartz, Biology, WITHDRAWN
- 35..... Libby Tolzin, Alex Dequaine & Colten Bristle, Biology, The allelopathic effects of crushed almond on corn plants, Libby 10:30-11:15, Alex 3:45-4:30, Colten 9:45-10:30
- 36..... Kristy Leopold, Psychology & Exercise Science, The Marshall Community: The Financial Burden on Psychosocial and Motor Development, 11:30-1:00
- 37..... Ryan Miller & Emmanuel Asota, Computer Science, Escape Plan App, 8:30-10:00
- 38..... Nathan Getting & Kyle Lecy, Economics, Economic Development in the Countries of China and India, 3:00-4:30
- 39..... Naomi Peterson, Exercise Science, The Effects and Recovery Process of Anterior Cruciate Ligament Replacement for a Female Competitive Athlete, 1:00-2:00
- 40..... Teather Lacy, History, Fagen's Museum: The Hidden Gem of Southwest Minnesota, 9:30-11:00
- 41..... Wanda L. Paluch, History, Divine Providence: The Rise and Fall of a Small Town Hospital, 10:30-12:00
- 42..... Dain Biorn, History, Jacob Riis' Views of the Dark, 12:30-2:00
- 43..... Johna Nelson, History, The Influence of the Women's Christian Temperance Union and the Volstead Act on Southwestern Minnesota, 12:30-2:00
- 44..... Tyler Thielges, History, The Visigoths, 9:00-10:30
- 45..... Alan Zimmerli, Agronomy, Allelopathic Effects of Black Walnut Husk Extract on Monocot Germination and Growth, 10:30-12:00
- 46..... Heather Daugherty, Mathematics, Fair Division, 3:00-4:30
- 47..... Sabrina Ley & Breanna Houselog, Economics, Economic Development in Bangladesh and Afghanistan, 3:00-4:30
- 48..... Eshaan Joshi & Shagun Upadhaya, Computer Science, 'Tic Tac Toe' (XOXO), 9:30-11:00

Poster Presentation Session B

SPECIAL SESSION

“Migrant Voices: The Marshall Area Narrative Inquiry Project”

Student Center Upper Level (SC 216)

Posters displayed 8:30 am- 5:00 pm, Program: Sociology

Faculty Advisor: Dr. Kerry Livingston, Sociology

Research Assistants: Stephanie Geier (Sociology)
and Erin Reps (Graduate Student)

Cultural Advisors and Translators: Mu Mu Aye, Marly Cid (Graduate Student), Hussein Osman, Marie Hoff and Yesenia Cerda

Graphic Art: Alexandria Thies

Story Poster Researchers: Justine Heinis, Cole Johnson, Jessica Osteraas, Jeremy Vogel, Erin Rauenhorst, Cody Seehafer, Stephanie Geier, Katie Hatch, Kayla Yount, Michael Koch, Josey Kockelman-Radtke, Amanda Tolzmann, Lexie Vande Hoef, Destiny Fredricks, Jonathan Heimer, Austin Olson, Brittany Cadena, Shelby Maes, Victoria Brooks, Altanshagai Tsend-Ayush, Thomas Powers, Brittany Verhelst, Savoy Brown, Shelby Farmer, Alexander Burton, Samira Sheikh, Justin Ross, Kelsey Larson, James Muller, Caleb Johnson, Samantha Graupmann, Kelli Gass, Hailey Goeman, Leona Kostecki, Shelby Stevens, Grady Holtberg, Ashley Wildman, Angela Pearl, Tyler Hruby, Honor-Ra Hanson, Taylor Court, Tamara Logan, Maria Dunblazier, Megan Lynne, Nicole Bennett, Cassie Morgan, Mariah Hilleren, Thiyang Riek, Joseph Grant, Divonte Beale

- 49.....Exhibit Introduction
- 50.....Methods, Stephanie Geier, 9:30-11:00
- 51.....Literature Review, Katherine Speiker, 2:30-4:00
- 52.....Demographics, Malik Johnson, 1:00-2:30
- 53-102 Story Posters, Megan Lynne 9:30-11:00, Katie Hatch 1:30-3:00
- 103..... Findings and Conclusions, Marly Cid: 9:30-10:00 & 12:30-2:00, Erin Reps: 10:30-11:30 & 3:30-4:30, Hussein Oman: 11:00-12:30, Mu Mu Aye: 2:00-3:30, Yesenia Cerda: 3:30-5:00
- 104..... Works Cited
- 105..... Acknowledgements

Poster Presentation Session C

SMSU Library Plaza

Posters displayed 8:30 am to 5:00 pm,

Authors available at times listed after title

Freshman Year Seminar, Nursing, Political Science, Psychology, Sociology & Theatre

- 106..... Donovan Woods, Political Science, Effects of the Minimum Wage Increase on Greater Minnesota, 10:00-11:30
- 107..... Alison M. Bakken, Political Science, Broadband Access: The Future for Greater Minnesota, 2:30-4:00
- 108..... Tom Lammers, Political Science, Greater Minnesota’s Emerging Water Crisis, 1:30-3:00
- 109..... Jonathan Heimer, Political Science, Difficulties of Water Management In Southwest Minnesota, 2:30-4:00
- 110..... Altanshagai Tsend-Ayush, Political Science, Highway 23/Saratoga Project, 3:00-4:30
- 111 Jory Dove, Spencer Thomas & Destiny Fredricks, Psychology, Size Perception at Multiple Angles, 11:30-12:30
- 112..... Tyler Flud, Dave Lien & Kelsey Lee, Psychology, The Effect of Sight on Taste Perception, 11:30-12:30
- 113..... Alexis Frick, Blake Nath, Nick Kellen & Leah Hacker, Psychology, The Effect of Task Engagement on Time Perception, 11:30-12:30
- 114..... Kayla Chisum, Psychology, SMSU Students’ Understanding of Civic Engagement: A Qualitative Analysis, 10:30-11:30 & 12:30-1:00
- 115..... Dave Lien, Psychology, Barriers to Non-Traditional Student Enrollment and Retention at SMSU, 1:00-2:30
- 116..... Kylie Wahl, Melissa Downing, Bryan Lubitz & Josie Simon, Freshman Year Seminar, What Can Social Media Do With Your Likes? Kaylie & Bryan 10:30-12:00; Melissa & Josie 1:00-2:30

- 117..... June Stensrud, Kara Burch, Grace Nelson, Brooklyn Bangasser & Jared Schmidt, Freshman Year Seminar, Social Media and Personal Connections, June, Kara & Grace 11:30-1:00; Brooklyn & Jared 2:30-4:00
- 118..... Jamie Schell, Danielle Duncan & Bryan Wurdeman, Freshman Year Seminar, Who You Are on Social Media, Jamie & Danielle 12:30-2:00; Bryan 10:00-11:30
- 119..... Erica Hansen, Theatre, How to Become a Dragon, 9:30-11:00
- 120..... Jessica Matt, Jordyn Hetland, Melissa Kidrowski, Marcia Blaster, Megan Loew, Jennie Wigen & Bonnie Parsons, Nursing, Oh Baby! Using Essential Oils for Pain Management During Labor and Delivery, Jessica & Jordyn: 9:30-11:00 ; Melissa & Marcia: 11:00-12:30, Megan, Jennie & Bonnie: 1:30-3:00
- 121..... Taylor Engel, Theatre, Phantom of the Opera, The Phantom's Face Makeup, 1:00-2:30
- 122..... Crystal Enga, Theatre, Corrective Makeup, 2:00-3:30
- 123..... Sarah Norton, Theatre, The Art of a Mortician, 9:30-11:00
- 124..... Claire Macki, Paul Norgren, Amy Thomas & Brittney Stockwell, Freshman Year Seminar, "How Much Privacy Do You Really Have?" The Privacy of Social Media, Claire & Paul 11:00-12:30, Amy & Brittney 12:00-1:30
- 125..... Emily Crumrine, Dalton Jones, Peyton Sanders & Jacob Broberg, Freshman Year Seminar, Are You a Target for Big Business? Emily & Dalton 12:00-1:30; Jacob & Peyton 2:30-4:00
- 126..... Brooke Thompson, Emily Safar, Callie Severson & Miranda Giese, Freshman Year Seminar, Motives Behind a Cyberbully, Brooke & Emily 1:00-2:30; Miranda and Callie 9:30-11:00
- 127..... Tamara Hellendrung, Sociology, Elder Abuse: What are the implications of elder abuse in the United States in nursing homes among staff? 11:00-12:30
- 128..... Hannah Kuno, Sociology, Racial Profiling: Traffic Stops, 10:00-11:30
- 129..... Julie Schimerowski, Sociology, Creating a Welcoming Environment for International Students on College Campuses, 11:30-1:00
- 130..... Leah Bernard, Sociology, Barriers and Inequalities in Healthcare for Individuals with Disabilities, 10:30-11:30 & 4:00-4:30
- 131..... Tehra Christianson, Sociology, Child Abuse and Trauma Services, 11:30-1:00

Poster Presentation Session D

PE Link Upper Level

Posters displayed 8:30 am to 5:00 pm,
Authors available at times listed after title
Accounting, Mathematics, Political Science,
Psychology, Sociology & Theatre

- 132..... Annie Magnuson, Theatre, Make-up for Mermaids, 1:00-2:30
- 133..... Emilie Baartman, Theatre, Rocking the Rock Star Look: Gene Simmons, David Bowie, and Alice Cooper, 2:00-3:30
- 134..... Joel Gay, Theatre, Making Actors Bleed, 3:00-4:30
- 135..... Jenna Miller, Theatre, 1920's Style Makeup, 12:20-2:00
- 136..... Thomas M. Powers, Political Science, The Impact of Roundabouts on Greater Minnesota, 1:00-2:30
- 137..... Jeremy Brands, Political Science, Water Supply and Water Shortages in Southwest Minnesota, 11:00-12:30
- 138..... Jordan Leckband, Political Science, Public Transportation Trends in Greater Minnesota, 2:30-4:00
- 139..... Chelsea Wiese, Psychology, Civic-mindedness, integrity, and community service self-efficacy among SMSU students, 3:30-5:00
- 140..... Samantha Minter, Psychology, Gun ownership and attitudes about guns among college students, 9:30-11:00
- 141..... Emily Wajer & Megan Schmidt, Psychology, How Supervised Parenting Time Visitations Work, 9:30-11:00
- 142..... Bryan Creamer, Sociology, Intimate Partner Violence: As Seen Through the Child's Eye; Different Health Concerns and Ways of Prevention, 9:30-11:00
- 143..... Chucky Her, Sociology, Viewing Bullying within Gender Role Conflict from a Sociological Perspective, 3:00-4:30
- 144..... Benjamin Ryan, Sociology, The Changing Patterns of Housework and the Division of Labor, 10:30-1:00

- 145..... Maria Dunblazier, Sociology, The signs of child abuse and the implications in the professional workplace, 3:00-4:30
- 146..... Cody Seehafer, Sociology, Barriers in Daily Life: Challenges Faced by People with Disabilities, 3:00-4:30
- 147..... Donne Lobendahn, Sociology, Private Prison Complex, 3:00-4:30
- 148..... Austin Olson, Sociology, Devaluing Women's Work: Gender Pay Inequity, 3:00-4:30
- 149..... Abby Straw, Accounting, 3 Generations Working Together? Is It Possible? 1:00-2:30
- 150..... Cailin Morris, Accounting, The Unaffordable Affordable Care Act, 9:30-11:00
- 151..... Carter Barker, Mathematics, How to Solve any Biquadratic Equation, 2:30-3:30
- 152..... Victoria Garza, Sociology, (How) Does the Sexual Orientation of Parents Matter? 3:00-4:30

Keynote Address: “Education, Research and Critical Thinking – Keys to a Progressive Society”

Keynote Speaker: Martin A. Draper, PhD
National Program Leader –
Plant Pathology/ Integrated Pest Management
United States Department of Agriculture
National Institute of Food and Agriculture



Martin Draper, received his BS in plant pathology and pest management from Iowa State University and MS (barley/bacteriology) and PhD (potato/virology) degrees in plant pathology from North Dakota State University. Dr. Draper worked for the ND State Seed Department as plant pathologist and disease-free potato seedstocks manager from 1984 to 1989, served as the director of the Plant Pest Diagnostic Laboratory and Seed Health Testing Laboratory at NDSU from 1989 to 1997, and as Extension Plant Pathologist at South Dakota State University from 1997 to 2006 where he worked in 15 crops focusing on wheat and soybeans. Marty has been with the USDA since 2006 as National Program Leader for plant pathology and integrated pest management in the National Institute of Food and Agriculture (NIFA). In his current role with NIFA, he oversees research and integrated competitive grant programs and coordinates NIFA needs with land-grant university multistate committees among other duties. He is also associated with several extension activities within the agency. He has significant management responsibilities in the National Plant Diagnostic Laboratory Network and the ipmPIPE (integrated pest management-Pest Information Platform for Extension Education). Many of his programs emphasize risk assessment as a management tool. Over the years Dr. Draper has taught in the university setting as well as conducting research and extension activities on field crops, focusing on cereals (wheat, barley, and durum), oilseeds (soybean, sunflower and safflower), pulse legumes (chickpea, lentil and field pea) and specialty crops, especially potatoes.

Dr. Draper is a native of Council Bluffs, IA. He is married to Betsy, the Information Technology – Chief Enterprise Architect at NIFA. They have two married daughters who both live in Sioux Falls, SD and are proud grandparents three times over.

Dr. Draper will discuss the importance of critical thinking in sound decision making and how research experience builds on our educational principles and contributes to the development of those skills. We expect our society to move forward, but in many ways, we hold the key to the future by the decisions we make today and tomorrow. It is not trivial to consider the importance of abundant clean water, clean air, a plentiful and accessible food supply, and a stable environment. Each of these components of a favorable living environment are impacted by our decisions and behavior as a society. We only get to that point through sound decisions and interpretation of data. An understanding of research methods can inform decisions that influence a sustainable and resilient world for us to live in, but depend on clear and analytical thought. Research experience fosters such analytical thinking and also a healthy skepticism. You don't always get the expected result. As a result, experience in research helps us recognize pseudo-science and distortion of the truth in public claims and in setting public policy. Dr. Draper will share examples of uses and abuses of research that have been the platforms to reach various desired outcomes.

Abstracts

Oral Session A – Upper Level Conference Center Biology, Creative Writing, Environmental Science, English Literature, Political Science & Scientific & Technical Writing

1

Title: Habitat Preferences for Mule and White-Tailed Deer in South Central South Dakota

Presenter(s): Terrance Maier

Advisor: Drs. Thomas Dilley & Emily Deaver,
Environmental Science

Abstract: Habitat preferences among three sites were studied in south central South Dakota for Mule (*Odocoileus hemionus*) and White-Tailed (*Odocoileus virginianus*) deer. Deer were observed in a millet field, corn field, and open grassland area. Deer were observed, using binoculars, on the 12th and 27th of the month throughout the summer in the morning and evening: The number of deer, species, sex, fawns, and whether the two species mingled were recorded. ANOVA's and T-tests were used to determine whether significant differences were found among the sites, species, and time of day. Results indicated significant differences showing a higher number of Mule deer, the open grassland habitat being preferred, and Mule deer preferring the grassland over White-Tails. The millet and corn fields showed insignificant differences between species and time of day.

2

Title: Seasonal survey of frog and toad species and abundance at multiple sites near Lake Sarah, Southwest Minnesota

Presenter(s): Devin Ryan

Advisor: Drs. Emily Deaver & Thomas Dilley,
Environmental Science

Abstract: In the 1990's, scientists noticed that amphibians were declining at an alarming pace. National and state programs were created to monitor and resolve the decline. This study is part of the Minnesota Frog and Toad Calling Survey Program, which monitors populations in Minnesota during April, June and July. It was hypothesized that there would be a difference between the frog and toad species heard in April and June/July 2015. Ten sites were surveyed for frog and toad mating calls around

Lake Sarah, Minnesota. Four of the seven species found in Southwest Minnesota were heard. Chorus Frogs were the most abundant and commonly heard species, and there was a difference in which species were heard in which month. Statistical analysis showed that the frog and toad populations have not significantly decreased or increased since 2003 at this location, indicating that this area has not been significantly affected by the amphibian decline.

3

Title: Insect Biodiversity: A Comparison of Sweetland Hall Prairies, Marshall, MN

Presenter(s): Emilee Gutzmer, Meredith Hyatt & Audi Nickel

Advisor: Dr. Betsy Desy, Biology

Abstract: A high diversity of plants, animals, and microorganisms is essential for a healthy prairie ecosystem. Because insects serve a variety of roles, for example prey, predator, and parasite, they are important for ecosystem function. The purpose of our study was to compare insect biodiversity in two recently constructed prairies, east (shade) vs. west (sunny), by Sweetland Hall, SMSU, Marshall, MN. Using sweep nets, insect populations were collected, identified, and counted. We identified a total of 27 insect families, approximately half of which were insects from the family, *Curculionidae*. The Shannon-Wiener Index of Species Diversity indicates both prairies as relatively diverse, with no difference in diversity between the east and west prairie locations.

4

Title: Summer Roadside Use by White-Tailed Deer near Currie, Minnesota

Presenter(s): Travis Radke

Advisor: Drs. Thomas Dilley & Emily Deaver,
Environmental Science

Abstract: The white-tailed deer *Odocoileus virginianus*, is a highly visible, abundant, culturally and economically important species in North America. This study measures the number of deer seen near sunrise and sunset along roadside habitats. Observations were made to monitor roadside use, temporal and spatial patterns, and deer/vehicle collisions along a 2.5 mile distance of road from June 2015 until the end of August 2015, three days a week, morning and evening. Females were most commonly seen throughout all 5 sites. The highest number of deer were seen in the first two weeks. A significant difference for males between sunrise and sunset was noted, with more males seen during sunrise supporting the expectation that males are rarely seen out of mating season. A large difference at sunrise and sunset

between males and females was also documented at all sites. There was no difference in the total number of deer over the summer.

5

Title: Survey of Pollinators in the ADM-SMSU Wildlife Area Marshall, MN Summer 2015

Presenter(s): Caci Lingen

Advisor: Drs. Emily Deaver & Thomas Dilley, Environmental Science

Abstract: Insects, such as butterflies, moths, flies, beetles, and especially bees, play an important role ecologically, agriculturally, and economically through pollination. Recent declines in insect populations have become a growing concern, including in prairies. A prairie survey was conducted from July to September 2015 in southwest Minnesota to document pollinators present on different composite plant flowers. Five 50-meter long transects were surveyed using the point-intercept method, recording plant and pollinator types within 1 meter of the transect line. Seven species of pollinators were found on 5 different species of plants: 3 bees, 2 beetles and 2 wasp species. Statistical analysis (ANOVA, $p= 0.05$) showed that there was a significant difference between the number of bumblebees on Stiff Goldenrod over time, and in the number of Pennsylvania Leatherwing beetles on all plants over time, with most pollinators appearing in early September. In addition to bees, beetles were found to be important pollinators in prairies.

6

Title: Influence of Temperature and Precipitation on the Prevalence of Lyme Disease in Minnesota

Presenter(s): Claire Sames, Rhiannon Sears & Ashley Millerbernd

Advisor: Dr. Betsy Desy, Biology

Abstract: Lyme disease is caused by the bacterial spirochete, *Borrelia burgdorferi*, and is transmitted to humans through the bite of infected blacklegged ticks (*Ixodes scapularis*). The white-footed mouse (*Peromyscus leucopus*) serves as a reservoir for *B. burgdorferi*. Several studies show that temperature and precipitation are correlated with increased *P. leucopus* populations. The purpose of this study was to determine how patterns of precipitation and temperature were linked to the prevalence of Lyme disease in Minnesota. We examined reports of Lyme disease made by the Minnesota Department of Health from 2000-2013 and compared them to trends in temperatures and precipitation in Brainerd, Minnesota. We found no association between winter temperatures and prevalence of Lyme disease. However, our data show that years with higher spring precipitation had a decrease in the

prevalence of Lyme disease. Thus, wet springs may result in a decrease in the prevalence of Lyme disease in Minnesota.

7

Title: Density of Goldenrod Plants With and Without Insect Galls in the SMSU Wildlife Area

Presenter(s): Devin Ryan, Emily Heesch & Marissa Mattson

Advisor: Dr. Betsy Desy, Biology

Abstract: Goldenrod plants (*Solidago spp.*) are known to be parasitized by gall insects (*Eurosta spp.*). Gall insects stimulate the plants to create galls, which in turn provide a relatively safe environment for their larva. The purpose of our study was to determine the occurrence and distribution of gall infestation in goldenrod clumps in the Wildlife Area. Live larva in galls was also recorded. Fourteen randomly selected clumps of goldenrod were surveyed for galls. Larva was present in 78.37% of galls. There was a significant difference in gall abundance in small and large clumps. The South end of the Wildlife Area had significantly greater gall abundance than the North end. The greater gall abundance among smaller clumps may be due to close proximity of food and habitat. Landscape variations may have also affected gall abundance, showing the gall infestation may have been affected by environmental factors.

8

Title: Isolation of Antibiotic-Producing Microbes from Soil Collected in Marshall, MN

Presenter(s): Caroline Mukeshimana, Dylan Johnson & Mikaela Cypher

Advisor: Dr. Betsy Desy, Biology

Abstract: Soil is composed of many organisms, organic matter, gasses, minerals, and microbes. Some soil bacteria produce antimicrobial agents to inhibit growth of nearby microbes. Bacteria thrive in soil with low pH, high moisture content, and organic material. As bacteria continue to develop resistance to commonly used antibiotics, it is important to continue finding new ways to fight off these bacteria. The purpose of this study was to determine whether or not bacteria were producing antimicrobial agents near three ponds in southwest Minnesota. We hypothesized that the oldest pond would have more antibiotic producing microbes than the newer ponds. We isolated bacteria by six fold dilutions, spread each dilution on petri dishes, patched them, and performed various agar overlays. Only one colony from the oldest pond displayed antibacterial properties against *E. coli*, *Staphylococcus aureus*, *Salmonella*, *Streptococcus agalactiae*, and

Klebsiella pneumoniae, therefore our hypothesis was supported.

9

Title: “Interesting, but Terribly Overrated”

Presenter(s): Jess Rockeman

Advisor: Marianne Zarzana, Creative Writing

Abstract: Jess Rockeman’s short fiction and poetry seek to highlight the lives of women who may not get their day in the spotlight, such as queer women, women born into poverty, or women who have been victims of violent crimes. She writes only stories that she herself would like to read. Her flash fiction story “Warning Song” is about a young girl forced to give her siblings a sense of normalcy after an encounter with their abusive father. Her poems “Jonbenét” and “S’il vous plait” are about two high-profile cases of violence against women. And her short story, “The Blue Room,” details an odd, endearing encounter between a student and her professor at a local gay bar.

10

Title: “Interesting, but Terribly Overrated”

Presenter(s): DC Crowell

Advisor: Marianne Zarzana, Creative Writing

Abstract: This presentation will consist of poems about the Salem Witch trials, the post-9/11 impact, and hate texts, along with some short fiction pieces. Crowell’s subjects are what she has observed, heard about, or experienced firsthand. These real-life events and the emotions conveyed are what Crowell emphasizes in her work.

11

Title: “Interesting, but Terribly Overrated”

Presenter(s): Stephanie Wisdom

Advisor: Marianne Zarzana, Creative Writing

Abstract: Stephanie Wisdom is inspired by her childhood, experiences in school, interactions with people, and interests in history, culture, and mystery in her writing. Stephanie was born in Panama, and the story she will be reading, “The Stone Door,” is a fictitious retelling of folktales her mother told her, as well as her own experiences in the country.

12

Title: Effects of LED Light vs Fluorescent Light on the Growth of Radish Plants (*Raphanus sativus*)

Presenter(s): Krishna Ghimire

Advisor: Drs. Emily Deaver & Thomas Dilley, Environmental Science

Abstract: Plants convert light energy into chemical energy through photosynthesis, but not all wavelengths are used with equal efficiency. Artificial light is useful for controlling the quality, intensity and

duration of light. The growth of radish plants (*Raphanus sativus*) under LED and fluorescent lights was measured in environmental chambers to determine if there would be improved growth using LED lights. Sixteen radish plants were grown in two environmental chambers, one with Philips Alto fluorescent bulbs, the other with Sylvania Daylight LED bulbs, both set at a 16:8 light: dark photoperiod, 20°C and 630 LUX. After growing 26 days, there was no significant difference (T-test, $p=0.05$) in final average height and leaf length for fluorescent vs LED radish plants. However, radish shoot and root mean dry weight were significantly heavier in the fluorescent light treatment. Differences in the spectral wavelength outputs of the bulbs likely account for this difference.

13

Title: Comparison of Plant Species in an Old and New Reconstructed Prairie in Southwest Minnesota

Presenter(s): Taylor Buchtel, Catarina Gronau, Casey Hertz & Katlyn Sandbulte

Advisor: Dr. Betsy Desy, Biology

Abstract: Many factors contribute to and affect the biodiversity of vegetation in a prairie. Burning prairie vegetation is a method used by resource management to reconstruct prairies so they resemble their native counterparts. The purpose of our study was to determine the effect of time since reconstruction on the frequency of prairie plant species. Using a combination of the line-intercept and quadrat methods, we examined two prairies of differing ages of reconstruction (3 years vs 15 years) in Southwest Minnesota. In the three-year old prairie, we identified 23 plant species, and 19 plant species were identified in the 15-year old prairie. Eight plant species occurred in both prairies. Indian Grass, Brome Grass, Round-Headed Bush Clover, and Purple Prairie Clover occurred most frequently in the recently reconstructed prairie. Brome Grass, Indian Grass, Big Bluestem, and Fox Tail had the highest frequency in the established prairie.

14

Title: Distribution and Abundance of Galls on Hackberry Tree Leaflets

Presenter(s): Megan Bruns, Lozililo Moyo, Elizabeth Senkyr & Tatum Larson

Advisor: Dr. Betsy Desy, Biology

Abstract: Galls are tumorous outgrowths on plants caused by insects. Galls on Hackberry tree leaflets serve as a food source and protection for the insects. The purpose of this study was to determine the distribution of galls on Hackberry tree leaflets located on the Southwest Minnesota State University campus. We divided our study area into

north and south, and sampled 5 trees from each area. We collected four leaflets from each tree and determined gall number, arrangement (cluster, scatter, combination, and single), and measured distances between galls. We found average distance between galls in the north area (avg=1.8cm) to be similar to the average in the south area (avg=2.0cm). Average number of galls per leaflet in the north and south areas were 3.7 and 4.1 respectively.

15

Title: A Comparison of Earthworm Densities in Four Habitats in Southwest Minnesota

Presenter(s): Matthew Kubly, Nicole Cordes & Taylor Schreier

Advisor: Dr. Betsy Desy, Biology

Abstract: Terrestrial earthworms (*Lumbricina spp.*) are a non-native species in Minnesota, but have been found to be important in soil development (Smetak *et al.*, 2007). In this study, we predicted that densities of earthworms would not differ between habitats. The habitats for this study were a deciduous and coniferous forest located on the SMSU campus, Marshall, Minnesota. The other two habitats were till and no-till cornfields located near Currie, Minnesota. All earthworms in a sample site (30 cm² and 20-30 cm deep) were counted. We found a highly significant difference in earthworm densities in the four habitats ($X^2=187.2$, $p<0.005$). No-till had the highest earthworm density and the coniferous had the lowest earthworm density. This suggests that no-till habitats have the highest rates of nutrient cycling, which could be due to fertilizers and stability of habitat. The low density of the coniferous habitat was possibly due to soil make-up.

16

Title: A Summary of Bird Species Occurrence in Southwest Minnesota over a Ten Year Period, 2005 to 2015

Presenter(s): Ellen Johnson, Briana Reiersen, Deewan Bajracharya & Nathan Andresen

Advisor: Dr. Betsy Desy, Biology

Abstract: Local songbird species are important pollinators and act as natural pest control agents for crop farmers but recently, a decline in their population has been seen in Southwest Minnesota over the past decade. Browder *et al.* 2002, stated that grassland, wetland and woodland conversion into cropland for intensive agricultural practices is the most prominent interference for the decline in bird species population. The purpose of this study is to summarize the population of bird species in Southwest Minnesota over a decade, 2005 to 2015, in order to observe patterns of species abundance.

We collected dead birds from window strikes at SMSU for the month of October to understand species present in the area and compared that with the Ebirds database and past SMSU studies. We expect to see a decline amongst the popular songbirds found on campus compared to the data we find in the various databases.

17

Title: The Effects of the EPA's Water Rule on Minnesota's Farm Economy

Presenter(s): Jessica Laqua

Advisor: Dr. David Sturrock, Political Science

Abstract: This presentation is designed to show just how far the Environmental Agencies jurisdiction over private land owners will go to prove that some policies aren't gray. The so called "water rule" effects thousands of farmers and land owners and the multi-billion dollars it does to generate the Minnesota economy. With many questions still up in the air about the rules context and what is to be decided by the higher courts, who is losing here? Farmers and their money or standard citizens and their right to higher quality water for them and our future generations. The EPA's positive outlook on pollution control and the farmer's right to do what they should choose on their own private land. We are finding out new ways to control pollution every day, but should it be at the cost of hard working farmers?

18

Title: Gender and Fantasy in Children's and Young Adult Literature

Presenter(s): Paige Ebner, Danial Slowey, Kaitlyn McCaslin & Jennifer Rye

Advisor: Dr. Ruthe Thompson, Literature

Abstract: From nineteenth-century *Grimm's Fairy Tales* to the twenty-first-century *Twilight* series, children's and young adult literature has presented prescriptive gender roles and cultural icons of femininity and masculinity. Senior literature capstone students examine representations of gender in traditional fairy tales, *Alice in Wonderland* and *Through the Looking Glass*, and contemporary novels for young adults.

19

Title: Improvement of Fitness of Traditional Students at SMSU

Presenter(s): Naomi Peterson, Jessica Engebretson, Paul Vold & Zach Bailey

Advisor: Dr. Amanda Bemer, English

Abstract: The purpose of our project is to increase the number of students who utilize the fitness centers on the campus of Southwest Minnesota State University to help reduce obesity. We are

proposing that a renovation of the fitness centers on campus will increase their usage. The current equipment lacks safety and the sanitation is poor. The results of a survey showed that students would use the fitness centers if the equipment was upgraded. Limiting the student workers to those who have some experience in fitness would allow for traditional students to feel safe using the space as they are able to ask for advice or assistance. The addition of a schedule would give traditional students more opportunity to utilize the facility at a time that fits around their busy schedules.

20

Title: Healthy Food at SMSU

Presenter(s): Daryl Thomas, Megan Will & Katie Wenisch

Advisor: Dr. Amanda Bemer, English

Abstract: The purpose of this report is to recommend healthier eating options in the Food Court at SMSU. By offering healthier food options, SMSU will become a healthier environment for college students. Our research focuses on three main points: (1) gathering information about which healthy food options should be offered at SMSU, (2) collecting data and information about the costs of healthy food options versus unhealthy food options, and (3) finding information about the health benefits of eating healthier foods and how it will help SMSU in the long run. We believe that our research will indicate: (1) which healthy food options SMSU students would prefer to have, (2) how much these new healthy food options will cost, and (3) what health benefits it will have for SMSU students and how it will help the school in the long run.

21

Title: Improving Recycling Initiatives at Southwest Minnesota State University

Presenter(s): Dylan Curfman, Dylan Parsons, Jordan Salonek & Sondra De La Cruz

Advisor: Dr. Amanda Bemer, English

Abstract: The purpose of this report is to recommend ways to improve recycling around SMSU's campus. By adding more recycling bins and placing them in more efficient places, the amount of recycled materials will increase. Our research focuses on the cost of recycling bins, the advantages and disadvantages of those bins, information from the maintenance staff about the upkeep, and the best places to put them. Our research shows that increasing the number of bins on campus and placing more of them in classrooms and by vending machines will increase the number of items recycled. These ideas would benefit SMSU

by reducing waste sent to landfills and increase the green footprint of our university.

22

Title: Fighting Obesity, One Desk at a Time

Presenter(s): Amanda Heesch, Corey Gregor & Sara Tews

Advisor: Dr. Amanda Bemer, English

Abstract: The purpose of this research report is to recommend putting in standing desks in the computer labs of SMSU. Our research focuses on the benefits, disadvantages and cost that would affect SMSU. By putting in these desks SMSU students will reduce the risk and effects of obesity. Our research indicates that there are many more advantages than disadvantages to using standing desks in a classroom environment. These benefits include improvement of overall cardiovascular health, help with weight loss and reduces the risk of type 2 diabetes.

Oral Session B- CH 201 Contemporary Issues, History, Psychology, Political Science, Sociology and Theatre

23

Title: Discussing the Social and Developmental Challenges of Cerebral Palsy Wheelchair Bound Individuals at SMSU

Presenter(s): Taylor Koloc, Hannah Chaddock & Victoria Bense

Advisor: Dr. Scott Peterson, Psychology

Abstract:

24

Title: Cohabitation and the Connection to Divorce and Religion

Presenter(s): Kelsey Larson

Advisor: Dr. Cindy Aamlid, Sociology

Abstract: In today's society, a majority of couples are choosing to live with each other before marriage. Cohabitation has become the norm for many couples due to financial help and the belief it will help create a better marriage. Couples who cohabitate believe that living with each other before marriage will help them decide if they are compatible with one another or if they should go their separate ways. Despite this thinking, cohabitation actually shows an increased chance of divorce from those who wait to live with each other until marriage. For

couples who choose not to cohabitate before marriage, religion is generally the main factor in their decision.

25

Title: The History of the Chemical Corps

Presenter(s): Michael Koch

Advisor: Dr. Thomas J. Williford, History

Abstract: Chemical warfare was a new concept in the Great War. The United States was not prepared for troops being gassed. After WWI, The Chemical Warfare Service (CWS) was created. In World War II the CWS started to use mortar rounds to support infantry by gassing the enemy units. The CWS was changed to the Chemical Corps. The Chemical Corps did not just use chemical, but flame and smoke weapons also. The Korean War, the Chemical Corps provided smoke cover for months at a time so the enemy would not find U.S. troops. In Vietnam, they used the "people sniffers" to find the enemies and herbicides to destroy the enemy's cover. The Gulf War, they made sure the United States Army was ready and trained for a potential chemical attack. Throughout the conflicts in the Middle East, the Chemical Corps continues to train and prepare for chemical, biological, radiological, and nuclear attacks.

26

Title: Effects of Family Structure on Juvenile Delinquency

Presenter(s): Brittany Verhelst

Advisor: Dr. Cindy Aamlid, Sociology

Abstract: This paper is a focus on whether or not family structure has an effect on juvenile delinquency. It will address whether two-parent, single-parent, or divorced families increase the likelihood of juveniles becoming delinquent. Along with that, it will look to see if family size, birth order, and family relationships added to the delinquency in juveniles. It will also take a look at whether criminal activity will continue once people outgrow their juvenile stage and become adults, or if it will no longer exist once they turn into adults. This paper will review a number of sources in order to draw its conclusion about this topic.

27

Title: The Last War Song

Presenter(s): Megan Lipetzky

Advisor: Dr. Thomas Williford, History

Abstract: The largest mass execution in United States history happened on December 26, 1862, in Mankato, Minnesota. The hanging of 38 Dakota men brought an end to the Dakota Conflict within Minnesota. The hangings were a public event

showing the settlers that were affected by the conflict and immigrants moving to the area that the government had the situation under control. The hangings are also believed to have been a message to the South for wanting to secede from the Union.

28

Title: Stage Management and the Stage Manager's Promptbook

Presenter(s): Kyle Havlicek

Advisor: Sheila Tabaka, Theatre

Abstract: The stage manager is the person that keeps a show running smoothly. Stage managers help manage auditions, write down blocking (movement) during rehearsals, and call the show. That is only a few of the many things that stage managers have to accomplish, and a stage manager wouldn't be complete without his or her promptbook. The promptbook consists of all the paperwork that a stage manager would need, including a copy of the script. Promptbooks need to be well organized and legible for others to read, just in case they end up having to leave the show. Sometimes a certain stage manager is used just for rehearsals, and once the show opens the original one leaves and a new stage manager comes in to take the place of the former one, so it is important that a promptbook can be understood by others.

29

Title: How to apply basic contouring for the stage

Presenter(s): Payton Shively

Advisor: Sheila Tabaka, Theatre

Abstract:

30

Title: (How) Does the Sexual Orientation of Parents Matter?

Presenter(s): Victoria Garza

Advisor: Dr. Vicky Brockman, Sociology

Abstract: moved to poster #152

31

Title: The Effects of Music on Student's Walking Speed

Presenter(s): Nicole Cordes

Advisor: Dr. John Ginocchio, Music

Abstract: Music has been shown to effect habits in retail settings (Garlin, 2006). Often, companies manipulate background music to get more sales. Students may use similar methods to manipulate the music that they listen to to get the most out of their education. The hypothesis tested is that students will walk faster when exposed to faster paced music. To test this, students were exposed to music for 209.3 feet before they chose to go on two different paths.

While they were walking on each path, their steps were being recorded. Song pace was later looked up and determined by beats per minute. Students did walk faster when exposed to faster paced music.

32

Title: Railway Transportation System of Greater Minnesota

Presenter(s): Cole Johnson

Advisor: Dr. David Sturrock, Political Science

Abstract: The aim of this research into the Railway Transportation System is to ascertain the dynamics and politics of such a system in its current development and growth within that of Greater Minnesota. Minnesota, itself, is in the process of committing to its five-year mandate on rail transportation and negotiates with over 20 companies comprising over 4,400 miles of railroad statewide. By using qualitative and quantitative measures from online State and company statistics, MnDot sources, and the capabilities of the local railroad within Luverne, Minnesota, this research will shed light on the impact, ramification, and importance that deals with the current state of public policy in Greater Minnesota.

33

Title: Through the Years: The Town History of St. Leo, Minnesota

Presenter(s): Sean Kallevig

Advisor: Dr. Thomas J. Williford, History

Abstract: In 1878, the small town of St. Leo, MN was founded. It is located in Southwest Minnesota, a region dedicated to agriculture, and is home to approximately 100 people. Through the course of its existence, St. Leo has seen the coming and going of many businesses, a church, a fire department, a bank, and a post office. St. Leo is also the hometown of the Minnesota record holder for longest tenured mayor, who also happens to be a member of the Minnesota Softball Hall of Fame. St. Leo is a unique community that has developed through the years into a home for all of its residents.

34

Title: Immigrants in Minnesota: Educational Challenges and Contributions to State Economy

Presenter(s): Erik Khzmalyan

Advisor: Dr. David Sturrock, Political Science

Abstract: Although Minnesota has fewer immigrants than many states, its foreign-born immigrant population increases faster than the national average. Rural Minnesota, for instance, has become a destination for thousands of immigrants. The region known for its agriculture industry needs educated immigrants who are willing to take farming

jobs. Providing these people with the necessary education is crucial as it will keep them up on the best practices and new technology in agriculture. New reports show that immigrant farmers are needed as a safeguard against declining population of traditional, native-born farmers. Two groups are particularly interested in entering the agriculture industry: Hmong and Hispanic. It is true that Minnesota has always been generous in creating educational programs for immigrant farmers. However, there is still an immense need to boost these programs in order to utilize the skills of immigrants and make farming even more effective.

35

Title: Modern History: The 2009 Decision of the ELCA

Presenter(s): Broderick K. Eveslage

Advisor: Dr. Thomas J. Williford, History

Abstract: In 2009, the Evangelical Lutheran Church in America (ELCA) was faced with a momentous situation. They found themselves encountering the question of how much involvement people who open identified themselves as homosexuals should have in their church. After almost twenty years of research and development of policy, the ELCA finally decided to vote on this issue at their church-wide national meeting in August 2009 in Minneapolis, Minnesota. That decision would ripple through the entire church base and cause some major inter-congregational disputes, including in Marshall, Minnesota.

36

Title: Racism in the Pacific during World War II

Presenter(s): Benjamin Klotz

Advisor: Dr. Thomas Williford, History

Abstract: During World War II, many Americans, including those in our own government, thought that whites were racially superior to the Japanese they were fighting. Due in part to this belief, the United States during this time used racially-charged propaganda supported by stereotypes and scientific racism. These racial beliefs were the cause for the internment of thousands of Japanese-Americans, and affected the way American soldiers behaved in the Pacific. The Japanese military elite, also had their own racial beliefs. This culminated in the Yamato Race, the belief the Japanese were intended to end Western Imperialism in Asia, replacing it with a Japanese Empire. The Japanese elite believed it was their divine right to be ruler over who they believed to be lesser Asians.

37

Title: The Use of POW Camps in Minnesota during WW2

Presenter(s): Broderick Goens

Advisor: Dr. Thomas J. Williford, History

Abstract: Prior to US involvement in World War Two, agriculture was a profitable area for the United States, especially in the state of Minnesota. After many men left to fight in the Pacific or European theaters, there was often a shortage of labor for agriculture. Beginning in 1943, the United States utilized the policy of prisoners of war (POW) as a source of labor in various towns throughout Minnesota. This paper takes a look at how both Italians and German prisoners of war were used in towns such as Bird's Island, New Ulm, and others as a source of labor in Southwest Minnesota. Their labor and services helped the economy, but also led to different opinions from the people of these towns about the prisoners. Their treatment affected the prisoners themselves and their views towards life in the camp in comparison to after the war itself.

38

Title: Founding of the Upper Sioux Community

Presenter(s): Adam Savariego

Advisor: Dr. Thomas J. Williford, History

Abstract: The Upper Sioux Community was founded on unique circumstances in the mid 1930's. In the years before, the area went through turbulent times. War, broken treaties, forced removal, genocide, and assimilation the Dakota people lived in fear. The majority of these stem from the original broken treaty of Traverse Des Sioux that guaranteed homeland for the Dakota people. Ten miles east and west of the Minnesota River was designated Dakota territory with provided provisions to survive. However, a band of Dakota were forced to fight when these provisions were not being upheld by the government in a conflict in 1862. Government policy in the years to follow forced the Dakota to scatter away from Minnesota. In the 1930's a different government policy gave hope to the Dakota, the Indian Reorganization Act. This act allowed the Dakota who returned home to organize into a community. This provided the basis for what Upper Sioux is today.

39

Title: Substance Abuse Treatment and the United States Prison System

Presenter(s): Grady Holtberg

Advisor: Dr. Cindy Aamlid, Sociology

Abstract:

Abstracts

Poster Session A – Agronomy, Biology, Computer Science, Economics, Exercise Science, History & Mathematics

1

Title: An interplay between oxidative stress and autoimmunity in the pathogenesis of vitiligo

Presenter(s): Briana Reiersen

Advisor: Drs. Tony Greenfield and Pam Sanders, Biology

Abstract: There are many theories surrounding a mechanism for vitiligo. Two main mechanisms would include oxidative stress and autoimmunity. Laddha *et al.* (2014) researched the humoral autoimmunity mechanism and oxidative stress mechanism and found significantly increased levels of LPO and antimelanocyte antibodies in vitiligo patients compared to controls. Lili *et al.* (2012) studied the cell-mediated autoimmunity mechanism and found increased numbers of both CD8+ cytotoxic T lymphocytes and Tregs in the perilesional skin of general vitiligo patients. Oxidative stress has been shown to be a possible mechanism and appears to be the initial trigger in causing vitiligo which is made worse by autoimmune elements.

2

Title: The Use of Lettuce Extract as a Natural Herbicide

Presenter(s): Phil Duerr

Advisor: Lee French, Agronomy

Abstract: Today's herbicides are harming the environment and are creating herbicide resistant weeds. With organic farming becoming a more dominant approach, an herbicide that can be used in that style of farming needs to be available. The use of lettuce extract as a plant growth inhibitor has been documented. An experiment was performed using different rates (15%, 25%, and 35%) of lettuce extract to inhibit barley plant growth. It resulted in the lower concentrations inhibiting the plant growth more. Lettuce extract shows to have inhibitory effects on plant growth and could be a viable product for an organic approach to weed control.

3

Title: The allelopathic effect of orange, lemon, and banana peel extract on dry weight and overall height of corn

Presenter(s): Paige Hendrickson & Taylor Holicky

Advisor: Dr. Pam Sanders, Biology

Abstract: Peels of commercially harvested fruit becomes waste which can be useful if used as herbicide. We investigated the allelopathic effects of orange, banana, and lemon peel extracts on average height and dry biomass of corn plants (*Zea mays* 'Sugar Buns'). 4-week old corn plants were transplanted into 4 groups of 6 and treated in an optimum greenhouse environment. Plants were watered with 25g/L extracts of orange, banana, or lemon peel and a control of distilled water. Plant height was measured for 3-weeks and dry weight at harvest. Corn plants treated with orange extract exhibited a significantly greater plant height than the control treatment after day 14. Lemon extract caused a significant higher difference in dry biomass compared to the control, orange, and banana peel treatments. Results show this concentration of fruit peel extracts will aid in the increased growth on average height and biomass.

4

Title: Diet and Body Composition of SMSU Women's Basketball Team

Presenter(s): Tiffany Gehl

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: This study sought to determine whether diets of the SMSU women's basketball team meet energy and micronutrient recommendations when compared to Recommended Dietary Allowances (RDA). Diets were analyzed using nutritional analysis software (FoodWorks). A second aim was to determine relationships between body composition of players and their energy intake. The players completed 3-day food logs during preseason on two weekdays and one weekend day. Body composition measurements included height, weight, and body fat percentages using bioelectric impedance (RJL Systems). Daily intakes of carbohydrate, protein, and fat were lower than RDA (protein 60.5±16.7 vs. 85.0 g/day, carbohydrate 254.0±75.3 vs. 354 g/day, fat 66.1±18.9 vs. 424 g/day, p<0.05). Also, vitamin D levels were lower than RDA (0.79±0.80 vs. 75 mcg/day, p<0.05). Kilocalorie intake and macronutrient quantity determined by Pearson correlation was not associated with any body composition measures. These players' diets may not be adequate for players to achieve peak performance.

5

Title: Small Interfering RNA as the Silver Bullet for Cancer

Presenter(s): Rebecca Sommer

Advisor: Dr. Vaughn Gehle & Pam Sanders, Biology

Abstract: One in 200 people are diagnosed with cancer each year in the U.S. Treatments are often non-specific with significant side effects. Gene silencing uses short transcripts (siRNAs) to inhibit mRNA translation, effectively turning off a specifically targeted gene. The Mcl-1 gene codes for an anti-apoptotic protein that is overexpressed in many cancers and which contributes to drug resistance. Aliabadi *et al.* (2013a) studied the efficacy of Mcl-1 siRNA in cultured cancer cells and found that Mcl-1 siRNA gene silencing significantly decreased cell viability. In a second study, Aliabadi *et al.* (2013b) determined the efficacy of Mcl-1 gene silencing in slowing tumor growth in mice *in situ*. Results indicated that intratumoral Mcl-1 siRNA injections significantly slowed tumor growth. Intraperitoneal Mcl-1 siRNA injections also slowed tumor growth, but this effect was not significant. These studies indicate that siRNA silencing of the Mcl-1 gene is a promising alternative to current cancer therapies.

6

Title: Longitudinal Analysis of Ongoing Employee Wellness Fitness Programming

Presenter(s): Sara Tews

Advisor: Jeffrey W. Bell, Ph. D & Kris Cleveland, D.P.T., Exercise Science

Abstract: This retrospective study sought to compare the results of an ongoing employee wellness and fitness program. In each program, subjects completed 12 weeks of personal training including pre- and post-tests. Each program was completed during an academic semester. This study compared results from spring 2013 through spring 2015. Subjects included 213 employees from a local corporation ranging in ages from 23 to 62 years. The body composition and vital signs from pre-test to post-test did not consistently change from program to program. However, fitness measures consistently improved. The five semester average for the aerobic 1-mile walk test decreased from pre-test to post-test by 54.2 seconds and the VO₂max increased by 1.84 ml/kg/min. The core and lower back stability and flexibility, as tested by a plank core-stability test, the Eurofit sit-up test, and sit & reach test, increased by an average of 32.8 seconds, 3.78 repetitions, and 2.72 centimeters respectively.

7

Title: Mathematics and Music: Actions of Dihedral Groups

Presenter(s): Amanda Boushek

Advisor: Dr. Heather Moreland, Mathematics

Abstract: The association between mathematics and music has been considered for thousands of years. One example of this relationship is the use of integers modulo twelve to represent each of the twelve chromatic tones in an octave, referred to as pitch classes. The major and minor triads are written as triples of those pitch classes and form the dihedral group of order 24. Two types of musical actions on the triads are explored: T/I (transposition and inversion) and PLR (parallel, leading tone exchange, and relative). It is shown that two subgroups are formed by applying these operations, and each is the centralizer of the other. A “clock” showing the pitch classes and two graphical representations illustrate the T/I-group and PLR-group actions, respectively. Using Johann Pachelbel's famous Canon in D, the duality of these groups is demonstrated.

8

Title: Restaurant POS System

Presenter(s): Brett Welsh & Santosh Chaulagain

Advisor: Drs. Daniel Kaiser, Shushang Man & Kurosh Mortezaipoor, Computer Science

Abstract: The basis of this project is to create a web application for smaller restaurants. This application would be used by employees who take customer's orders. After the order is taken they will enter it into this program. Our program will keep track of individual orders. It will also keep a running total with the tax included at the bottom of the screen. The program is being created in Visual Studios 2015, and the code is being written in C# and XAML. Our overall approach was to create a user friendly program that is easy for anyone to use.

9

Title: FimH as a critical component in attachment of uropathogenic *Escherichia coli* and therefore a potential target in development of a treatment

Presenter(s): Nicole Cordes

Advisor: Drs. Tony Greenfield & Pam Sanders, Biology

Abstract: Urinary tract infections (UTI's) are very prevalent in women with uropathogenic *E.coli* as the most common cause of these infections. FimH is an adhesion protein on the tip of the type 1 pili of *E. coli*. Wellens *et al* (2008) used manose based inhibitors to show that FimH binds to manose residues on the uroepithelial cells. The addition of heptyl-alpha-D-mannose reduced adhesion and

invasion to bladder cells. Langermann *et al* (2000) created a vaccine to produce anti-FimH antibodies which would prevent FimH adhesion. Monkeys that were vaccinated and later challenged with uropathogenic *E. coli* were protected from infection. Therefore, with more research, vaccines may be made that target FimH or ligand-based antagonists can be used to prevent *E. coli*.

10

Title: Craft Me a Favor Website

Presenter(s): Cameron Daniels Lawson

Advisor: Dr. Dan Kaiser, Computer Science

Abstract: The Craft Me a Favor website is designed to show off the designs of the Craft Me a Favor business and also a way to have customers request personal wanted crafts via the internet. Customers will be sent a personal craft after receiving payment information that is linked with PayPal. This site will be simple in design and easy to use for potential customers. The website will send the company email a form when customers submit a personal request. The users will be able to have an account name and password for transactions within the site.

11

Title: Fitness of collegiate wrestlers over a competitive season

Presenter(s): Meghan Johnson & Demi Rorvick

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: The purpose of this study was to measure physical fitness over a competitive wrestling season. Twenty-four wrestlers from an NCAA Division-2 team completed a battery of fitness tests before and after their season. Testing included body composition (skinfolds and bioelectric impedance analysis-RJL Systems), VO₂Max via a Cooper Test, vertical jump, and muscular strength exercises. Body fat measured by skinfolds worsened post-season (9.81 ± 3.90 vs. 10.96 ± 3.48 percent, $p < 0.05$) and bench-press worsened post-season (121.12 ± 26.09 vs. 102.54 ± 22.58 kilograms, $p < 0.01$). Improvements were seen in pre-season compared to post-season in hang clean (88.18 ± 16.33 vs. 88.30 ± 17.99 kilograms, $p < .100$), dead-lift (104.09 ± 21.75 vs. 151.67 ± 33.51 kilograms, $p < .001$), and back-squat (104.40 ± 24.8 vs. 125 ± 25.41 kilograms, $p < .001$). Other fitness measurements were relatively stable indicating a thorough and stable training program from off-season to the following off-season.

12

Title: Anthocyanins in Berries and Effect on Malignant Tumor Development

Presenter(s): Elizabeth Senkyr

Advisor: Dr. Pam Sanders, Biology

Abstract: Anthocyanins are water soluble polyphenolic flavonoid responsible for the red, blue, and purple hues of fruits and vegetables. Up to 10% of berry dry weight is anthocyanins. Studies suggest anthocyanins possess potent anticancer activity *in vitro* and *in vivo*. More than 35% of human cancer mortality may be related to diet. This project is a review of studies on anthocyanin impact on gastrointestinal tumor development and the prevention of gastrointestinal cancers in both animal and human models. A variety of mechanisms are being studied to determine dietary anthocyanin effect on cancer development and progression, with primary focus on antioxidant and anti-inflammatory activity.

13

Title: RM Point of Sale System (RMPOSS)

Presenter(s): Riya Shrestha & Maheshwor Dhungel

Advisor: Drs. Daniel Kaiser, Shushang Man & Kurosh Morteza-pour, Computer Science

Abstract: RM Point of Sale System is an object-orientated application for Windows OS where the software lets users track usages, monitor changes, calculate, and analyze inventory on an item-by-item basis. RMPOSS is highly secure and popular among businesses, such as restaurants and small stores. This software is built using Java with Jframe for the GUI and MySQL for data storage. The system will also include a web feature that allows the customer to use the unique receipt number to generate detailed information about an order from our online database.

14

Title: The Effects of Distance from Light and Sound Stimuli on Reaction Time

Presenter(s): Gabe Langseth & Whitney Burmeister

Advisor: Jeffrey W. Bell, Ph.D. and Brent Jeffers, Exercise Science

Abstract: The purpose of this study was to determine whether distance from visual or auditory stimuli affect reaction time. Twenty-five men and 25 women (age 18-27 years, weight 74.8 ± 18.9 kg, and height 173.5 ± 12.0 cm) with previous or current track and/or swimming experience were tested. Subjects completed 12 randomized trials of the visual and auditory tests: 3 at close light, 3 at close sound, 3 at far light, and 3 at far sound. The average reaction times for close light, close sound, far light, and far sound were 0.248 ± 0.047 , 0.2091 ± 0.042 , 0.258 ± 0.051 , 0.233 ± 0.035 seconds, respectively. There was a main effect of slower reaction time with further distance from stimulus (0.0165 sec, $p < 0.01$). There was a main effect of stimulus type with

reaction to sound being faster than light (0.0321 sec, $p < 0.01$). Distance from and type of starting stimulus should be considered as factors affecting reaction time in sports that include starting signals.

15

Title: The effectiveness of natural predators compared to chemical methods in regulating the population of invasive zebra mussels

Presenter(s): Ellen Johnson

Advisor: Dr. Betsy Desy & Pam Sanders, Biology

Abstract: This poster reviews two studies that investigate a biological vs. a non-biological method of controlling populations of the invasive zebra mussel (*Dreissina polymorpha*) in the Great Lakes Region. Zebra mussels have devastated native mussel populations and caused approximately \$5-10 billion in costs to clear industrial pipes. Possible control methods include the use of natural predators (biological) and chemicals (non-biological). Naddafi & Rudstam (2013) found that handling time and consumption rate of zebra mussels by natural predators did not substantially affect the population of Zebra mussels. Aldridge et. al. (2006) used a chemical method, the BioBullet, and found that the KCl particles contained therein caused high mortality rates in Zebra mussels. Biological control methods may not be effective in the short-term possibly because of a brief co-evolutionary time between the predator and prey. However, chemicals may have long-lasting negative effects in the ecosystem.

16

Title: The Allelopathic Effects of Oregano on the Height and Dry Weight of Tomatoes

Presenter(s): Lacey Prescott & Ellen Johnson

Advisor: Dr. Pam Sanders, Biology

Abstract: Oregano (*Origanum vulgare*) is an aromatic herb that contains phytotoxic chemicals. This study investigated the effects of various concentrations of oregano extract on height and dry weight of tomato plants (*Solanum lycopersicum*). We predicted that higher concentrations of oregano extract (3.33 g/L) would have the most profound effects on the decrease in height and dry weight. Twenty-four 2-week-old tomato plants were treated in an ambient greenhouse environment. The plants were split into four groups and watered with 0, 0.33, 1.67 and 3.33 g/L oregano extract. Plant height was measured over 18 days and dry weight was collected at harvest. Plants showed height inhibition of 80.6% between the control and 3.33 g/L oregano extract, and 89.5% decrease between the dry weight

of the same concentrations. Our results show that high concentrations of oregano inhibit the height and weight of tomato plants.

17

Title: Effects of Eccentric vs Concentric Training on the Bicep

Presenter(s): Daryl Thomas

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: Muscular hypertrophy is related to muscular strength improvements which is a need in most sports. In football and body building a major focus of training is to increase muscle mass. Our previous research indicated eccentric training (ET) may improve girth of the calf muscles. It is unclear whether this would also change in muscles of the upper body. In this study each subject performed ET on one arm and concentric training (CT) on the contralateral arm. Whether subjects trained their dominant or non-dominant arm eccentrically was randomized. Each subject performed 3 sets of 10 repetitions for CT at 75% 1-Repetition Maximum and 3 sets of 5 repetitions at 110% 1-Repetition Maximum for ET. The arm circumference was measured at the highest girth of the bicep and normalized to fat-free circumference by taking a skin-fold measurement. At the time of this abstract submission all data had not been collected and analyzed.

18

Title: Mechanism of botulinum toxin A as a treatment in overactive bladder patients

Presenter(s): Dawa Gyalmu Rai

Advisor: Drs. Vaughn Gehle & Pam Sanders, Biology

Abstract: Botulinum toxin is produced by *Clostridium botulinum* which causes deadly neuroparalytic botulism. Recently, botulinum toxin A was approved for treatment in patients with overactive bladder (OAB) refractory to antimuscarinic therapy. Lawrence et al. (2013), studied the pharmacological performance of botulinum toxin serotypes A and E. Neurons were cultured and exposed to botulinum toxin A and E. Results showed that botulinum toxin A selectively cleaves limited proportion of SNAP 25 that is directly involved in neurotransmission. Liu et al. (2015) studied botulinum toxin target protein in bladder mucosa in overactive bladder patients. OAB patients were treated with botulinum toxin A injection. Result showed that botulinum toxin A injection effectively cleaved SNAP-25 (cSNAP-25) and decreased the frequency and urgency episodes in OAB patients. Both studies showed presence of cSNAP-25 by

botulinum A and concluded that the cSNAP-25 can be used as a reliable marker for botulinum toxin A action.

19

Title: Static vs Dynamic Stretching Effects on Vertical Jump and "Dunking" Performance of SMSU Basketball Players

Presenter(s): Cody Petrowiak

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: This study sought to determine the effects of static compared to dynamic stretching on basketball-specific performance measured by vertical jump and a timed slam-dunk test. Ten male basketball players from an NCAA Division-2 team were tested using a randomized cross-over design. To qualify, subjects had to make two dunks in five attempts. Subjects completed all tests after either static stretching or dynamic stretching with half completing each type on a given testing day. Immediately post-stretching, subjects completed 3 trials of vertical jumps (Vertec) and then the dunking drill. The following day, subjects completed testing after the other stretching style. There were no significant differences between vertical jump height, drill time, or accuracy between static or dynamic stretching. As expected, there was a significant association between vertical jump height and drill time ($r=0.91$, $p<0.01$) and number of dunks made ($r=0.53$, $p<0.05$). Stretching style may not impact basketball jumping and dunking performance.

20

Title: The Use of Therapeutic Hypothermia to Improve Neurologic Outcome in Post-Cardiac Arrest

Presenter(s): Chris DiSanto

Advisor: Drs. Sandy Craner & Pam Sanders, Biology

Abstract: Approximately 375,000 Americans have an out of hospital cardiac arrest (OHCA) every year. The survivors (10.6%) rarely recover without neurologic damage from ischemia. HACA (2002) and Bernard *et al.* (2002) showed that treatment of post-cardiac arrest with therapeutic hypothermia (TH) correlates with favorable neurologic outcomes. Patients resuscitated from cardiac arrest were randomly assigned to hypothermic and normothermic treatment groups (HACA, 2002). Neurological outcomes were blindly assessed 6 months later. Patients in the hypothermic treatment group had improved neurologic recovery as well as a higher rate of survivability. Kwang *et al.* (2015) compared the effect of TH on the neurological recovery to the location the patient was resuscitated. Results suggested that TH associated with good neurological recovery and higher survivability, but

the location of resuscitation was insignificant. More hospitals and ambulances services should implement TH protocols in order to improve patient survivability and quality of life after a cardiac arrest event.

21

Title: Plyometrics and lateral performance in softball players

Presenter(s): Taylor Koloc

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: This study sought to examine the effects of a specifically designed plyometric program on the lateral performance of SMSU Division II female softball athletes. The study utilized 12 college-aged students ranging from 18-21 years of age. Height was measured using a stadiometer. Weight and body fat percentage were measured using a scale with bioelectrical impedance capabilities (Tanita). Subjects were 166.8 ± 8.31 cm tall, weighed 71.7 ± 11.34 kg and had $29.8 \pm 6.92\%$ body fat. Lateral velocity was measured with a power analyzer (Tendo) and a horizontal lateral dive for distance was performed 3 times to each side. Both tests were completed before and after a 5 week period of training consisting of 3 times per week. Subjects performed lateral box jumps, band jumps, bounding, hurdles and ladders each training session. At the time of the abstract submission all data had not been collected.

22

Title: Loxosceles Spider Envenomation: Mechanism of Action of Sphingomyelinase Phosphodiesterase (SMase D) and its Effects on Human Tissue

Presenter(s): Michael Mattick

Advisor: Dr. Pam Sanders, Biology

Abstract: Brown spiders (*Loxosceles*) are found on every continent and their bite can result in dermonecrosis, hemolysis, renal failure and death. I review two studies that identify the cause of these biological reactions and the mechanism of action it uses. Tambourgi *et al.* (1998) use gel filtration to isolate proteins from crude venom. They show activity of Sphingomyelinase D (SMase) by showing sphingomyelin is broken down. Tambourgi *et al.* (2007) assay samples of regular and depleted complement components, serum amyloid P, and C-reactive protein. They show that SMase induces the common pathway of our complement system by showing a significant decrease in hemolysis from a P1 treated erythrocyte and C1 depleted human serum. In the presence of SMase activity, our complement system is activated by the Common Pathway.

23

Title: Allelopathic Effect of Ginger Rhizome Extract on the Seedling Growth of Lettuce

Presenter(s): Chidera Ndubuisi, Okeleamaka J. Chukwuyem & Oluchi Olivia Ndubuisi

Advisor: Dr. Pam Sanders, Biology

Abstract: Allelopathy either inhibits or increases plant growth. We hypothesized that the higher the concentration of ginger extract used to water the lettuce seedlings, the higher the inhibitory effect on the leaf length and dry weight of the lettuce plants (*Lactuca sativa*). The aqueous extract of ginger (*Zingiber officinale*) rhizome was tested at 10g/L, 30g/L, and 60g/L. All ginger extracts decreased the shoot dry weights by 11–17% compared to the control. The leaf length of the plants were not significantly decreased by the extracts

24

Title: Vote Helper iOS App

Presenter(s): Ben Spaeth

Advisor: Dr. Daniel Kaiser, Computer Science

Abstract: For many people the idea of thoroughly researching political candidates prior to voting seems like a major task. This is why I have created an app that can easily be downloaded on your phone that gives the user quick information on each candidate. The app is for iPhone users and allows the user to easily navigate through the presidential candidates for both major parties. For each candidate it includes basic information about where they stand on certain issues. It also includes a political feed with current news for the user to stay up to date with what is going on in the world of American politics.

25

Title: Iron Fist

Presenter(s): Zach Bailey

Advisor: Drs. Daniel Kaiser, Shushang Man & Kurosh Mortezapour, Computer Science

Abstract: Iron Fist is a science-fiction themed twin-stick shooter. In it, you assume the role of a member of the Iron Fist, a group of highly-trained intergalactic soldiers. You're tasked with investigating reports of enemy activity taking place on a remote planet. Arriving there, you discover a temple crawling with enemy soldiers, and are then ordered to engage the threat. Delving deeper into the temple, the enemy grows stronger and more numerous with each passing floor. Only by reaching the bottom will you discover their purpose there. As for the gameplay and controls, it's very simple. The game is meant to be played on a controller, with the left stick handling movement, while the right handles aiming and shooting. The goal of the game is to make it to the

bottom of the temple by eliminating the waves of enemies on each floor.

26

Title: Effects of High-Intensity Interval Training on Body Composition of Wheelchair Athletes

Presenter(s): Chantel Paul, Zachary Specht & Jonathan Cross

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: High-intensity interval training has been recognized as a superior method to standard aerobic training for reducing body fat. This study sought to determine the effects of high-intensity interval training performed in a wheelchair on selected body composition measures. Body Mass Index was determined by height/length and weight. Body fat was determined by the 7-site skinfold method (Lange) and bioelectric impedance analysis (RJL) Studies were performed on college-aged individuals including 10 able bodied controls and 10 wheelchair basketball athletes. All testing was performed before and after 4 weeks of high-intensity interval training. At the time of this abstract submission, all data had not been analyzed.

27

Title: Effects of high-intensity interval training on cardiovascular fitness using a novel wheelchair training system

Presenter(s): Zachary Specht, Jonathan Cross & Chantel Paul

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: High intensity interval training is commonly used to improve cardiovascular fitness, but has not been fully studied in wheelchair athletes. This study measured cardiovascular fitness of 11 Collegiate Wheelchair Basketball players and 10 able-body controls at Southwest Minnesota State University before and after four weeks of high intensity interval training performed in a wheelchair. High intensity interval training was performed 3 days per week and included 8 bouts of all out sprint against resistance that was determined during pre-testing. Each bout was separated by a 90 second rest period. VO_2max was measured on a novel wheelchair ergometer (Action Manufacturing) using an incremental test via metabolic cart (Cosmed). The able-bodied population also performed a running VO_2max on a treadmill (True). Post-tests of the same measures were completed after 12 sessions of upper body high intensity interval training. At the time of abstract submission, all data had not been analyzed.

28

Title: Effects of high intensity interval training on wheelchair pushing kinematics

Presenter(s): Jonathan Cross, Zachary Specht & Chantel Paul

Advisor: Jeffrey W. Bell, Ph. D. and Brent Jeffers, Exercise Science

Abstract: Movement analysis is used in sports science as a reliable option for understanding improvements in performance. However, to our knowledge, kinematic analysis has not been performed in wheelchair basketball players after completing high-intensity interval training. There is a possibility that wheel chair pushing kinematics may be improved with high-intensity interval training, which could lead to more efficient movement and therefore improved aerobic fitness. This study was designed to detect any changes in the wheel chair pushing mechanics in a group of collegiate wheel chair basketball athletes at Southwest Minnesota State University after 4 weeks of high intensity interval training. High-speed video (Fastec) was recorded at 300 Hz for 10 wheel chair basketball athletes and 10 able bodied controls. Kinematic analysis was performed using specialized analysis software (Dartfish) and included hand-wheel contact/release and elbow angle on contact. At the time of this abstract submission, all data had not been analyzed.

29

Title: Foam Rolling and Football Summer Conditioning

Presenter(s): Erin Kamrath

Advisor: Jeffrey W. Bell, Ph D. and Kris Cleveland, D.P.T., Exercise Science

Abstract: Foam rolling has rapidly grown in popularity with athletes as a warm-up and soreness relief tool. The purpose of this study was to determine whether foam rolling on the lower extremities of college football players would improve selected fitness parameters including flexibility, strength, speed, and power. Twenty-six healthy males (age 20.12 ± 1.13) trained for 10 weeks during summer training program designed by SMSU's strength and conditioning coach. Ten of the 26 athletes performed two, 30 second bouts of foam rolling applied to the quadriceps, adductors, hamstrings, iliotibial band, and gluteals twice a week after resistance training days. Horizontal power was measured using a 40-yard sprint, vertical power was measured using sergeant jump test, and goniometry was used to measure hamstring and quadriceps flexibility. There was no main effect of the foam-rolling condition on any dependent

variables. Therefore, foam rolling may not be a valuable tool despite its popularity.

30

Title: Developing a Website for Technology Assistance

Presenter(s): Spencer Louwagie

Advisor: Dr. Daniel Kaiser, Computer Science

Abstract:

31

Title: Mathematical Analysis of Football Scheduling in NSIC Conference

Presenter(s): Kaylee Benson

Advisor: Dr. Heather Moreland, Mathematics

Abstract: Generating an effective collegiate football schedule is an important issue that faces educational institutions nationwide. A branch of combinatorics known as graph theory can be used to analyze this as well as a variety of other mathematical questions. Using geometrical ideas, graph theory uses diagrams consisting of dots and lines to gain insight into this problem. We apply this theory and its techniques to the development of the Northern Sun Intercollegiate Conference (NSIC) football schedule. An optimal schedule is created, taking into account home versus away games. This schedule can be easily adapted as the match-ups in the two subdivisions of the conference vary from year to year.

32

Title: Developing an Arena Brawler using Unreal Engine 4

Presenter(s): Joseph Lilleberg

Advisor: Drs. Daniel Kaiser, Shushang Man & Kurosh Mortezaipoor, Computer Science

Abstract:

33

Title: NCAA Football BCS Algorithm and Its Flaws

Presenter(s): Jake H. Schueller

Advisor: Dr. Heather Moreland, Mathematics

Abstract: The NCAA college football Bowl Championship Series (BCS) algorithm was designed to rank the top twenty-five teams in NCAA division one football. The algorithm quickly became shrouded in controversy. The rankings were consistently being debated by members of the NCAA, the media, and the public. We present evidence as to why the algorithm, which was developed to keep inconsistencies at a minimum, was flawed from the start, the discrepancies and issues that resulted, and why it was subsequently replaced. We will also take a quick look at the new College Playoff Committee, and how it was meant to

be a major improvement, but why it ultimately has its own unique flaws.

34

Title: Effect of ferulic acid and increased temperature on soybean (*Glycine max*) germination and growth

Presenter(s): Melissa Bartz

Advisor: Dr. Pam Sanders, Biology

Abstract: WITHDRAWN

35

Title: The allelopathic effects of crushed almond on corn plants

Presenter(s): Libby Tolzin, Alex Dequaine & Colten Bristle

Advisor: Dr. Pam Sanders, Biology

Abstract: Some forms of tree nuts like the walnut have allelopathic tendencies which have negatively affected field crop growth. We hypothesized that the allelopathic effects of higher concentrations of crushed almond (*Prunus dulcis*), a tree nut, in the soil would inhibit the corn plants over-all height and dry weight. Twenty 15-day-old corn plants (*Zea mays*) were grown in soil-less media containing crushed almond in 0, 5, 10, and 15 gram 4 inch pots. Corn plant height was measured over 21 days. It was observed that crushed almond in the soil had little to no effect in 0, 10, and 15 gram pots. After 12 days growth, the height of the 5 gram pot had slightly benefitted the corn plant. Dry weights showed no difference in plant size.

36

Title: The Marshall Community: The Financial Burden on Psychosocial and Motor Development

Presenter(s): Kristy Leopold

Advisor: Dr. Scott Peterson, Psychology; Kris Cleveland, D.P.T. & Brent Jeffers, Exercise Science

Abstract: Your five year old son or your daughter cannot kick a ball, catch a ball, or hit a ball. You say, "oh that's okay he/she just isn't athletic". Well your child's deficiency may be due simply to lack of interest, but what if it's not? What if your child is getting bullied and not picked to be on a team at recess? What if this happens every day for the remainder of their years in school? Motor development goes beyond a child's athleticism. This study examines the motor development stages of children into early childhood and how motor development influences social development and play. This study also investigates the effect of socioeconomic status on families of the Marshall, Minnesota community as it relates to the child's ability to utilize opportunities presented to ensure successful development.

37

Title: Escape Plan App

Presenter(s): Ryan Miller & Emmanuel Asota

Advisor: Dr. Daniel Kaiser, Computer Science

Abstract: Escape Plan is a mobile phone app developed for the Windows Mobile Phone operating system. The main function of the app is to allow the user to escape an unwanted or awkward situation by mimicking an incoming phone call. The phone call will look and feel just like a regular phone call except the user is able to change the name and number they are receiving a call from. The user is able to schedule a phone call for a later time, or use the app for an instant escape. Escape Plan was developed using Microsoft Visual Studio 2015 using C# and XAML as the coding languages.

38

Title: Economic Development in the Countries of China and India

Presenter(s): Nathan Getting & Kyle Lecy

Advisor: Dr. Sang Jung, Economics

Abstract:

39

Title: The Effects and Recovery Process of Anterior Cruciate Ligament Replacement for a Female Competitive Athlete

Presenter(s): Naomi Peterson

Advisor: Jeffrey W. Bell, Ph.D., Exercise Science

Abstract: The Anterior Cruciate Ligament (ACL) is the knee's primary stabilizing ligament. Studies show ACL tears are common among female collegiate athletes. This case study of a female collegiate athlete measured kinanthropometric and kinematic changes over 23 weeks of recovery after ACL replacement surgery. Results showed swelling at the patella initially increased (4.3cm) then decreased (3cm). Quadricep and gastrocnemius muscle sizes initially increased (3.5, 2.8), decreased (4.2cm, 2.8cm) then increased again (2.5cm, 1.0cm). At week 8, release to run was issued, full range of motion (ROM) during the swing phase of running increased at the hip (80.32°) and knee (49.24°) over 15 weeks. The most important finding was increased hip ROM of the stance leg during force production phase (35.39°). Longer force production phase resulted in greater stride length. Further study should be conducted to see how changes in ROM at the hip affect stride length in a larger study population.

40

Title: Fagen's Museum: The Hidden Gem of Southwest Minnesota

Presenter(s): Teather Lacy

Advisor: Dr. Thomas J. Williford, History

Abstract: Granite Falls, Minnesota is home to a museum that not many know exist, many people that reside in Southwest Minnesota may know that this museum exists but have never made the short trip to visit it. The Fagen family has been able to freeze these stories of World War Two in time with interactive displays and breathtaking warbird. The goal of this presentation is to tell the story of not only the creation of Fagen Fighter's WWII Museum but also what lies within the walls of Fagen Fighter's WWII Museum. Primary sources made up the largest part of the data and resources used within this presentation. Many visits to Fagen Fighter's WWII Museum and interviews with the Fagen family themselves helped with the approach on presenting this information. I have hopes that with the information in this presentation, it will inspire people to take time out of their busy life to enjoy this gift that the Fagen family has given to our region. In one trip you may never know who or what you will see, history may present itself to you when you least expect it.

41

Title: Divine Providence: The Rise and Fall of a Small Town Hospital

Presenter(s): Wanda L. Paluch

Advisor: Dr. Thomas J. Williford, History

Abstract:

42

Title: Jacob Riis' Views of the Dark

Presenter(s): Dain Biorn

Advisor: Dr. Thomas J. Williford, History

Abstract: In 1890, Jacob A. Riis published *How the Other Half Lives*. The revolutionary book provided a photographic tour of slums in New York City. His illustrations documented the living conditions of the poor within New York City's slums. Some photographs were taken in dark areas that required photographic innovations never used up to that point in history. The new advances in photography of the time made it possible to capture the nighttime subjects onto film. The field of photography had been advancing over the past several decades since its creation in 1839. By the late 1880's photography was no longer just for professional. Each innovation to photography caused it to become simpler and more efficient. The process of photography still required a small amount of training.

43

Title: The Influence Women's Christian Temperance Union and the Volstead Act on Southwestern Minnesota

Presenter(s): Johna Nelson

Advisor: Dr. Thomas J. Williford, History

Abstract: In 1919 the sale and distribution of alcoholic beverages in the United States was illegal. Leading up to the 18th Amendment were the formation of groups and discussions relating to the liquor problem that was plaguing the country. These groups started the movement towards prohibition, and one in particular, Women's Christian Temperance Union, were able to spread across the country, even making its way to the Southwest Minnesota Region. There were many different documents and resources that these ladies were reading and sharing with their fellow W.C.T.U. members. These documents, papers, and essays were extremely influential to the forming the beliefs and resolutions of the ladies of the W.C.T.U. in the Southwestern Minnesota region.

44

Title: The Visigoths

Presenter(s): Tyler Thielges

Advisor: Dr. Thomas J. Williford, History

Abstract: The Visigoths were a Germanic tribe of people who migrated from Northern Europe and settled along the Danube River. In 376 they crossed over into the Roman Empire and essentially became citizens. Through hardships brought upon them by the governors of the region, they rebelled against the Empire. This led to the First Gothic War in 378, which lasted until 382, when a peace treaty was signed to stop the Visigoths from attacking and taking grain from the surrounding villages. Some of the Visigoth leaders, like Alaric, were betrayed multiple times by the Roman Empire (both East and West). Being deceived once more, Alaric then led his army to the doorsteps of Rome in 410. There was not much opposition to the Visigoths as they pillaged the defenseless city of its valuable goods, bringing the citizens of Rome to their knees.

45

Title: Allelopathic Effects of Black Walnut Husk Extract on Monocot Germination and Growth

Presenter(s): Alan Zimmerli

Advisor: Lee French, Agronomy

Abstract: Allelopathic chemicals have the ability to reduce germination rates and overall growth in plants. I predicted that increasing black walnut (*Juglans nigra*) husk extract concentrations will reduce germination in monocots including: dent corn (*Zea mays*), barley (*Hordeum vulgare*), oats (*Avena*

sativa), hard-red wheat (*Triticum poaceae*), and red fescue (*Festuca rubra*). Seeds of these plants were planted in pots and placed within the Southwest Minnesota State University greenhouse. Each species of seed had trials with concentrations of walnut husk at 0 g/pot, 5 g/pot, 10 g/pot, and 20 g/pot. These concentrations were soaked in water for 48 hours before placement within their respected pots. Plants were kept in the greenhouse for 4 weeks and were dried and weighed. Biomass was calculated for each pot. My results indicate a trend that increasing black walnut husk concentration can reduce overall growth in an assortment of monocots.

46

Title: Fair Division

Presenter(s): Heather Daugherty

Advisor: Dr. Heather Moreland, Mathematics

Abstract: Have you ever faced the problem of having to share a candy bar or favorite sandwich with a sibling and wondered how you were going to split it fairly? If you have ever been confronted with this problem or a similar dilemma, a field of mathematics exists to approach this dilemma called "Fair Division." Fair division uses an algorithmic approach in solving real-world problems ranging from how to fairly divide belongings after a divorce to the division of weekly chores. Delving into this field of study we will look specifically at the Cake Cutting Algorithm. Using this algorithm we will consider the case of how to split items between two and three individuals and generalize to the case of allocating items between a finite number of individuals using "fair" and envy-free division methods.

47

Title: Economic Development in Bangladesh and Afghanistan

Presenter(s): Sabrina Ley & Breanna Houselog

Advisor: Dr. Sang Jung, Economics

Abstract: Economic development is key around the world, however is seen with high intensity in developing countries such as Bangladesh and Afghanistan. Secondary research will be done of these countries in order to compare and contrast their economic development. Development in their job sector and description of rural/urban areas help to see what implications the countries have used to develop so far. Due to their geographic location to each other, Bangladesh and Afghanistan have a concern in how each other can be working to build up their trade and economics. Domestic issues involving each country will be examined such as education and health, inequality, and population growth. Bangladesh and Afghanistan look to international policies which will help determine the

direction of economic development. Overall, an examination of the economic development of each country and recommendations of further action will be confirmed.

48

Title: 'Tic Tac Toe' (XOXO)

Presenter(s): Eeshaan Joshi & Shagun Upadhaya

Advisor: Drs. Daniel Kaiser, Shushang Man & Kurosh Morteza-pour, Computer Science

Abstract: Tic Tac Toe is a simple game which normally can be played using paper and pen. The players put 'X' and 'O' in square boxes played on a 3 by 3 grid. The player who succeeds in placing three respective marks in a horizontal, vertical, or diagonal row wins the game. The player can choose his opponent or can also play with the computer. The game is created under Visual Studio using C# for windows.

Poster Session B – Special Session "Migrant Voices: The Marshall Area Narrative Inquiry Project", Sociology Program

Posters #49- 105

Faculty Advisor: Dr. Kerry Livingston, Sociology
Research Assistants: Stephanie Geier (Sociology Major) and Erin Reys (SMSU Graduate Student)

Cultural Advisors and Translators: Mu Mu Aye, Marly Cid (SMSU Graduate Student), Hussein Osman, Marie Hoff and Yesenia Cerda

Graphic Art: Alexandria Thies

Story Poster Researchers: Justine Heinis, Cole Johnson, Jessica Osteraas, Jeremy Vogel, Erin Rauenhorst, Cody Seehafer, Katie Hatch, Kayla Yount, Michael Koch, Josey Kockelman-Radtke, Amanda Tolzmann, Lexie Vande Hoef, Destiny Fredricks, Jonathan Heimer, Austin Olson, Brittany Cadena, Shelby Maes, Victoria Brooks, Altanshagai Tsend-Ayush, Thomas Powers, Brittany Verhelst, Savoy Brown, Shelby Farmer, Alexander Burton, Samira Sheikh, Justin Ross, Kelsey Larson, James Muller, Caleb Johnson, Samantha Graupmann, Kelli Gass, Hailey Goeman, Leona Kostecki, Shelby Stevens, Grady Holtberg, Ashley Wildman, Angela Pearl, Tyler Hruby, Honor-Ra Hanson, Taylor Court, Tamara Logan, Maria Dunblazier, Megan Lynne,

Nicole Bennett, Cassie Morgan, Mariah Hilleren, Thiyang Riek, Joseph Grant, Divonte Beale

Abstract: This qualitative study aims to explore the experiences of immigrants who moved to the Marshall area within the last thirty years. Using snowball and availability sampling, our class conducted 49 face-to-face, nonscheduled standardized interviews. Participants were asked about their experiences before and after migrating to the U.S. The digitally recorded interviews were transcribed, and through the process of data reduction, the most compelling parts of each story were used to create a narrative profile. In the final stage of the analysis, a small team of researchers used thematic coding to identify common themes that emerged from the interviews.

Poster Session C – Freshman Year Seminar, Nursing, Political Science, Psychology, Sociology & Theatre

106

Title: Effects of the Minimum Wage Increase on Greater Minnesota

Presenter(s): Donovan Woods

Advisor: Dr. David Sturrock, Political Science

Abstract: Beginning in 2014, the minimum wage in Minnesota has incrementally increased each year until August of 2016 where it will remain at \$9.50 an hour. Minnesota's minimum wage will then increase each year based on inflation starting in 2018. There are many preconceived notions regarding the effects wage increases, such as this one, will have on the economy. This analysis seeks to determine the actual effect on areas in greater Minnesota such as: Bemidji, Duluth, Mankato, Marshall, Moorhead, and Winona. The effects of the minimum wage increase will be evaluated by different employment rates and wage statistics that have been gathered since 2013 by the Minnesota Department of Employment and Economic Development, U.S. Bureau of Economic Analysis, Minnesota Department of Labor and Industry, and other governmental agencies.

107

Title: Broadband Access: The Future for Greater Minnesota

Presenter(s): Alison M. Bakken

Advisor: Dr. David Sturrock, Political Science

Abstract: Recent interest in competing with a 21st century economy has prompted Minnesota law makers to push for broadband expansion in Greater Minnesota. In an attempt to uncover what this entails for citizens of Minnesota, research was conducted to assess the risks and potential benefits of the Minnesota Broadband Expansion Program. Throughout the course of the research, it was found that the benefits of the program would far outweigh the potential costs. This expansion project would allow Greater Minnesota to compete on a world

108

Title: Greater Minnesota's Emerging Water Crisis

Presenter(s): Tom Lammers

Advisor: Dr. David Sturrock, Political Science

Abstract: Everyday Minnesotans use water and probably don't appreciate how valuable it is or where it comes from. Communities in Minnesota have experienced water shortages from wells drying up or current wells becoming contaminated. To curb this problem communities have to spend a considerable amount to have water piped in from other areas or spend more money to clean water to make it safe but there are limitations to that. Consider Marshall spent a couple years ago \$13 million to build a 26 mile pipe to bring water into the community from an aquifer by Granite Falls to meet their demands. Other communities in Minnesota are facing the same problem and are struggling to meet the demands effectively turning water into a valuable resource.

109

Title: Difficulties of Water Management in Southwest Minnesota

Presenter(s): Jonathan Heimer

Advisor: Dr. David Sturrock, Political Science

Abstract: The purpose of this report is to examine the challenges and difficulties Southwestern Minnesota faces in addressing water management and consumption. This report takes two different avenues by comparing and contrasting rural water management and city water management in Southwestern Minnesota. The primary scope of this report revolves around the Marshall area, where several interviews were conducted with Marshall Municipal Utilities (MMU) and Lincoln Pipestone Rural Water (LPRW) representatives. Research also included research documents received from MMU and LPRW. Secondary background research in water management/treatment was also done. This paper reflects the research conducted and an evaluation of the two companies' management of the difficulties faced here in Southwestern Minnesota.

110

Title: Highway 23/Saratoga Project

Presenter(s): Altanshagai Tsend-Ayush

Advisor: Dr. David Sturrock, Political Science

Abstract: The City of Marshall, a community in Southwest Minnesota, is in the process of implementing a roadway infrastructure redesign at one of the most traveled and historically dangerous intersections in the city. The cross-section of Highway 23 and Saratoga Street is known for its many fatalities, and the community has united behind the plan to make changes to the location. The road to breaking ground on the project in September of 2015 was a long one, as long as 20 years of planning according to the Minnesota Department of Transportation. Understanding the planning process and the key organizational players was critical in the success of the project. Studying the case of roadway infrastructure and the administrative process surrounding transportation changes is important for any rural city attempting to make a resolution for the better of their community and environment.

111

Title: Size Perception at Multiple Angles

Presenter(s): Jory Dove, Spencer Thomas & Destiny Fredricks

Advisor: Dr. Scott Peterson, Psychology

Abstract: Size perception has been tested for multiple studies in the past. One study has shown that males are less context-sensitive than females when determining the size of an object, meaning that females' size perception tends to be more influenced by surrounding objects than males' size perception. Another study has shown that size perception tends to be more accurate at eye-level than at any other angle, vertically. As such, size perception was studied combining these two previous studies in order to replicate the findings of context-sensitivity, and to determine which angle males and females most accurately perceive the size of an object. The results of this study are expected to be similar to the findings of the previous studies.

112

Title: The Effect of Sight on Taste Perception

Presenter(s): Tyler Flud, Dave Lien & Kelsey Lee

Advisor: Dr. Scott Peterson, Psychology

Abstract: Throughout history, countless studies have been conducted on our perception of taste, trying to answer questions like how it works, what we taste, and if other physical senses can influence taste in some way. The goal of our experiment was to see if our perception of taste can be influenced by

visual stimuli. In the experiment, participants are shown four different bottles labeled as flavored water being poured into cups. They are then asked to taste the water in each cup and rate the strength of each flavor. But, what the participants are not told is that each bottle labeled as flavored water is actually filled with only plain water. Will seeing the flavored water labels on the bottles being poured actually make them perceive a taste other than plain water in the cups? Our hypothesis is that participants' perception of taste will be influenced by the visual stimuli.

113

Title: The Effect of Task Engagement on Time Perception

Presenter(s): Alexis Frick, Blake Nath, Nick Kellen & Leah Hacker

Advisor: Dr. Scott Peterson, Psychology

Abstract: This research pulled together multiple ideas on how to study people's perception of time into one. Here the participants found that empty time was perceived to be longer than a time interval where something was going on. Participants were randomly split up into two different groups. Each group was given a happiness scale to complete before they were asked to complete the experiment. Then one group would be asked to watch a boring video, and the other group was asked to watch a more exciting video. Each group would rate how much they liked the video, and how long they perceived the video to take. In this study the participants will believe that less time will pass while watching a more engaging video, whereas, they will perceive time to go slower while watching a less engaging video. It is also predicted that negative moods will result a longer perceived time.

114

Title: SMSU Students' Understanding of Civic Engagement: A Qualitative Analysis

Presenter(s): Kayla Chisum

Advisor: Dr. Christine Olson, Psychology

Abstract:

115

Title: Barriers to Non-Traditional Student Enrollment and Retention at SMSU

Presenter(s): Dave Lien

Advisor: Dr. Christine Olson, Psychology

Abstract: Non-traditional student numbers are increasing in colleges across the country. However, the attrition rate, the rate that they drop out, for these students remains higher than for traditional aged students. This project takes a look at older than average students, 25 years old and up, and

what their experience is at SMSU. Through interviews with older students enrolled here information will be gathered about both their positive and negative experiences as an older student, and what changes, if any, they feel could help support and retain non-traditional students.

116

Title: What Can Social Media Do With Your Likes?

Presenter(s): Kylie Wahl, Melissa Downing, Bryan Lubitz & Josie Simon

Advisor: Lisa Lucas, English

Abstract: Do you think social media websites should have the right to gather your activity online to find information out about you? Most people would say no. When you hit the button, "I agree to the terms and conditions," you are agreeing to allow the social media site to gather information about your activity online. The more time people spend on social media, the more likely you are to become depressed. Likes and dislikes could increase a person's depression levels. Even when you are shopping online, you are sharing information about yourself. What would you do if your teenage daughter was pregnant and you found out after Target did? This is a true story about a normal teenage girl that never had the chance to tell her father she was pregnant. Between social media and information a store gathered, she was devastated.

117

Title: Social Media and Personal Connections

Presenter(s): June Stensrud, Kara Burch, Grace Nelson, Brooklyn Bangasser & Jared Schmidt

Advisor: Lisa Lucas, English

Abstract: The objective of this project is to inform individuals about how social media influences interpersonal interactions. Social media has affected the way we interact with each other, but there is not enough evidence to state whether the changes are positive or negative. We independently searched for and analyzed peer-reviewed journal articles. Some group members found that social media has a negative effect on interpersonal relationships, while others found the opposite. Based on these findings, we look forward to reading future research studies for a more definitive answer.

118

Title: Who You Are on Social Media

Presenter(s): Jamie Schell, Danielle Duncan & Bryan Wurdeman

Advisor: Lisa Lucas, English

Abstract: Social Media includes the websites and applications that enable users to create and share content or to participate in social networking.

Popular apps that society uses on a daily basis, such as Snap Chat, Facebook, Instagram, and Twitter, may seem safe and simple, but in reality, can hinder you in the real world. Many people do not realize how one post on social media can affect their schooling, career, and personal life. In today's world, 70% of businesses use social media background checks when determining who they hire. Social Media also affects not only you yourself, but your peers and loved one's perspective of you along with your extracurriculars. What you post on Social Media in the present can affect your life's future prospects.

119

Title: How to Become a Dragon

Presenter(s): Erica Hansen

Advisor: Sheila Tabaka, Theatre

Abstract:

120

Title: Oh Baby! Using Essential Oils for Pain Management During Labor and Delivery

Presenter(s): Jessica Matt, Jordyn Hetland, Melissa Kidrowski, Marcia Blaster, Megan Loew, Jennie Wigen & Bonnie Parsons

Advisor: Nancyruth Leibold, Nursing

Abstract: Essential oils during labor and delivery study looks into the use of essential oils during labor and delivery instead of current conventional methods. Populations of the study are women who are pregnant and in labor or those that are postpartum. Retrospective studies, quantitative and qualitative, are used in assessing effectiveness of oils, commonly used oils, applications, and any contraindications. Also, costs to apply or use essential oil treatment in place of current methods are analyzed, along with safety and ease of incorporation into nurse's routine of care of laboring women. Currently, common treatments consist of a variety of medical treatments for pain relief such as: epidurals, spinals, general anesthesia; all treatments which can cause negative or unwanted side effects. Use of oils in place of current methods for pain and nausea can provide a naturalistic option to those wanting to avoid medications and the potential side effects that can occur. Lavender, peppermint, mandarin, and chamomile are oils used in place of or with current methods of treatment. Nurses, who are knowledgeable about the use of essential oils, are able to apply the practice and use of essential oils to women in labor and delivery for pain management.

121

Title: Phantom of the Opera, The Phantom's Face Makeup

Presenter(s): Taylor Engel

Advisor: Sheila Tabaka, Theatre

Abstract: Since the novel came out, The Phantom of the Opera has become one of the most feared creatures in all of history, matching up to Dracula and Frankenstein. The description of his face is so distorting, but how do you bring that into real life? Through the movies and the musical, we will see the history and evolution of the "Face" of The Phantom of the Opera. Does it match with the original? And what could you do to recreate your own version of The Phantom?

122

Title: Corrective Makeup

Presenter(s): Crystal Enga

Advisor: Sheila Tabaka, Theatre

Abstract:

123

Title: The Art of a Mortician

Presenter(s): Sarah Norton

Advisor: Sheila Tabaka, Theatre

Abstract:

124

Title: "How Much Privacy Do You Really Have?"
The Privacy of Social Media

Presenter(s): Claire Macki, Paul Norgren, Amy Thomas & Brittney Stockwell

Advisor: Lisa Lucas, English

Abstract: We will take a look at how much privacy you really have with your cell phone company. We will look at the reasons why and how long your cell phone records are kept. Who determines this, the phone company or the government? What do the terms and conditions really say? What are you agreeing to? Out of the 4 major cell phone companies we will look at the differentiation between their contract agreements. Will YOU be caught naked in front of your cell phone company?

125

Title: Are You a Target for Big Business?

Presenter(s): Emily Crumrine, Dalton Jones, Peyton Sanders & Jacob Broberg

Advisor: Lisa Lucas, English

Abstract: The evident increase in popularity of social media has altered the approach to traditional advertising. Historically marketers have reached their customers through print, such as newspapers, magazines, or billboards but has evolved into so much more. The Recent up rise in social media

activity has opened new doors for advertisers. In the United States alone over 67 percent of Americans are currently users of social media, this includes Facebook, Twitter, and Instagram. The financial success of big business is at the will of social networking. Information has been gathered to prove the effectiveness of business marketing through social media as a whole. This presentation will be touching base on how businesses are targeting their prospective customers insuring the content of advertizing is relevant to the viewer as well as how this is creating a large profit margin, ultimately benefiting both the producer and the consumer.

126

Title: Motives Behind a Cyberbully

Presenter(s): Brooke Thompson, Emily Safar, Callie Severson & Miranda Giese

Advisor: Lisa Lucas, English

Abstract: Cyberbullying is a problem in today's society due to the recent increase of social media and technology. Our research focuses on the motives behind a cyberbully. This presentation looks at the differences between a traditional bully and a cyberbully, gender differences, the motives of a cyberbully, who is at risk of being cyberbullied, statistics, effects of being cyberbullied, and prevention and possible solutions. Within our research we found that kids between the ages of 12 and 18 are more likely to be a cyberbully and to be a victim of cyberbullying. We concluded that the main motives of a cyberbully are peer pressure, power and status, anonymity, anger/frustration, fun/boredom, and revenge.

127

Title: Elder Abuse: What are the implications of elder abuse in the United States in nursing homes among staff?

Presenter(s): Tamara Hellendrung

Advisor: Dr. Vicky Brockman, Sociology

Abstract:

128

Title: Racial Profiling: Traffic Stops

Presenter(s): Hannah Kuno

Advisor: Dr. Vicky Brockman, Sociology

Abstract: For over 25 years, the police practice of racial profiling or stopping individuals primarily based on their race has been under intense public scrutiny. This poster will develop a definition of racial profiling and examine the patterns of racial profiling across the United States. Finally, strategies for reduction of racial profiling will be examined and the effectiveness of these strategies will be explored.

129

Title: Creating a Welcoming Environment for International Students on College Campuses

Presenter(s): Julie Schimerowski

Advisor: Dr. Vicky Brockman, Sociology

Abstract: Discrimination against international students is a significant problem on college campuses across the country today. This poster focuses on the patterns of discrimination faced by international students on campuses, and explores campus-based solutions to the problems faced by international students. Solutions involve changing the campus climate by reaching out to staff, students, and community members about the issues confronting international students, and providing campus educational outreach to improve the level of cultural competency and inclusion.

130

Title: Barriers and Inequalities in Healthcare for Individuals with Disabilities

Presenter(s): Leah Bernard

Advisor: Dr. Vicky Brockman, Sociology

Abstract: One in five Americans has a disability and the number of individuals with a disability is expected to increase in upcoming years. Individuals with disabilities face both physical and structural barriers, as well as inequalities in access to healthcare. This poster will highlight these barriers and inequalities that exist in the quality of care individuals with disabilities receive from medical professionals. Socioeconomic status, access to health insurance and Medicaid are significant factors affecting access to healthcare. Recommendations for further research and changes in healthcare (access and delivery) are explored.

131

Title: Child Abuse and Trauma Services

Presenter(s): Tehra Christianson

Advisor: Dr. Vicky Brockman, Sociology

Abstract: Child sexual and physical abuse can cause negative physical and mental effects in victims during their childhood and through adulthood. Trauma therapy services such as individual therapy sessions, group therapy, symbolic expression, and art therapy may lead to more positive effects in a child's life course. Successful treatment goals involve building healthy and trustworthy relationships between therapists and patients, or among peers who have experienced similar childhood trauma. This poster presentation examines the negative effects of child sexual and physical abuse and explores the value of trauma therapy services.

Poster Session D – Accounting, Mathematics, Political Science, Psychology, Sociology & Theatre

132

Title: Make-up for Mermaids

Presenter(s): Annie Magnuson

Advisor: Sheila Tabaka, Theatre

Abstract: Explore the process of what it takes to look like a mermaid with both regular cosmetic make-up and stage make-up. Easy to learn and fun to do, this fantasy make-up is perfect for anyone.

133

Title: Rocking the Rock Star Look: Gene Simmons, David Bowie, and Alice Cooper

Presenter(s): Emilie Baartman

Advisor: Sheila Tabaka, Theatre

Abstract:

134

Title: Making Actors Bleed

Presenter(s): Joel Gay

Advisor: Sheila Tabaka, Theatre

Abstract: Making a performance look real is important to help amplify an audience's experience. Since an actor probably shouldn't literally bleed on stage, makeup artists are given the challenge of making fake blood look real. This can be accomplished with the blood mixture itself or enhanced through other design elements such as lights, scenic and costumes, or a designer can take it a step further by not only making the blood look real but by making a wound look like it's actually bleeding.

135

Title: 1920's Style Makeup

Presenter(s): Jenna Miller

Advisor: Sheila Tabaka, Theatre

Abstract: 1920's Style Makeup is a step-by-step guide to creating the style of makeup made popular by actress Clara Bow (inspiration for the character Betty Boop). Information on this poster includes ways to alter skin tone and face shape, as well as a way to reshape eyebrows that does not involve any hair removal. In the end, we will not only have learned how to apply a popular look from the 1920's in a few simple steps, but also how that style changes the way our faces look.

136

Title: The Impact of Roundabouts on Greater Minnesota

Presenter(s): Thomas M. Powers

Advisor: Dr. David Sturrock, Political Science

Abstract:

137

Title: Water Supply and Water Shortages in Southwest Minnesota

Presenter(s): Jeremy Brands

Advisor: Dr. David Sturrock, Political Science

Abstract: Water is often considered the most precious resource. For my project I am researching the state of water supply in Southwest Minnesota. I am exploring who has water and who is in need. This has led me to focus on Worthington and the surrounding area, which has led me to look into the Lewis and Clark water project, which is what the Worthington community has been counting on. I have discovered that the aforementioned community is currently having to purchase 500,000 gallons of water daily. I am looking into what progress has been made as far as funding and legislation to extend the Lewis and Clark project and fully develop a dependable water source for especially Worthington, Minnesota.

138

Title: Public Transportation Trends in Greater Minnesota

Presenter(s): Jordan Leckband

Advisor: Dr. David Sturrock, Political Science

Abstract:

139

Title: Civic-mindedness, integrity, and community service self-efficacy among SMSU students

Presenter(s): Chelsea Wiese

Advisor: Dr. Scott Peterson, Psychology

Abstract: The purpose of this study is to investigate differences in "civic-mindedness" between lower-level and upper-level college students at Southwest Minnesota State University (SMSU). To measure "civic-mindedness," a survey was constructed containing items from three different scales: the civic minded graduate scale, the integrity scale, and the community service self-efficacy scale. The survey was administered to students in LEP 100 and LEP 400 sections, and results analyzed to determine whether the four years at SMSU had an impact on students' civic-related behaviors and attitudes. Our findings suggest that there is significant growth in civic engagement for SMSU students from the beginning to the end of their college careers.

140

Title: Gun ownership and attitudes about guns among college students

Presenter(s): Samantha Minter

Advisor: Dr. Scott Peterson, Psychology

Abstract: While gun violence seems to be increasing in college students and on college campuses, there seems to be very little research devoted to determining why this is. This study was intended to answer some vital questions associated with this topic, specifically having to do with the number of gun owners among students and their attitudes about gun control and current gun laws. We attempt to shed some light on who is more likely to own guns, the reasons for gun ownership, and if certain demographic qualities correlate with gun ownership or attitudes toward guns and current gun laws.

141

Title: How Supervised Parenting Time Visitations Work

Presenter(s): Emily Wajer & Megan Schmidt

Advisor: Dr. Scott Peterson, Psychology

Abstract: People often have questions about what supervised visitations are and how they work. Our research attempts to address some of these questions. We interviewed personnel at four different visitation centers and found that there is not a set way in which a visitation center is run. Despite these differences, all of the agencies share the same goal, which is to ensure the safety and protection of the children. In most cases of court ordered supervision, there has been a history of maltreatment of children that results in serious developmental difficulties. Children learn through their own experiences and this can be harmful if a child/ren has been in an actively abusive or neglectful environment for most of their lives. Through supervised visitations, children are still able to see their parents, but the abuse and neglect has been removed, so the child/ren are still able to focus on the important relationship.

142

Title: Intimate Partner Violence: As Seen through the Child's Eye; Different Health Concerns and Ways of Prevention

Presenter(s): Bryan Creamer

Advisor: Dr. Vicky Brockman, Sociology

Abstract:

143

Title: Viewing Bullying within Gender Role Conflict from a Sociological Perspective

Presenter(s): Chucky Her

Advisor: Dr. Vicky Brockman, Sociology

Abstract: Bullying is a major concern for parents, school officials, and professionals working in schools (ranging from elementary to high school) across the nation. This poster will develop a definition of bullying behavior and examine the ways bullying might reflect gender-atypical behavior. The emotional impact on the victim will be examined. Finally, strategies for dealing with the prevention of bullying in school settings will be explored.

144

Title: The Changing Patterns of Housework and the Division of Labor

Presenter(s): Benjamin Ryan

Advisor: Dr. Vicky Brockman, Sociology

Abstract:

145

Title: The signs of child abuse and the implications in the professional workplace

Presenter(s): Maria Dunblazier

Advisor: Dr. Vicky Brockman, Sociology

Abstract: Child abuse is affecting children across our nation at an unbelievable pace. It is important to raise awareness and help to put an end to child abuse. The aim of this poster is to develop a definition of child sexual abuse, to examine the signs of sexual abuse, and to gauge the impact of abuse on victims. Finally the implications for dealing with child abuse in the professional workplace will be explored.

146

Title: Barriers in Daily Life: Challenges Faced by People with Disabilities

Presenter(s): Cody Seehafer

Advisor: Dr. Vicky Brockman, Sociology

Abstract: Disabled people face many challenges in their daily lives. This poster explores the barriers faced by disabled people at various stages in their life course. These barriers are both physical and social, and evident in institutional settings. Finally this poster will explore the strategies for addressing these barriers.

147

Title: Private Prison Complex

Presenter(s): Donne Lobendahn

Advisor: Dr. Vicky Brockman, Sociology

Abstract:

148

Title: Devaluing Women's Work: Gender Pay Inequity

Presenter(s): Austin Olson

Advisor: Dr. Vicky Brockman, Sociology

Abstract: The gender pay gap remains intact in the United States. While the gender pay gap has narrowed, the average pay for women is still less than for men. This poster will explore these trends, and examine the causes and consequences of salary inequity of female workers in the workplace. Women across America are still devalued in the work they perform and this has widespread social implications. Finally, strategies for narrowing this gap will be explored.

149

Title: 3 Generations Working Together? Is It Possible?

Presenter(s): Abby Straw

Advisor: Dr. Will Thomas, Accounting

Abstract: This poster dignifies the 3 generations in society today: Baby Boomers, Generation Xers, and Millennials. Each generation provides their own unique qualities to the workforce, but they each also share certain characteristics with one another. Each generation has gone through different tragedies such as the Vietnam War to the Watergate Scandal and even the attack of 9/11. The train of events had a significant impact on each generation which can be justified as a similarity or difference with another generation. Today, Baby Boomers are in the early stages of retirement, and Millennials are just entering into the workforce which opens many doors for young adults today. The ultimate goal is to successfully have all three generations work together to the best of their abilities and put their differences aside.

150

Title: The Unaffordable Affordable Care Act

Presenter(s): Cailin Morris

Advisor: Dr. Will Thomas, Accounting

Abstract:

151

Title: How to Solve any Biquadratic Equation

Presenter(s): Carter Barker

Advisor: Dr. Tumpa Bhattacharyya, Mathematics

Abstract: A biquadratic equation is of the form $x^4 + ax^3 + bx^2 + cx + d = 0$. The algebraic solution of a biquadratic equation was discovered by Ferrari during the 15th century. We discuss the solution of a biquadratic equation by Ferrari's method and its application in geometry.

152

Title: (How) Does the Sexual Orientation of Parents Matter?

Presenter(s): Victoria Garza

Advisor: Dr. Vicky Brockman, Sociology

Abstract: The Supreme Courts ruling mandating the legalization of gay marriage on June 26, 2015, changed the lives of gay couples and their children in the United States. Since the legalization of gay marriage, many gay families couples have continued to form families, becoming parents, and sometimes adopting children. This poster will examine the current issues confronting same-sex married couples in forming families and will examine the impact of same sex relationships on children's development.

NOTES

NOTES



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