12th Annual

undergraduate research conference

SOUTHWEST MINNESOTA STATE UNIVERSITY

Wednesday, November 29, 2017

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

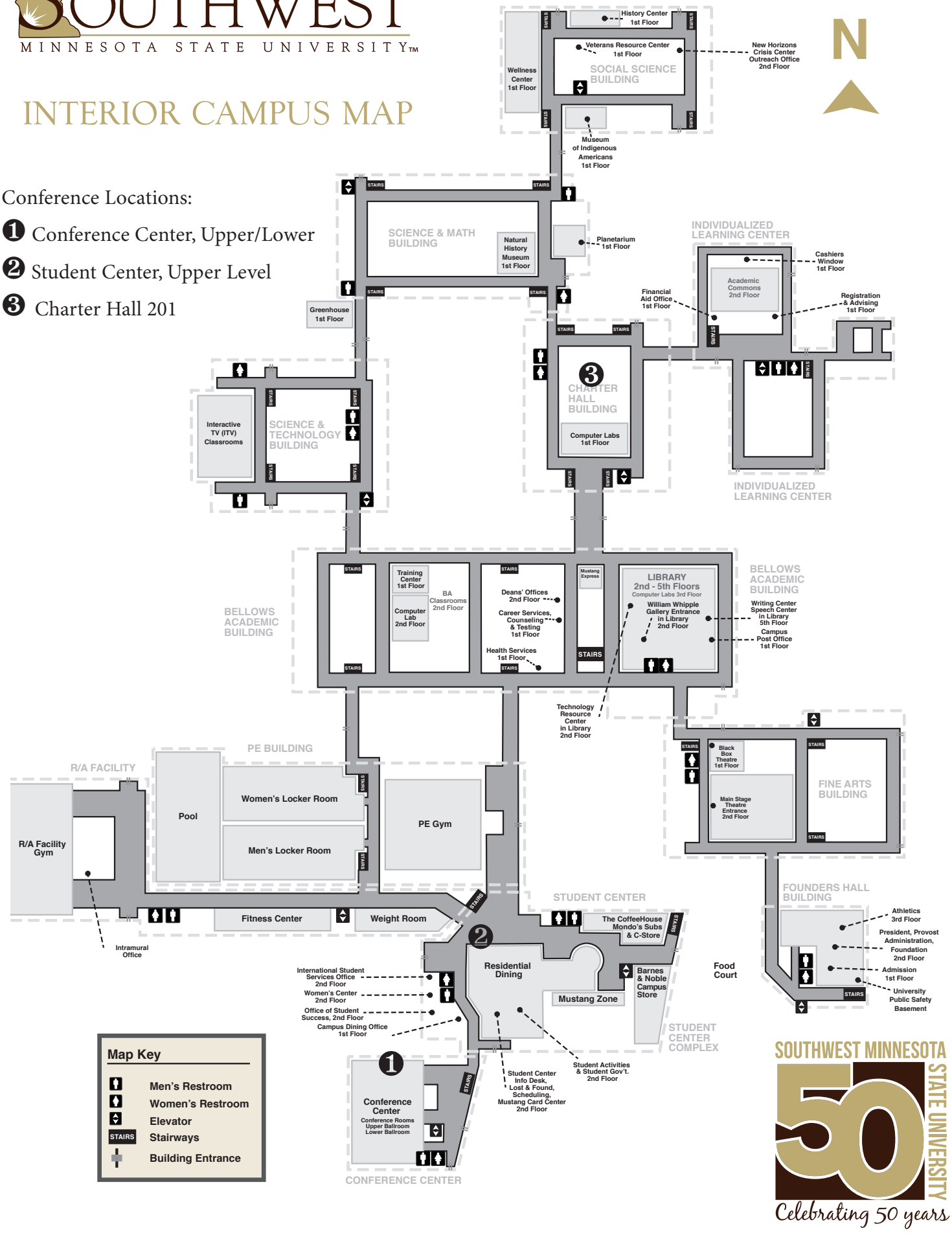
ABSTRACT BOOKLET

SOUTHWEST
MINNESOTA STATE UNIVERSITY™

INTERIOR CAMPUS MAP

Conference Locations:

1. Conference Center, Upper/Lower
2. Student Center, Upper Level
3. Charter Hall 201



SOUTHWEST MINNESOTA STATE UNIVERSITY
50
Celebrating 50 years

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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 12th year of the SMSU Undergraduate Research Conference, there are 21 different programs participating with 34 different faculty advisors. There are also 217 different undergraduate students presenting 46 orals and 93 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 J. Gores, SMSU President,** Opening Remarks

8:45..... **Wokil Bam, SMSU Alumnus, Class of 201**2
Envrionmental Science and Chemistry majors.
Oceanography PhD student at Louisiana State University.
Keynote Address: Active Learning- making the most of a college experience through research

50 Denotes research projects related to SMSU's 50th Anniversary

ORAL SESSION A
SMSU Conference Center Upper Level
Agronomy, Biology, Creative Writing, Environmental Science

9:45..... Justin Hill, Environmental Science, Using gravestones as a means to estimate the growth rates of *Dimelaena oreina* and *Xanthoria elegans* lichens in Southwest Minnesota
10:00..... Beau Swenson, Environmental Science, Differences in invertebrate populations as influenced by water quality at four locations in Lake Titow, Sibley County Minnesota
10:15..... Brayden Anderson, Environmental Science, Distribution of Lichen on Granite Outcrops in the Minnesota River Valley
10:30..... BREAK
10:45..... Melissa Klecker, Environmental Science, Characterization of Tree Species in the ADM-SMSU Environmental Learning Area at Southwest Minnesota State University 50
11:00..... Garrett Wee, Environmental Science, Bird Surveys in the ADM- SMSU Environmental Learning Area 50
11:15..... Taylor Olson, Environmental Science, Characterization of bacterial populations in soils of different ages after land use changes
11:30-..... Matthew D. Steinbronn, Environmental Science, Guide to Glacial Ridge Scenic Trail, Southwest Minnesota
11:45..... Aditya W. Harsono, Environmental Science, Soil island development on granitic outcrops in the Minnesota River Valley
12:00-1:15 . Brittni Branch, Alexandra Krohn & Kaleigh Farrelly, Creative Writing- Original Works, Telling Secrets to the Trees: A Senior Portfolio Reading
1:15..... Matthew D. Steinbronn, Tou Soua Vue & Courtney Popowski, Biology, Comparison of Lyme Disease Incident Rate in Lyon County and Hennepin County, Minnesota
1:30..... Taylor Olson & Matt Mattson, Biology, Comparison of goldenrod plant height and biomass from two soil types
1:45..... Lauren Kerr, Margaret Provo & Alan Zimmerli, Biology, Comparing Plant Density in a Restored Prairie vs. Old Field in the SMSU Wildlife Area
2:00..... Paige Hendrickson, Selena Herr & Anthonia Ameho, Biology, Comparison of Earthworm Densities in a Deciduous and a Coniferous Forest in the SMSU Wildlife Area
2:15..... Michelle Williams, Taylor Holicky & Beau Swenson, Biology, Comparison of macroinvertebrates in a coniferous versus deciduous forest in the SMSU wildlife area
2:30..... Matt Mattson, Environmental Science, Trends in soil temperature of different habitats through time at the ADM-SMSU Environmental Learning Area Marshall, MN

2:45.....Troy Filzen, Javin Medenwaldt & Stephan Ameyaw, Biology, Comparison of Aerial Insects in a Prairie vs. a Wetland in the SMSU Wildlife Area
3:00.....BREAK
3:15.....Chelsea Wiese & Mckenzie Besel, Biology, Animal densities of a wetland and a field habitat based on road kill
3:30.....Brayden Anderson, Easton Popma & Steven Yang, Biology, Using Bird Strikes to Determine Bird Diversity on the SMSU Campus During Fall Migration
3:45.....Jakob Hicks, Agronomy, On site soil sampling and GIS analysis of accuracy
4:00.....Arthur Baur, Agronomy, The use of cover crops
4:45.....Awards Ceremony

ORAL SESSION B

Charter Hall 201

Agronomy, English, History, Literature, Political Science, Sociology and Theatre

10:00.....Ryan Koopman, Political Science, Wins and Losses: Community Involvement and School Referendum Outcomes in Southwest Minnesota
10:15.....Jenna Miller, Theatre, Quick Change Makeup: The Art of Becoming Multiple People On Stage
10:30.....BREAK
10:45.....Jakob Hicks, Agronomy, Efficacy and Affordability of Dicamba Adjuvant Packages
11:00.....Ashlie Weber, Agronomy, Assessing the Variability of Extractable Phosphorus
11:15.....Jakob Hicks, Agronomy, *Z. mays* Host Plant Resistance to *D. virgifera*
11:30.....Kaitlyn Leach, Psychology, Adoption: The Impact it has on Family Relationships
11:45.....Crystal Yearous, Psychology, Gauging Financial Anxieties in Young People
12:00.....LUNCH BREAK
12:30-1:20 .Sara DeSmet, English, Prewriting in Middle School English
Nicole C. Berning, English, The Importance of Connecting Reading and Writing in a Middle School English Classroom
Shelby Taylor, English, Motivating Adolescent Writers
Emily Williamson, English, Effective Strategies to Provide Feedback and Grade High School Students' Writing
1:30.....Caleb Herrlich, Literature, The Prevalence of Philosophical Thought in Classic Literature and Its Changes Over Time
1:45.....Maggie Meyers, Kendra Jasso-Chukwuyem, Cody Sleiter & Taylor Laabs, Sociology, Do Reality TV Shows About Teen Pregnancy Have Any Effect on The Actual Statistics?
2:00.....Claire McManmon, History, How the Irish Immigrants Shaped the History of Minnesota
2:15.....Lucas Freeman, History, The Hadley Buttermakers and the Minnesota Town Ball Tradition
2:30- 3:15 ..Poems from the Poetry Workshop, English
Desiree Bauer
Emily Duchert
Danielle Crowell
Selina McCool-Kamstra
Thalia Otero
Austin Rusch
McKenzie Swanson
Sophia White
3:30 .....Sarah Hunter & Ashley Wulkan, Nursing, There's No Room in the Inn: The Need for Community-Based Behavioral Health Care

POSTER PRESENTATION SESSION A

SMSU Conference Center Lower Level

Posters displayed 8:30 am to 5:00 pm

Accounting, Agribusiness, Agronomy, Biology, Chemistry, Computer Science, Environmental Science, Exercise Science Mathematics

(Time listed is when author will be present at the poster.)

1. Carter Barker, Mathematics, Derangement: Abnormal Permutation? 12:30-2:00
2. Taylor Holicky, Biology, Why the honey badger is unaffected by snake venom, Formal 10:00-10:30, Informal 10:30-11:00, 3:00-3:30
3. Austin Leek, Computer Science, Undergraduate Research Conference Application Website, 12:30-2:00
4. Mckenzie Besel, Biology, Stress as a cause of hypothyroidism, Formal 1:00-1:30, Informal 11:00-11:30, 1:30-2:00
5. Ashley Hoehne, Ashton Bartlett, Tanner Luebke & Alexander Jorgensen, Exercise Science, Landing Mechanics between Dominant and Non-Dominant Legs, Ashley 10:00-11:30, Ashton 11:00-12:30
6. Jessie Janisch & Jordan Flinn, Exercise Science, Mirror training and functional movement in hemiplegic stroke victims, Jessie 1:00-2:30, Jordan 2:00-3:30
7. Tanner Luebke, Alex Jorgensen, Ashley Hoehne & Ashton Bartlett, Exercise Science, Landing Mechanics in non-ACL and ACL Repaired Individuals, Tanner 1:00-2:30, Alex 2:00-3:30
8. Alison Radunz, Exercise Science, No Effects of a Companion Animal on Physical Activity, 9:30-11:00
9. Kelsey A. Kinner, Accounting, Standards for Tax Preparers, 3:00-4:00
10. Shawn Hanson, Accounting, Not for Profit, Actually For Profit? 3:30-3:30
11. Hannah Palmeter & Sarah Mayfield, Exercise Science, The Effects of Exercise on Wheelchair User's Trunk Mobility and Flexibility Using a Wall Goniometer, Hannah 2:30-4:00, Sarah 10:30-12:00
12. Greta Geist & Carter Kirk, Exercise Science, Menstrual Cycle Effects on Volleyball Related Performance, Greta 9:30-11:00, Carter 2:30-4:00
13. Christina Tauer, Accounting, Is There a Growing Demand for Certified Public Accountants? 3:30-4:30
14. Taylor Curtis, Antonio Meikel & Landyn VanOverbeke, Exercise Science, Skin Proprioceptive Effects on Wrestlers' Reaction Time, Taylor 10:00-11:30, Antonio 1:00-2:30, Landyn 11:30-1:00
15. Erin Kamann, Tyler Lothert & Chase Onken, Exercise Science, Flexibility and Balance in Active and Sedentary College Students, Erin 10:30-12:00, Tyler 12:30- 2:00, Chase 2:30-4:00
16. Okony Onyongo Agwa, Agronomy, Organic Farming, 10:30-12:00
17. Biraj Shrestha, Computer Science, The First RPG, 12:30-2:00
18. Abhishek Shrestha, Computer Science, Image Translation Android Application, 12:30-12:00
19. Breanna Houselog, Agronomy, Temperature Effects on Corn Seed Germination, 10:00-11:30
20. Ty Bird, Computer Science, Zombie Dash, 10:30-12:00
21. Yuepan Vue, Computer Science, Weightlifting Logger Android App, 10:30-11:30
22. Christopher Berg, Cody Friedges, Nona Meunsy, Biology, The Allelopathic Effects of Green Tea Extract On Growth of Tomato Plants, Nona/Chris 2:00-2:45, Cody 2:45-3:30
23. Ryan Riebel, Agronomy, Comparing the Universal Soil Loss Equation (USLE) to the Revised Universal Soil Loss Equation (RUSLE), 10:30-12:00
24. Haruki Nagata & Olympia Lala, Computer Science, Find my tutor, 10:30-12:00
25. Michaela Fassler, Mathematics, A Curious Proof of Fermat's Little Theorem, 11:30-1:00
26. Ashlie Weber, Breanna Houselog & Marissa Mattson, Biology, Allelopathic effects of orange (*Citrus sinesnsis*) peel extract on basil 'mammoth' (*Ocimum basilicum*) height and dry weight, Ashlie/Breanna 1:00-1:45, Marissa 10:15-11:00

27.....Abby Einck and Nick Schmitz, Agro Economics, Economic Development, 3:00-4:30
28.....Aaron Wollschlager, Computer Science, Developing Space Defender, 10:30-12:00
29.....Tawnni Slagel, Amber Tjaden & Angie Wenning, Exercise Science, Interval Training Effects on Arterial Stiffness in Middle-Aged People, Tawni 10:30-12:00, Amber 2:00-3:30, Angie 12:30-2:00
30.....Spencer Petrich, Agronomy, Effects of Soil Compaction on Corn Yields, 10:30-12:00
31.....Shawn Griffin, Hayden Acker & Noah Sander, Biology, The Allelopathic Effects of Orange Peel Extract on Corn Growth, Shawn 11:00-11:45, Hayden/Noah 2:45-3:30
32.....Fadumo Ismail, Hayley Gerdes, Anthonia Ameho & Katie Boerboom, Biology, Allelopathic Effects of Ferulic Acid on Sweet Corn, Anthonia/Katie 9:45-10:30, Fadumo/Hayley 2:00-2:45
33.....Trenton Draeger, Agronomy, Germination Rates of Conventional Corn at Different Temperatures, 10:30-12:00
34.....Zachery Doose & Annie Samuelson, Chemistry, Computational Characterization of Intermediates in the Electrochemical Reduction of Triazine Herbicides, 2:30-4:00
35.....Justin Hill & Garrett Wee, Environmental Science, Field Guide to the SMSU-ADM Environmental Learning Area, 1:30-3:00 50
36.....Anthony Angrimson, Computer Science, Counting Bacteria Colonies Using Image Recognition, 1:00-2:30
37.....Kristen Bosveld, Mathematics, Mathematical Permutations of Musical Scales, 3:00-4:30
38.....Alana Christianson, Mathematics, Statistical Analysis of the SMSU Women's Basketball Team, 1:00-2:30
39.....Daryn Thompson, Computer Science, VR Game Demonstration, 1:00-2:30

POSTER PRESENTATION SESSION B

Student Center Upper Level (SC 216)

Posters displayed 8:30 am- 5:00 pm

Culinology, History, Hospitality Management, Justice Administration, Sociology, Theatre

(Time listed is when author will be present at the poster.)

40.....Hannah Redmond, Miranda Giese, Kayla Wartner, Shane Ratkovich & Courtney Mulder, Justice Administration, "School to Prison Pipeline": The Impact of Zero Tolerance Policy on Students of Color, Miranda/Kayla 11:30-12:30, Hannah/Courtney/Shane 12:30-1:30
41.....Rose Schmit, History, Clara Ueland's Path to Leadership in the Minnesota Woman Suffrage Association, 1:00-2:30
42.....Haley Bennett, Stacey Vue, Morgan Tyndall, Amelia Marroquin & Sushma Bakhunchhe, Hospitality Management, SMSU fan and student satisfaction on concession stands at SMSU football games, Amelia/Morgan/Stacey 9:30-10:30, Haley/Sushma 10:30-11:30
43.....Mari West, Yangi Sherpa, Samantha Mehus, Devon Lyons & Britta Iverson, Hospitality Management, Revisit to the Performance of SMSU Dining Services: comparison with the previous year, Samantha/Mari 9:30-10:30, Devon/Britta 10:30-11:30
44.....Athena Golling, Alexandra Krohn, Laxmi Shova Rana Magar & Cody Tavarez-Curtis, Hospitality Management, Observing motivating factors of students in choosing off campus or on campus dining options, Alexandra/Laxmi 9:30-10:30, Athena/Cody 10:30-11:30
45.....Caitlin Schmidt, Theatre, Changes in Stage Makeup Uses and Applications Over the Last 50 Years, 11:30-1:00 50
46.....Jordan Stangeland, Theatre, Prosthetics in Film and Television (1967-2017), 2:00-3:30 50
47.....Muna Mohamed, Dylan Beatty, Zach Beaumaster, Jacob Broberg & Nicholas Esping, Justice Administration, Law Enforcement and The Use of Body Cameras, Muna/Nick 11:30-12:30, Dylan/Jacob 1:00-2:00, Zach 3:00-4:00

48.....Gage Backman, History, The Farmers' Holiday Association in Southwest Minnesota 1932-1933, 1:00-2:30
49.....Sariah Cheadle, Fine Arts and Communication, The SMSU Writing Center: Then and Now, 1:00-2:30 50
50.....Paul Ragan, Theatre, Changes in Makeup Products from 1967- 2017, 2:30-4:00 50
51.....Peyton Sanders, History, The Duluth Lynchings of 1920, 2:00-3:30
52.....Sophie Johnson, History, The O'Connor Layover Agreement, 11:30-12:30
53.....Tamara Hellendrung, History, Dakota War of 1862, 1:00-2:30
54.....Mandy Harris, Chanelle Helmers, Michael Dombrowski & Brittany Ference, Sociology, Pink, Blue, or Yellow: Can You Raise Children Gender Neutral? 1:30-2:45
55.....Brianna Krumwiede, History, Jane Grey Swisshelm: A Contradiction, 10:00-11:30
56.....Taylor Krogman, History, Black Box: The Sue Cochran Kidnapping and Free Love in the 1970's, 1:30-2:30 50
57.....Shay All Runner, Culinology, Preventive Controls for Human Food and How It Keeps our Food Safe, 10:00-11:30
58.....Clarissa Geisel, Culinology, Development of Gluten-free Pie Crusts with Good Freeze/Thaw Stability, 2:00-3:30
59.....Morgan Benson, Theatre, Vogue Cover Makeup From 1967 To Present, 10:00-11:30
60.....Raxson Rax, Theatre, The History of the Black Box, 2:00-3:30 50
61.....Leah Graham, Theatre, Old Age Makeup: A Process, 10:00-11:30
62.....Danny McDonnell, Theatre, Lighting Techniques of The Past 50 Years, 10:00-11:30 50
63.....Jaylee Schanus, Theatre, The Changes in Theatre Sound Technology over 50 years, 1:00-2:30 50
64.....Michelle Stoner, Sociology, Dating Behaviors of International Students at SMSU and ECU, 1:00-2:30
65.....Josh Falk, History, Causation of the Dakota War, 10:30-12:00
66.....Thomas Knudson, Theatre, The Time Around Under Milk Wood, 11:00-12:30
67.....Whitney McCamish, Theatre, Shakespeare at Southwest Minnesota State University, 12:30-2:00
68.....Becca Green, Theatre, Musicals of 1967 and How They Represent the Time Period, 1:30-3:00 50
69.....Megan Schultz, Culinology, Development of pulse flour-based pasta, 10:00-11:30
70.....Rachel Stender, History, The Dakota 38, 9:30-10:30
71.....Rachel Stender, History, The Howard Lake POW Camp: 1944-1945, 10:30-11:30
72.....Zachary Gritmacker, Kaitlyn Leach, Danielle Lohse & Nick Santos, Justice Administration, Environmental Injustice: What It Is and Who Is Impacted, Zach/Kaitlyn 1:30-2:30, Danielle/Nick 2:30-3:30
73.....Avianna McFarquhar, Theatre, The Student Center's Changes Through 50 Years, 10:30-11:30 50

POSTER PRESENTATION SESSION C

BA Library Plaza (BA 272)

Posters displayed 8:30 am- 5:00 pm

Nursing, Political Science, Psychology

(Time listed is when author will be present at the poster.)

74.....Bethany Block, Ashley, Bohlsen, Olive Jones & Edna Masese, Nursing, Hand Washing and the Spread of Clostridium Difficile, 11:00-12:30

75.....Danna Steffen &Tenae Ashton, Nursing, Lice in Schools: Nit or Not, 12:00-1:30

76.....Megan Vangsness, Teresa Haase, David Haase & Jennifer Jager, Nursing, Breastfeeding: Benefits, Tools and Resources, 10:30-12:00

77.....Darci Aslesen, Myckenzie Sefkar & Josie Loll, Nursing, Fall Prevention in Long-Term Care, 1:30-3:00

78.....Sarah Blom & Lindsay Mitlyng, Nursing, Mandating influenza vaccines for healthcare workers and its effects, Lindsay 10:30-12:00, Sarah 12:30-2:00

79.....Kayla Moser, Kim Anderson, Liz Bunjer & Sheena St. Aubin, Nursing, Keeping it at the bedside, Kayla/Kim 10:00-11:30, Liz/Sheena 11:00-12:30

80.....Austin Olson, Political Science, Affordable Housing Shortage in Greater Minnesota, 2:00-3:00

81.....Muna Mohamed, Political Science, Police Training and Immigrant Contact in Southwest Minnesota, 1:00-2:30

82.....Saul Eugene, Political Science, Disparities in Handling of Petty Crimes in Marshall, Minnesota, 2:30-4:00

83.....Katherine Lee, Political Science, No Vacancies: Addressing Southwest Minnesota's Childcare Shortage, 12:30-2:00

84.....Gage Backman, Political Science, Mental Health Care Workforce Shortage in Greater Minnesota, 2:30-4:00

85.....Deewan Bajracharya & Pushpa Chhantyal, Psychology, Developmental Disabilities Due to Fetal Alcohol Spectrum Disorder, 1:00-2:30

86.....Sarah Mayfield & Hannah Palmeter, Psychology, The Fall 2017 Inclusive Fitness Programs' Effects on Participants' Depression, Aggression, and Self-Esteem Levels, Hannah 11:30-1:00, Sarah 2:30-4:00

87.....Amanda Hartmann, Tyler Punke, Mady Sowle & Zachairley Eisden, Psychology, The Influence of Level of Extroversion on Time Perception, 11:00-12:30

88.....Emily Buchert, Quinn Swenson & Kaitlin Vos, Psychology, Time Perception among "Gamers" vs. Non-"Gamers" 11:00-12:30

89.....Dawa Rai & Tara Thapa Magar, Psychology, Impact of Parental Divorce on Child Development, 2:30-4:00

90.....Jacob L. Benson, Amanda L. Johnson & Crystal R. Yearous, Psychology, Attention From Dot-to-Dot, 11:00-12:30

91.....Brooke Thompson, Jenifer Willemssen, Jada Hill, Samantha McNeel, Psychology, Time Perception and Memory for Complex and Simple Paintings, 11:00-12:30

92.....Andrea Fuerstenberg, Elias Mensah & Tegen Thon, Psychology, The Effect of Emotion on Time Perception, 11:00-12:30

93.....Sherry Helleksen, Nursing, How Does Management Affect Nurse Retention? 11:00-12:30

Keynote Address: "Active Learning- making the most of a college experience through research"

Keynote Speaker: Wokil Bam, SMSU Alumnus

Wokil Bam was born in Nepal and travelled all the way to Marshall, Minnesota in 2008 for his undergraduate education. He graduated from Southwest Minnesota State University in 2012 with a double major- a BS in Environmental Science and a BS in Chemistry, as well as a minor in Biology. During his senior year, he worked on a capstone project titled "Sodium Analysis in the Redwood River Water in Southwest Minnesota" and presented the research at the 7th Annual Undergraduate Research Conference at SMSU.

After graduation, Wokil went on to Louisiana State University (LSU) where he earned his Master of Science in Oceanography and Coastal Sciences in 2015. During his master's program, he studied the effects of oil spills on terrestrial arthropods and seaside sparrows in the Louisiana saltmarsh under the supervision of Dr. Eugene Turner and Dr. Linda Hooper-Bui. He was named a Gulf of Mexico Research Initiative (GoMRI) scholar in 2014 for this research.

He then joined the Marine Geochemistry Lab at LSU to pursue a PhD in Oceanography and Coastal Sciences under the supervision of Dr. Kanchan Maiti. His doctoral research focuses on the application of natural radioisotopes as tracers of environmental processes in both coastal and deep oceans. He is currently working on understanding how carbon, metals and other contaminants are transported from surface to the deep ocean in the Arctic and the Gulf of Mexico.

As a part of his research, he has participated in numerous coastal field excursions and offshore cruises in the Gulf of Mexico and has already spent over 50 days at sea. He has presented his current research work at various national and international conferences. Apart from academics, Wokil is involved in various volunteering activities and organizations. Currently, he is serving as President of the Coast and Environment Graduate Organization at LSU, and is a senator representing the graduate school in the LSU Student Government.

Wokil will talk about the importance of undergraduate research experiences, the benefits of research relative to a future career and his personal experiences. He will also talk about his current ongoing research using different types of naturally occurring radioisotopes to trace and understand environmental processes.

Abstracts

Oral Session A – Upper Level Conference Center
Agronomy, Biology, Creative Writing, Environmental Science

1
Title: Using gravestones as a means to estimate the growth rates of *Dimelaena oreina* and *Xanthoria elegans* lichens in Southwest Minnesota
Presenter(s): Justin Hill
Advisor: Drs. Thomas Dilley & Emily Deaver, Environmental Science
Abstract: Lichen are a symbiotic relationship between a fungus and an algae. They have the ability to colonize on a wide variety of surfaces, and under the harshest climates. Lichenometry applies the growth rates of certain radial growing, crustose lichens to estimate the time since colonization on a rock surface. The diameters, aspect, and rock type for *Dimelaena oreina* (Moonglow) and *Xanthoria elegans* (Sunburst) lichens were recorded on 271 different gravestones in Southwest Minnesota. Growth curves were derived by comparing the lichen diameters to the date on the gravestone, with Moonglow (n=141) displaying a growth rate of about 0.73 mm/year and Sunburst (n=539) with a similar rate of about 0.75 mm/year. Both Moonglow and Sunburst preferred a top facing aspect when growing on the vertical stone. These SW Minnesota growth rates were similar to reported values that were measured in different climates.

2
Title: Differences in invertebrate populations as influenced by water quality at four locations in Lake Titow, Sibley County Minnesota
Presenter(s): Beau Swenson
Advisor: Drs. Emily Deaver & Thomas Dilley, Environmental Science
Abstract: Aquatic macroinvertebrates have been used as biological indicators of water quality. Macroinvertebrate populations at 4 locations in Lake Titlow, Sibley county Minnesota were sampled June-August 2017 to determine if there was a relationship between organism population and water quality measurements. Nitrate, phosphate, dissolved oxygen, conductivity, temperature and pH were measured once a week with Lamotte test kits and a Hach HQ40d Field meter. Hester Dendy artificial substrates were removed every three weeks and organisms were identified and counted. A Shannon-Weaver diversity index showed August had the lowest diversity across all sites with the middle of the lake having the lowest macroinvertebrate diversity. There was a direct correlation between water quality measurements and macroinvertebrate populations. There was decreased diversity and numbers of organisms at sites with low dissolved oxygen. Amphipods increased in abundance at sites with an increase in phosphate, which also correlated with enhanced vegetation growth.

3
Title: Distribution of Lichen on Granite Outcrops in the Minnesota River Valley
Presenter(s): Brayden Anderson
Advisor: Drs. Thomas Dilley & Emily Deaver, Environmental Science
Abstract: Lichens are a symbiotic association between an algae or cyanobacteria and a fungus. This study was done to identify lichen distribution and abundance growing on five different granitic outcrops in the Minnesota River Valley to determine if slight chemical changes in the rock influenced lichen growth. Lichen were identified and species' areal distribution were sampled in two randomly separated grids at each outcrop. Eleven species of lichen were found with Cumberland rock shield being the most abundant on 4 of the 5 rock types. Several lichen species showed no statistical differences between the sites while others were unique to a particular site. Lichen at all 5 sites did differ to varying degrees suggesting rock chemistry may control lichen distribution. However, other factors such as topography, microclimates, site disturbances, and fire frequency must be considered as well.

4
Title: Characterization of Tree Species in the ADM-SMSU Environmental Learning Area at Southwest Minnesota State University
Presenter(s): Melissa Klecker
Advisor: Drs. Emily Deaver & Thomas Dilley, Environmental Science
Abstract: Studies on trees demonstrate their ecological importance to plants and animals. Overtime, the composition of tree species change as forests mature. In Marshall, MN the ADM-SMSU Environmental Learning Area provides an opportunity to study these types of changes. The purpose of this study was to document species, diversity and density of the current forest and to evaluate the changes in forest species since it was first planted. Tree species were identified, species relative abundance (SRA), relative dominance and age were determined. Out of 192 trees measured, 20 different tree species were

identified, with red pine, quaking aspen and green ash being most abundant and dominant. The ages measured did not correlate to the year of the initial plantings, which suggest that native, re-generational growth or undocumented plantings were measured. In the future, tree species will continue to change within the forest community and be studied in order to document those changes.

5

Title: Bird Surveys in the ADM- SMSU Environmental Learning Area
Presenter(s): Garrett Wee
Advisor: Drs. Emily Deaver & Thomas Dilley, Environmental Science
Abstract: Surveys of bird populations are used to evaluate environmental health and the influence of human activities on ecosystems. Bird surveys were conducted in the ADM- SMSU Environmental Learning Area March 24 - June 30, 2017 to evaluate current bird populations and to compare the results to a survey done in 1981 shortly after the SMSU nature area was created. Three areas were sampled- Coniferous Forest, Prairie and Open Parkland. A grid of 60 evenly spaced points was surveyed twice weekly. Over 2500 birds were identified. Results showed 100 species of birds from 44 families compared to 41 species from 24 families in the previous study. The Open Parkland habitat had significantly more birds than the other habitats ($p<0.01$) as well as more nesting birds. Most common species included the Ruby-crowned Kinglet, Yellow-rumped Warbler and Common Grackle. Changes in bird populations reflect changes in vegetation in the nature area over the past 36 years.

6

Title: Characterization of bacterial populations in soils of different ages after land use changes
Presenter(s): Taylor Olson
Advisor: Drs. Thomas Dilley & Emily Deaver, Environmental Science
Abstract: Microbial communities in soils reflect their environmental conditions. Changes in plant type or land use often result in a shift in the microbial community. This study looked at the bacterial populations in soils after a land use change. Soils were sampled in a current agriculture field, grass that was converted from agriculture in 2011, and grass that was converted from agriculture in 2005. Biolog EcoPlates were used to characterize the microbial communities based on their utilization of 32 carbon sources. The most commonly utilized carbon sources were amino acids. Results showed no statistical difference in the percent similarity or the functional diversity of the microbial communities despite differences in soil properties between the sites. A change in land use did not affect the bacterial communities at these sites.

7

Title: Guide to Glacial Ridge Scenic Trail, Southwest Minnesota
Presenter(s): Matthew D. Steinbronn
Advisor: Drs. Thomas Dilley & Emily Deaver, Environmental Science
Abstract: During the Late Wisconsin Glaciation (~20,000-10,000 yrs. BP) west-central Minnesota was covered by the Des Moines Lobe of the Laurentide Ice Sheet leaving behind several large moraine complexes during its recession. The Glacial Ridge Trail Scenic Byway, a network of interconnected roads located between Wilmar and Alexandria, was established to highlight these excellent examples of various glacial landforms. The aim of this project was to create a road guide locating, identifying, and describing these landforms. Using road and surficial geology maps, landforms along the scenic bypass were Identified, photographed, described, and mapped in GIS. A road guide with maps, photographs, landform descriptions and formation processes was produced from these field investigations. The landforms identified include moraines, moraine-dammed lakes, kames, kettle lakes, outwash plains, wetlands, and modern drainages. The road guide provides a useful resource for citizens to better understand the region's outstanding glacial geomorphology.

8

Title: Soil island development on granitic outcrops in the Minnesota River Valley
Presenter(s): Aditya W. Harsono
Advisor: Drs. Thomas Dilley & Emily Deaver, Environmental Science
Abstract: Soil islands are isolated, small, thin patches of soil developed on bare bedrock and serve as important sites for the initial colonization by plant communities. Soil island development at four granitic outcrops in the Minnesota River Valley was studied to determine soil island characteristics and formation processes. Twenty-seven soil islands were measured for size and depth and initial formation processes and plant communities were documented. Soil samples at 12 soil islands were analyzed in the lab to determine pH, texture, and organic matter content. Four stages of development were documented with progressive changes in size, depth, texture, and organic matter. Stage 1 consisted of small, thin accumulations of coarse sediment in shallow rock basins with only lichens and mosses. Stage 2 and 3 soil islands become progressively

bigger, deeper, and finer grained with more developed plant communities. Stage 4 islands are large, deep, and have trees growing on them.

9
Title: Telling Secrets to the Trees: A Senior Portfolio Reading
Presenter(s): Brittni Branch
Advisor: Marianne Zarzana, Creative Writing
Abstract: Brittni Branch's poems and short stories, as well as her essays, are inspired by her life experiences. Her reading will include an excerpt from a fiction piece and a poem about being a team mascot.

10
Title: Telling Secrets to the Trees: A Senior Portfolio Reading
Presenter(s): Alexandra Krohn
Advisor: Marianne Zarzana, Creative Writing
Abstract: Alexandra Krohn's short nonfiction and fiction is inspired by firsthand experiences and her observations of the world. She will read "The Other Side of the Glass," a nonfiction piece where the natural and man-made worlds collide. Her flash fiction story, "Silent Alarm," is about the justifiable fear women experience along with the sacrifices they make and the economic pressures they face.

11
Title: Telling Secrets to the Trees: A Senior Portfolio Reading
Presenter(s): Kaleigh Farrelly
Advisor: Marianne Zarzana, Creative Writing
Abstract: Kaleigh Farrelly is inspired by the music that she listens to, experiences in life, interactions with people, board games she plays with her friends, and games such as Dungeons and Dragons. She also explores issues regarding mental health. Kaleigh will be presenting a nonfiction essay, "Dancing with My Dragon: Depression," and poetry, "I, Too, Am an Outsider," an imitation poem that honors Langston Hughes.

12
Title: Comparison of Lyme Disease Incident Rate in Lyon County and Hennepin County, Minnesota
Presenter(s): Matthew D. Steinbronn, Tou Soua Vue & Courtney Popowski
Advisor: Dr. Betsy Desy, Biology
Abstract: Lyme disease is caused by a bacterium, *Borrelia burgdorferi*, vectored by the deer tick. Lyme disease is the most common tick-borne disease in North America, infecting thousands each year. The purpose of our study was to compare incidence rates of Lyme disease in Lyon county and Hennepin county, Minnesota from 2001-2015. Incident rates were calculated for individual years and in 5-year intervals. The rate of change was then calculated for the 5-year averages and a slope for the line of best fit was determined for each county for the 15-year period. These data give us a glimpse on where the disease is increasing and how quickly. They also allow us to infer potential causes for the rate of change in incident reports.

13
Title: Comparison of goldenrod plant height and biomass from two soil types
Presenter(s): Taylor Olson & Matt Mattson
Advisor: Dr. Betsy Desy, Biology
Abstract: Several factors influence the growth of plants, including pH, available moisture, soil type, and the microbial community within the soil. The soil can also be diverse in its own way depending on the content of sand, silt, and clay. The purpose of our study is to determine if Goldenrod plants (*Solidago canadensis*) grow more efficiently in different soil types. We harvested twenty five different samples of goldenrods from two sample sites. The first location was the simulated prairie grassland at the ADM SMSU Environmental Learning Area. The other location was near a section of the bike trail located on North Bruce Street in Marshall, MN. We randomly selected plants for harvest and brought each plant back to the lab, measured height and dried to determine biomass. Results showed plants growing in a loam soil were taller and had more biomass. Soil type had an influence on goldenrod growth.

14
Title: Comparing Plant Density in a Restored Prairie vs. Old Field in the SMSU Wildlife Area
Presenter(s): Lauren Kerr, Margaret Provo & Alan Zimmerli
Advisor: Dr. Betsy Desy, Biology
Abstract: Ninety-nine percent of prairie habitat has been lost in North America. Restoration is important in limiting degradation and habitat loss. The SMSU Wildlife Area in Marshall, Minnesota has a 4000m^2 restored prairie with a 2,250 m^2 old field on its northern border. Restoration was initiated in the southern quadrant by Ecology Professor E.A. Desy in 1998. In the fall of 2017, we compared vegetation between the restored prairie and the old field. Brome, prairie dock, Indian grass, and Canada goldenrod occurred most frequently in the restored prairie. Whereas, brome, little bluestem, big bluestem, and Canada goldenrod were dominant in the old field. Of the 27 species identified, 22 were shared between sites, however the frequency in which these species occurred was much higher in the restored prairie.

Thus, the restored prairie is likely to be more diverse than the old field.

15
Title: A Comparison of Earthworm Densities in a Deciduous and a Coniferous Forest in the SMSU Wildlife Area
Presenter(s): Paige Hendrickson, Selena Herr & Anthonia Ameho
Advisor: Dr. Betsy Desy, Biology
Abstract: Earthworms are ecosystem engineers that dominate soil species. Earthworm distribution may depend on abiotic factors. The purpose of this study was to compare earthworm abundance for two habitats, a coniferous forest and a deciduous forest, in the SMSU Wildlife Area. Earthworms were collected from five soil blocks from each biome from September to October, 2017. Soil was analyzed for texture, dry-weight, pH, nitrate, and percent organic matter. Nitrates were higher in the deciduous forest than the coniferous forest, the other soil variables were relatively the same. We found no significant difference in earthworm densities between the deciduous and coniferous forest. Although moisture, pH, and nitrate are important soil characteristics, they apparently were not key in determining earthworm densities in this study.

16
Title: Comparison of macroinvertebrates in a coniferous versus deciduous forest in the SMSU wildlife area
Presenter(s): Michelle Williams, Taylor Holicky & Beau Swenson
Advisor: Dr. Betsy Desy, Biology
Abstract: Macroinvertebrates may differ depending on soil characteristics. Soil characteristics vary depending on forest type. In this study, we compared macroinvertebrates and soil characteristics in a deciduous and coniferous forest in the SMSU Wildlife Area. Four soil samples from each forest, with the dimensions of 29(w) x 21(l) x7(d) cm, were collected and brought to the lab where a Berlese funnel was used to collect macroinvertebrates. Soil pH and texture was determined in the lab. The Shannon-Wiener index of species diversity found that the deciduous forest was more diverse in macroinvertebrates than the coniferous forest. In the coniferous forest, Hymenoptera (bees, wasps, and ants) was the most dominant order. In the deciduous forest, Acaria (ticks and mites) was the most dominant order.

17
Title: Trends in soil temperature of different habitats through time at the ADM SMSU Environmental Learning Area Marshall, MN
Presenter(s): Matt Mattson
Advisor: Drs. Emily Deaver & Thomas Dilley, Environmental Science
Abstract: Soil temperature affects numerous processes including seed germination, plant blooming and rates of chemical reactions. Soil temperature is also important in determining when gardeners and farmers can plant. Soil temperatures were measured once each semester fall 2007 through spring 2016 in the SMSU-ADM Environmental Learning Area at 5 cm and 10 cm below the surface in prairie, forest and mowed habitats. Evaluation of the data showed that the morning temperatures ranged from 44 to 46 ^{o}F regardless of habitat, and the afternoon temperatures ranged from 45.5 to 52.5 ^{o}F with the higher temperatures measured in the mowed habitat. Analysis of variance indicated significant differences in afternoon temperatures between the 3 areas with forest temperature measurements showing the least variation between the two depths and between morning and afternoon measurements. This study demonstrates the effect that cover vegetation has on moderating soil temperatures.

18
Title: Comparison of Aerial Insects in a Prairie vs. a Wetland in the SMSU Wildlife Area
Presenter(s): Troy Filzen, Javin Medenwaldt & Stephan Ameyaw
Advisor: Dr. Betsy Desy, Biology
Abstract: The purpose of this experiment was to determine abundance of aerial insects in two habitats, grasslands and wetlands in the SMSU Wildlife Area. Eight pans, (40cm by 31.8cm by 15.2cm) were set out on September 29^{th,} in the SMSU wildlife prairie. On October 5th the pans were set in the wetlands, and recollected on October 12th.We also performed aerial sweeps in both areas each time we checked the pans. In the lab, Insects were preserved in jars with alcohol until they were identified to order. There was a total of six orders found in both grasslands and wetlands. The insect orders with the highest number of individuals in both areas were Diptera and Hymenoptera.

19
Title: Animal densities of a wetland and a field habitat based on road kill
Presenter(s): Chelsea Wiese & Mckenzie Besel
Advisor: Dr. Betsy Desy, Biology
Abstract: Road kill can be an indicator of animal activity in different habitats. Seasonal changes, such as hunting and harvest may cause differences in animal behavior. The purpose of this study was to determine animal occurrence in two different habitats using roadkill. Roadkill was collected from a wetland and a field habitat along County Road 11 in Lyon County, Minnesota. In both habitats invertebrates, for example, katydids and flies, were more common than vertebrates.

20
Title: Using Bird Strikes to Determine Bird Diversity on the SMSU Campus During Fall Migration
Presenter(s): Brayden Anderson, Easton Popma & Steven Yang
Advisor: Dr. Betsy Desy, Biology
Abstract: Bird strikes, the death of a bird due to a window collision, are a top cause of bird mortality in the United States. Bird strikes can be used to learn more about bird species in an area. The purpose of our study was to determine bird diversity on the SMSU campus during fall migration by collecting bird strikes. We collected bird strikes in the morning and evening at four sites around the SMSU campus for a 3-week period during September and October 2017. We collected 26 total birds representing 17 different species. 58% (n=26) of strikes were flying eastward and 46% of strikes were at the SS/SM corridor. Warblers and sparrows comprised 58% of the total bird strikes. The results of this study suggested that the SMSU campus has a high level of bird diversity during fall migration.

21
Title: On site soil sampling and GIS analysis of accuracy
Presenter(s): Jakob Hicks
Advisor: Dr. Lee French, Agronomy
Abstract: In the current agriculture climate, it is important to get the highest return on investment on all expenses. Currently there is not an on farm cost effective and accurate soil sampling procedure available to agriculture producers. This study is developing a protocol that can be replicated by other producers. Factors that played a role in developing this protocol were cost, accuracy, replicability, and productivity using GIS. On farm soil sample results were compared to a registered soil testing lab for efficacy. This study was made possible by an innovation grant funded by the Minnesota Corn Growers.

22
Title: The use of cover crops
Presenter(s): Arthur Baur
Advisor: Dr. Lee French, Agronomy
Abstract:

Oral Session B- CH 201 Agronomy, English, History, Literature, Political Science, Sociology and Theatre

23
Title: Wins and Losses: Community Involvement and School Referendum Outcomes in Southwest Minnesota
Presenter(s): Ryan Koopman
Advisor: Dr. David Sturrock, Political Science
Abstract: In 2016, over $322 million worth of building bonds was voted on in referendums in Minnesota. Out of all of that, it was split down the middle with $162 million passing while $160 million failed. Even more astonishing is of that $160 million statewide that failed, $118.4 million was between two districts located in Southwest Minnesota. While the Marshall and Worthington school district administrations are left searching for answers, Minneota, Murray County Central, and Fulda all had building bonds or operational referendums passed easily. What have the small schools figured out that the larger districts have not? How does community involvement affect the outcomes of these referendums? By getting out into the five communities and asking about their referendums and the relationship between the community and school administration I seek the answer to the question: What do the little guys know that the big ones do not?

24
Title: Quick Change Makeup: The Art of Becoming Multiple People On Stage
Presenter(s): Jenna Miller
Advisor: Sheila Tabaka, Theatre
Abstract: In many plays, films, and television shows actors may play many different rolls with very different character designs. While advancements in technology make some aspects of this change easier, we don't have the ability to digitally drastically alter a person's appearance on stage or on live television.

Here is where the necessity of makeup and the ability to change it quickly come in handy. After holding dress rehearsals with my model along with studying videos from multiple Broadway shows and *Saturday Night Live*, I've found effective methods for quick change makeup. A vital aspect of all quick changes is a strong team working with you.

25
Title: Efficacy and Affordability of Dicamba Adjuvant Packages
Presenter(s): Jakob Hicks
Advisor: Dr. Lee French, Agronomy
Abstract: Dicamba has been used for some time now as one herbicide in corn Integrated Pest Management (IPM). With the release of Dicamba tolerant soybeans (*Glycine max*) by Monsanto this herbicide can now be used in Soybean IPM. Dicamba is relatively old technology but has not been used in tank mixes. This study looks at the efficacy and the affordability of 6 different adjuvant packages and one check. Another factor that plays into IPM decisions is the cost of treatment. This study also evaluates the cost per efficacy. The most efficient product may not be affordable in production industry.

26
Title: Assessing the Variability of Extractable Phosphorus
Presenter(s): Ashlie Weber
Advisor: Dr. Frank Schindler, Chemistry & Agronomy
Abstract: Composite soil samples are assumed representation of discrete grid-points, and many soil testing laboratories report nutrient results on a measured volume using calibrated scoops and not sample mass. Both stages of sampling have inherent variability, and no assessment studies have been done. This type of information is valuable in that it would aid soil managers with resource and time prioritization. The objective of this study was to analyze the variability of extractable soil phosphorus as it relates to composite field and volume-measure laboratory sampling. Twenty regional soil samples were collected, ten composite and ten discrete, crushed to pass a 2 mm sieve, massed or scooped, and extracted for phosphorus (P) using 0.5 M $NaHCO_3$ at pH 8.5. An analysis of variance with Duncan's posteriori test for group differences were conducted. The results of this study are discussed, and the findings related to current soil sampling and analyses protocol.

27
Title: *Z. mays* Host Plant Resistance to *D. virgifera*
Presenter(s): Jakob Hicks
Advisor: Dr. Lee French, Agronomy
Abstract: It is estimated that corn rootworm (*D. virgifera ssp.)* causes over a billion dollars in lost revenue each year. One common way to treat rootworms involves staking rootworm resistant traits in corn plants. However, rootworm tolerance to all traits has been observed. This study is looking at a novel, conventionally bred host plant resistant phenomena. Two trials, one was performed in the SMSU greenhouse, and one was performed at the SMSU research plots. Results from 75 different corn varieties are examined looking for their ability to resist rootworm pressure. This is the second year of this study.

28
Title: Adoption: The Impact it has on Family Relationships
Presenter(s): Kaitlyn Leach
Advisor: Dr. Corey Butler, Psychology
Abstract: Strong family support is an important element of a successful adoption. Prior studies show that parents who have relatives in close proximity are less likely to have their adoption end in disruption than those whose relatives live farther away. However, current research about the effect of adoption on immediate family relationships is limited. In this descriptive study, 510 parents of adoptive and/or biological children answered an online survey about their relationships with their immediate family. The purpose of this study is to compare the strength of adoptive parents' relationships with their family to family relationships of parents who have not adopted.

29
Title: Gauging Financial Anxieties in Young People
Presenter(s): Crystal Yearous
Advisor: Dr. Corey Butler, Psychology
Abstract: When adolescents graduate high school they face a life of uncertainty which includes personal financial responsibility. Often, throughout their lives, they attain understanding about personal finances through varied sources and can make detrimental mistakes. "Trial and error" type mistakes can have dire consequences for the young and they face an upward climb when it comes to gaining personal insights about how to handle money. Providing personal finance training from an all-encompassing source can help reduce anxieties about personal finances that adolescents may have. If anxieties toward money can be reduced, they may be able to better plan for their futures and make smarter decisions in their financial lives. This experiment is an attempt to gauge levels of anxiety in high school

adolescents towards the handling of personal finances and to see of those anxiety levels can be changed with one-on-one training.

30
Title: Prewriting in Middle School English
Presenter(s): Sara DeSmet
Advisor: Dr. Lori Baker, English
Abstract: Young writers often struggle to form clear, organized ideas in their writing. However, teachers can combat this common writing frustration in middle school writing through unlocking the potential of prewriting strategies. Research on best practices in middle school language arts and adolescent cognitive development reveals that students are at a crucial age for prewriting instruction and for developing writing processes that will continue to shape them as writers in high school and beyond. Specific prewriting strategies not only aid in their written expression but also their overall organizational skills. Recognizing the importance of prewriting at the middle school level will help teachers better guide their students through the entire writing process.

31
Title: The Importance of Connecting Reading and Writing in a Middle School English Classroom
Presenter(s): Nicole C. Berning
Advisor: Dr. Lori Baker, English
Abstract: Reading and Writing are often approached as separate subjects in middle school classrooms. Students are given reading assignments that are different from vocabulary and writing lessons, that should be done simultaneously. When students are writing, they are also reading, and when students are reading, they are improving their writing abilities. When educators provide lessons that incorporate and overlap literacy and writing to students, students are more inclined to build both sets of skills at the same time. This conclusion is based on review of current research on best practices in reading and writing in middle school classrooms.

32
Title: Motivating Adolescent Writers
Presenter(s): Shelby Taylor
Advisor: Dr. Lori Baker, English
Abstract: Motivating adolescents to write is one of the biggest challenges many English teachers face in the classroom. These individuals avoid writing for many reasons such as the strict guidelines of the assignments that they must follow, the lack of interest in the topic or conditions of the assignments, and finally the lack of understanding the initial mechanics of writing in general. Therefore, a selection of research was gathered to determine which strategies work best for teachers when trying to motivate adolescent writers. For this presentation, we will consider "adolescent writers" to range from the 5th-12th grade. It was found that these writers were more likely to take interest in writing when the writing process and fundamentals were clear, and the guidelines of the assignment did not limit their creativity.

33
Title: Effective Strategies to Provide Feedback and Grade High School Students' Writing
Presenter(s): Emily Williamson
Advisor: Dr. Lori Baker, English
Abstract: In many high school English classrooms, students are primarily given feedback and comments on their papers through summative assessments after the students are completely finished with their writing. This method for grading writing is often not effective since students do not use the teacher's feedback to improve their writing. After consulting findings from current high school English teachers and experts in the field of English and educational studies, research shows comments should be utilized through formative assessments. Teachers' comments and feedback belong on the students' drafts, not on their final written products. Instead of serving as editors, teachers need to shift their role to "aiditors," or facilitators, helping students throughout the writing process. Requiring students to respond to the teacher's feedback encourages revisions and growth for students' writing. Through these effective methods, instead of students disregarding the teacher's feedback, students will learn to use these comments to improve their writing.

34
Title: The Prevalence of Philosophical Thought in Classic Literature and Its Changes Over Time
Presenter(s): Caleb Herrlich
Advisor: Dr. Ruthe Thompson, Literature
Abstract: Beginning with the father of philosophy and leading all the way up to modern times, different concepts of morality have been constantly and heavily debated. By analyzing *Metamorphoses* by Ovid, *The Inferno* by Dante Alighieri, *Paradise Lost* by John Milton, and *Crime and Punishment* by Fyodor Dostoyevsky I will attempt to track and explain the shifts in philosophical thought over time by applying various ethical and moral philosophical theories.

35
Title: Do Reality TV Shows About Teen Pregnancy Have Any Effect on The Actual Statistics?
Presenter(s): Maggie Meyers, Kendra Jasso-Chukwuyem, Cody Sleiter & Taylor Laabs

Advisor: Dr. Cindy Aamlid, Sociology
Abstract: Teen pregnancies are a pressing issue for many reasons. Our group was interested in learning if reality television shows about teenage motherhood have had any impact on teen pregnancy, The most significant finding, was, yes, the shows influenced the rates of teen pregnancy. The reality shows have shown the good, the bad, and the ugly, and teens, seeing all of this made them realize that having a child is definitely not all fun and games. This knowledge has brought down the rates of teen pregnancy significantly. Our presentation will share its findings.

36
Title: How the Irish Immigrants Shaped the History of Minnesota
Presenter(s): Claire McManmon
Advisor: Dr. Thomas J. Williford, History
Abstract: In the 1840s, Ireland was hit by a potato famine, forcing thousands of Irish to leave, many of whom came to America seeking food and land. Some of these Irish immigrants settled in Minnesota and built communities there. A particularly large population of the Irish immigrants settled in St. Paul. There are several historical figures who played a major role in building the Irish communities of Minnesota, such as Archbishop John Ireland and James. J. Hill. Their efforts to build these communities helped shape the culture and industry of Minnesota, particularly in the Twin Cities. Although they arrived poor, the Irish still managed to dominate the social pyramid in St. Paul by the end of the nineteenth century. By examining the lives of the Irish living in Minnesota in the 1800s, we can understand how they played such an important role in shaping the history of Minnesota.

37
Title: The Hadley Buttermakers and the Minnesota Town Ball Tradition
Presenter(s): Lucas Freeman
Advisor: Dr. Tom Williford, History
Abstract: Baseball is America's pastime, a tradition in the United States culture for over 150 years. In the state of Minnesota, town amateur baseball is apart of the states rich history. The team that is the epitome of this timeless tradition is the Hadley Buttermakers. Baseball has been played in Hadley for over a century and through the years it has brought the community and families from Hadley together from its earliest beginnings. In this project, we will explore the rich history of the Buttermakers as well as the origins of town ball in Minnesota. Through that exploration we will see how it inspired community camaraderie and identity for Hadley. Finally we will describe how a town with a population of just 60 has continued the rich town ball tradition into present day.

38- 45
Title: Poems from the Poetry Workshop
Presenter(s): Desiree Bauer, Emily Duchert , Danielle Crowell, Selina McCool-Kamstra, Thalia Otero, Austin Rusch, McKenzie Swanson, Sophia White
Advisor: Dr. Susan McLean, English
Abstract: Poems from the Poetry Workshop

46
Title: There's No Room in the Inn: the Need for Community-based Behavioral Health Care
Presenter(s): Sarah Hunter & Ashley Wulkan
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract: This paper explores five published articles that discuss a variety of community-based Interventions for those experiencing mental health crises. Qualitative, quantitative and mixed method results were obtained using a variety research methods to collect data, which included mental health telephone triage, electronic medical records, and surveys, which provided statistical analysis. In Rosenberg's 2012 analysis of behavioral disorders, she addresses the growing mental health crisis. There is a growing concern about the increase of behavioral health patients in the United States. In a 2016 study by O'Neill et al., they look how "hours and miles" affects those experiencing crises, along with the negative impacts to their family members, especially in the pediatric population. Recommended nursing interventions include, but are not limited to, utilizing therapeutic communication skills, in order to establish a therapeutic nurse-patient relationship.

Abstracts

Poster Session A – Agriculture, Agribusiness, Agronomy, Biology, English, Environmental Science, History, Mathematics & Psychology

1
Title: Derangement: Abnormal Permutation?
Presenter(s): Carter Barker
Advisor: Dr. Dan Kaiser, Mathematics & Computer Science
Abstract: A derangement is an arrangement or a permutation of a sequence of objects in which *nth* is not placed in the nth position for any n. The idea of derangement was proposed and solved by a French mathematician, P.R. Montmort, in 1708.

2
Title: Why the honey badger is unaffected by snake venom
Presenter(s): Taylor Holicky
Advisor: Dr. Vaughn Gehle, Biology
Abstract: Many animals are prey to venomous snakes, but the honey badger can reverse this role. Their nicotinic acetylcholine receptors (nAChR) have evolved resistance to snake neurotoxins. Here I review two studies that detail the specific binding site of α-bungarotoxin on the α subunit of the nAChR of the honey badger. Wilson et al. (1985) localized the high affinity binding site of this toxin between amino acids (AA) 173-204. They used proteolytic digestion and peptide synthesis to create a 32 AA region to test in a competitive binding dot plot assay. Drabeck et al (2015) used primers to amplify the AA 122-205 section of the honey badger's nAChR gene. They found that the honey badger avoids binding of alpha-bungarotoxin by replacing serine with arginine on site 187, causing a charge repulsion between the receptor and toxin. This replacement allows the honey badger to be unaffected by snake venom.

3
Title: Undergraduate Research Conference Application Website
Presenter(s): Austin Leek
Advisor: Dr. Kaiser, Dr. Man, Professor Mortezapour
Abstract: This project is a website to accept applications for the Undergraduate Research Conference here at SMSU. The website will primarily present an easy user interface to students who want to apply to the conference. Its secondary function will be to simplify the job of conference organizers. The student interface will allow submission of several files and text information about the student group and their project. The organizer interface will consolidate the student data and allow organizers to update information about each year's conference.

4
Title: Stress as a cause of hypothyroidism
Presenter(s): Mckenzie Besel
Advisor: Drs. Vaughn Gehle and Sandy Craner, Biology
Abstract: 4.6 percent of the U.S. population has hypothyroidism, in which the thyroid gland does not produce enough thyroid hormones. Some forms of stress, both physical and psychological, have been hypothesized to cause the development of hypothyroidism. Long distance running is one form of stress that may correlate with the development of the disease. Matsumura *et al. (*2015) surveyed runners with diagnosed hypothyroidism and analyzed their training regimens and history. The investigators found that individuals who started running before age ten self-reported the development of hypothyroidism. In addition, Winand *et al.* (1992) studied the effects of endurance training on Wistar rats. The endurance trained rats produced significantly lower levels of T_3 and T_4 hormones compared to the controls. Both studies indicate a possible correlation between hypothyroidism and endurance exercise, and further support a possible relationship between stress and thyroid malfunction.

5
Title: Landing Mechanics between Dominant and Non-Dominant Legs
Presenter(s): Ashley Hoehne, Ashton Bartlett, Tanner Luebke & Alexander Jorgensen
Advisor: Dr. Mostafa A. Hegazy, Exercise Science
Abstract: The purpose of this study was to determine if there are any biomechanical differences in landing mechanics between dominant and non-dominant legs of Division II female volleyball players. In this experiment, we investigated the differences in ground reaction force (GRF) between the repaired and non-repaired legs. This was done by inserting F-Scan pressure insoles (Teckscan Co., Boston, U.S.A) into participants' shoes to measure GRF. Participants' maximal jump height was determined using the vertical challenger (jump and reach device; Tandem Sport, Louisville, KY, USA), the highest out of 3 jumps was used as their maximum. Participants then completed three submaximal jumps to 75%,

50%, and 25% (3 trials each) of their maximal jump height. All data collection was not completed by the time of the abstract submission.

6
Title: Mirror training and functional movement in hemi-plegic stroke victims
Presenter(s): Jessie Janisch & Jordan Flinn
Advisor: Kris Cleveland, DPT & Jeffrey W. Bell, PhD, Exercise Science
Abstract: Stroke often leads to hemiplegia, defined as leaving half of the body with a functional impairment. The aim of this study was to determine whether or not using mirror therapy will positively affect movement symmetry. Six post-stroke, hemiplegic subjects completed a Fugl Meyer assessment determining their current status for motor and sensory ability. Then, subjects completed a 5-10 minute session moving their unaffected arm using a Mirror Box. The Fugl Meyer assessment was then performed again immediately after the training and at 48-72 hours post. At the time of this abstract submission, all testing had not been completed.

7
Title: Landing Mechanics in non-ACL and ACL Repaired Individuals
Presenter(s): Tanner Luebke, Alex Jorgensen, Ashley Hoehne & Ashton Bartlett
Advisor: Dr. Mostafa A. Hegazy, Exercise Science
Abstract: The purpose of this study was to determine if there are any biomechanical differences in landing mechanics between ACL repaired and non-ACL repaired legs of Division II athletes. In this experiment, we investigated the differences in ground reaction force (GRF) between the repaired and non-repaired legs. This was done by inserting F-Scan pressure insoles (Teckscan Co., Boston, U.S.A) into participants' shoes to measure GRF. Participants' maximal jump height was determined using the vertical challenger (jump and reach device; Tandem Sport, Louisville, KY, USA), the highest out of 3 jumps was used as their maximum. Participants then completed three submaximal jumps to 75%, 50%, and 25% (3 trials each) of their maximal jump height. All data collection was not completed by the time of the abstract submission.

8
Title: No Effects of a Companion Animal on Physical Activity
Presenter(s): Alison Radunz
Advisor: Jeffrey W. Bell, PhD & Kris Cleveland, DPT, Exercise Science
Abstract: Interactions with animals have shown beneficial effects on the activity level of elderly individuals. This may allow them to stay independent for longer periods of time. The purpose of this study was to determine if an interaction with a companion dog affected the activity level of selected nursing home residents. The activity level was tracked with an All Cart Fitness Tracker Wireless Activity pedometer two days before the interaction and two days after. Nursing home residents spent one hour with the dog where they could pet, play with, and groom it. There was no significant difference in the activity level of the residents before and after the interaction ($p=0.21$). The animal interaction time may need to be extended to see improvements in activity level of the residents.

9
Title: Standards for Tax Preparers
Presenter(s): Kelsey A. Kinner
Advisor: Dr. Will Thomas, Accounting
Abstract: Currently there are no standards set forth for those who preparer tax returns. This creates opportunity for tax fraud to occur without consequences. In an effort to standardize those who prepare tax returns and increase general knowledge of tax preparation, the IRS attempted to regulate the field with the Registered Tax Return Preparer Test. This test was found to be outside the statutory authority of the IRS and has been discontinued. Since then, a voluntary continued education program known as the Annual Filing Season Program (AFSP) has been created. Granting the IRS the statutory authority to regulate the field of tax preparation, passing legislation in each state to set their own standards and informing clients about how to research the credentials of their tax preparer are all solutions to this problem along with the continued use of the AFSP.

10
Title: Not for Profit, Actually For Profit?
Presenter(s): Shawn Hanson
Advisor: Dr. Will Thomas, Accounting
Abstract:

11
Title: The Effects of Exercise on Wheelchair User's Trunk Mobility and Flexibility Using a Wall Goniometer
Presenter(s): Hannah Palmeter & Sarah Mayfield
Advisor: Jeffrey W. Bell, PhD & Kris Cleveland, DPT, Exercise Science
Abstract: Individuals with trunk mobility, flexibility, and balance impairments due to underlying neuromuscular disease or spinal cord injury are more likely to use wheelchairs. The purpose of this study was to compare trunk balance and mobility before and after an individualized 8-week training program.

Subjects performed trunk mobility trials measured by goniometer: extension, flexion, right and left lateral flexion; followed with shoulder mobility and functional sit and reach tests. Subjects participated in training adapted to their mobility characteristics. No changes were found after training for left lateral flexion (p=0.28), flexion (p=0.97), right or left backscratch tests (p=0.93 and p=0.91), and functional sit and reach (p=0.22) but, trends for improvements were found for right lateral flexion (36.0˚ vs. 44.6˚, p=0.10) and extension (34.3 ˚ vs. 48.8 ˚, p=0.09). Due to the individualized training and subject conditions this study may need additional time and greater number of subjects to substantially influence these measures.

12
Title: Menstrual Cycle Effects on Volleyball Related Performance
Presenter(s): Greta Geist &Carter Kirk
Advisor: Dr. Jeffrey W. Bell, Exercise Science
Abstract: The purpose of this study was to determine the effects of different phases of the menstrual cycle on volleyball-related performance indices. Ten college-aged female volleyball players participated. Subjects were 19.40±0.84 years old. Subjects completed tests every five days beginning the day after starting their menstrual cycle and until their next cycle. Subjects performed 5 serves, 3 timed agility tests, and one 3-repetition-maximum squat each test. Due to scheduling, illness, and injuries all tests were not completed for every. No significant differences were found during the different phases: average serve (59.66±1.82 vs 58.74±2.66 vs 56.50±3.83 vs 56.81±2.35 kph, p=0.124), average agility (6.22±0.32 vs 6.34±0.26 vs 6.27±0.29 vs 6.19±0.20 sec, p=0.634), and squat (72.12±18.04 vs 76.86±16.52 vs 76.86±17.13 vs 79.15±17.65 kg, p=0.833). Interestingly, average serve speed decreased throughout phases and may be related to competition schedule. Additionally, the squat non-significantly increased over time. This study was underpowered and may need additional subjects.

13
Title: Is There a Growing Demand for Certified Public Accountants?
Presenter(s): Christina Tauer
Advisor: Dr. Will Thomas, Accounting
Abstract:

14
Title: Skin Proprioceptive Effects on Wrestlers' Reaction Time
Presenter(s): Taylor Curtis, Antonio Meikel & Landyn VanOverbeke
Advisor: Dr. Jeffrey W. Bell, Exercise Science
Abstract: Skin mechanoreceptors may affect reaction time and skin contact pressure in wrestlers may affect match performance. The purpose of this study was to determine whether depth of pressure or athlete status affects reaction time**.** Forty college students (20 wrestlers, 15 non-wrestling athletes, and 5 non-athletes) completed tests where three weights (5g, 10g, and 30g) were dropped from 50cm onto the bicep while subjects were blindfolded and wearing earplugs. Each weight was dropped three times in a randomized order. All trials were recorded using a high-speed camera (Fastec IL3) at 1200 Hz. Average reaction time to weight drops (29 wrestlers, 13 non-wrestling athletes, 4 non-athletes) were analyzed using a 3x3 ANOVA (SPSS v.24). There were no main effects for group or weight (*p*=0.38), although heavier weights elicited a non-significant faster response (5g=140.28±16.44 ms, 10g= 136.75±17.63 ms, 30g=128.86±18.02 ms). Wrestlers likely should not train to react to a variety of contact pressures.

15
Title: Flexibility and Balance in Active and Sedentary College Students
Presenter(s): Erin Kamann, Tyler Lothert & Chase Onken
Advisor: Kris Cleveland, DPT & Jeffrey W. Bell, PhD, Exercise Science
Abstract: Poor balance and flexibility can lead to health problems including increased risk of falling and muscle imbalance. The purpose of this study is to determine if there is a difference in balance and flexibility between active and sedentary college students. Fifteen active and 15 sedentary college students were tested. Lower Quarter and Upper Quarter Y-Balance was used to determine upper-body and lower-body balance. Flexibility was determined using a sit-and-reach test, back scratch test, back flexion, and back extension test. Sedentary individuals compared to active had a trend for greater back flexion (12.93±4.96cm vs. 10.20±3.12cm, p=0.082) There were no other significant differences in any tests, although active individuals had non-significantly better scores for most other measures. It is unclear why sedentary individuals performed better on back flexion.

16
Title: Organic Farming
Presenter(s): Okony Onyongo Agwa
Advisor: Dr. Lee French, Agronomy
Abstract: The idea organic farming currently exist in the United States, United Kingdom, Germany, and France, but some issue need to be solved. In the 1980s scientists approached the socio-economic

problems of the time with organic farming and believed organic farming had the potential to solve the problem that people are spending large portions of their income on food. The public liked the idea of organic farming but due to long term action plans that are required to make it a reality, almost 10 years' worth of planning, promotion and farming was needed in order to be a qualified organic farmer was off putting too many. Researchers reported that organic farming is highly efficient for the economy. To effectively solve the rising issue of entry cost, re-thinking and creating tools and ways to effectively solve entry issue need to be looked into.

17
Title: The First RPG
Presenter(s): Biraj Shrestha
Advisor: Drs. Dan Kaiser, Shushuang Man & Kourosh Mortezapour, Computer Science
Abstract: The community of people who play games (Gaming Community) is expanding at a very high rate. Games can be used to represent almost anything from the creator's fantasies to their values by incorporating them into the games they create. This project shows all the details of an RPG game on how it was created, the game engine used and what it is based upon. The game is an open world RPG (Role Playing Game) created by using Unity and several self-created components like the environment. The character completes many quests and explores the surroundings which is based on a real location in the country Nepal. The program is written in C# and can be played on any PC's or Consoles.

18
Title: Image Translation Android Application
Presenter(s): Abhishek Shrestha
Advisor: Drs. Dan Kaiser, Shushuang Man & Kourosh Mortezapour, Computer Science
Abstract: Snaplator is an android application created using Android Studio, Java, XML and JSON. The application lets users read sign boards or text written in different languages. The application uses Google Mobile Vision API for optical character reading and Google Cloud Translation API for text conversion. Mobile Vision API reads text from an image and the application sends a JSON request to the Cloud Translation API server. The translated text is then returned by the API as a JSON object which is parsed by the application to give the user a meaningful output. The mobile device running the application requires an internet connection, Android OS 4.4 or above and quality image taking capability for the application to work accurately. The main objective of this application is to let travelers understand texts written in different languages by just capturing an image and without having to type it on the phone.

19
Title: Temperature Effects on Corn Seed Germination
Presenter(s): Breanna Houselog
Advisor: Dr. Lee French, Agronomy
Abstract: The rate of plant growth in corn depends on the temperature that surrounds the plant. In order for a seed to germinate, adequate temperature and moisture uptake must be present. Germination is one of the most important stages in the life cycle of plants that determine the efficient use of the nutrients and water resources that are available. A fundamental understanding of germination is essential to crop production, especially in a world where we are trying to keep up with food production for a rapid increasing world population. I tested the hypothesis that corn seeds would have an optimal germination rate under 30°C rather than 10°C and at room temperature. Corn seeds were evaluated at 2, 4 and 10 days for evidence of germination. There was a significant difference in the number of corn seeds that germinated at 30°C compared to those seeds at 10°C.

20
Title: Zombie Dash
Presenter(s): Ty Bird
Advisor: Drs. Dan Kaiser, Shushuang Man & Kourosh Mortezapour, Computer Science
Abstract: This is a game designed in the gaming engine Unity and using C# scripts. It is a round style game where the goal is to live for as many rounds as possible. There are zombies that try to kill the player and as the rounds progress the number of zombies increase. The player gets points per zombie killed and the goal is to get as high a score as possible.

21
Title: Workout Logger Android Application
Presenter(s): Yuepan Vue
Advisor: Drs. Dan Kaiser, Shushuang Man & Kourosh Mortezapour, Computer Science
Abstract: Hitting plateaus is a common problem in people who work out. This problem occurs because the overloading principle is not applied to their training. In other words, they're not challenging their bodies to force a change. To solve this problem, I will create an android application that allows a user to track workouts by exercise, weight, and repetitions. The application will show users their progression over time and their previous sets and reps, so they can see how to adjust their training. By using this application,

it will allow the user to properly apply the overloading principle to their training.

22
Title: The Allelopathic Effects of Green Tea Extract On Growth of Tomato Plants
Presenter(s): Nona Meunsy, Christopher Berg & Cody Friedges
Advisor: Dr. Pam Sanders, Biology
Abstract:

23
Title: Comparing the Universal Soil Loss Equation (USLE) to the Revised Universal Soil Loss Equation (RUSLE)
Presenter(s): Ryan Riebel
Advisor: Dr. Lee French, Agronomy
Abstract: Soil loss is a big problem that agriculture has been facing for many years. These equations are a way for people to actually be able to predict about how much soil that they will lose in a rain event. There are two equations that are used to predict soil erosion, these are the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE). I compared and contrasted the two different equations and figured out the differences between the two equations. The RUSLE is more accurate than the Universal Soil Loss Equation for a number of reasons. It's more accurate because it has more of the variables that weren't quite as fully defined by the USLE. The equations are A=R*K*LS*C*P; where A is predicted annual soil loss, K soil erodibility, L slope length, S is slope gradient, C is cover management, and P is erosion control practices.

24
Title: Find my tutor
Presenter(s): Haruki Nagata & Olympia Lala
Advisor: Drs. Dan Kaiser, Shushuang Man & Kourosh Mortezapour, Computer Science
Abstract: **Find my tutor** is a user friendly mobile application created using Java, Android studio and Xampp for android users. The app will include the tutor's available time and the subjects they will be helping with. We will be creating a database using Xampp which will include tutor's information such as their names, majors and times available. Most of the contents of the application will include database information. This database will also be used to store the guest information in order to schedule appointments. The main objective of our project is to help the students make appointment online with the tutor. We want the students to utilize all the academic help and resources made available to them. On the completion of the project, students will be able to make online appointments via **Find my tutor** app which will help both students and tutors to plan accordingly and learn more.

25
Title: A Curious Proof of Fermat's Little Theorem
Presenter(s): Michaela Fassler
Advisor: Dr. Heather Moreland, Mathematics
Abstract: Fermat's Little Theorem has many uses in number theory. There are also many different methods to prove this theorem. The traditional proofs predominately use an analogue of the Euclidean algorithm. In Giedrius Alkauskas' article, "A Curious Proof of Fermat's Little Theorem", he defines a "curious" proof of this theorem that he "happened upon". It's curious because it does not utilize arithmetic, group theory, or the properties of binomial coefficients like other well-known proofs. This project reviews two of the more traditional proofs and Alkauskas' curious proof.

26
Title: Allelopathic effects of orange (*Citrus sinesnsis*) peel extract on basil 'mammoth' (*Ocimum basilicum*) height and dry weight
Presenter(s): Ashlie Weber, Breanna Houselog & Marissa Mattson
Advisor: Dr. Pam Sanders, Biology
Abstract: Allelopathy is a phenomenon that produces biochemicals that affect other organism's growth. Orange peels (*Citrus sinesnsis)* contain an inhibitory chemical that has been used as a suppressant on other plants. We tested orange peel extract on Basil (*Ocimum basilicum 'Mammoth'*) plants recording its inhibitory effects. This experiment consisted of 0%, 5%, 10%, and 15%, with 6 plants per treatment. Plants were grown in a greenhouse at a temperature between 20-30°C. Plant height was measured bi-weekly; ending the experiment, each plants dry weight was individually weighed and recorded. We found a significant reduction by 24% in plant height and 23% inhibition on dry weight between the control and 15% treatment group. We concluded citrus peels could be used to suppress weeds at higher concentrations.

27
Title: Economic Development
Presenter(s): Abby Einck and Nick Schmitz
Advisor: Dr. Sang Jung, Agro Economics
Abstract: The economies of China and Argentina have many differences along with some similarities. Chinas economy was one of the fastest growing in the world. Both countries grew quite rapidly and while China continued to grow and expand their economy Argentina's economy deteriorated. Argentina went through many hard years with their economy before

starting to improve it again. When comparing both countries we looked at the different strategies that were used and the difficulties they faced along the way.

28
Title: Developing Space Defender
Presenter(s): Aaron Wollschlager
Advisor: Drs. Dan Kaiser, Shushuang Man & Kourosh Mortezapour, Computer Science
Abstract: Space Defender is a 3d2d top down shooter video game about aliens invading the earth. You are in a space ship and are the last defense of the earth. You will acquire scrap to gain an advantage by purchasing upgrades. Unity was brand new to me when I started this project. It required many hours of just reading documentation and going through tutorials to understand how to use. I've developed this game by coming up with an initial description and list of features. I picked a feature and developed it until it was complete and repeated. I did come back to features multiple times to make the game better. Unity is a great engine to develop on and I would use it again.

29
Title: Interval Training Effects on Arterial Stiffness in Middle Aged People
Presenter(s): Tawnni Slagel, Amber Tjaden & Angie Wenning
Advisor: Dr. Jeffrey W. Bell, Exercise Science
Abstract: In the United States, 85.6 million people are affected by cardiovascular disease. Some studies have reported that High Intensity Interval Training workouts improves the Augmentation Index (AIx) in middle aged people but these results are equivocal. In this study, subjects were separated randomly into a control group (n=14) and a workout group (n=9). Both completed a pretest and a posttest following the 6-week workout period. The workout group completed two running interventions and one body-weight resistance training session each week. Each running workout included 6 to 10 repetitions of 30 seconds easy, 20 seconds moderate, and 10 seconds maximal effort. Twenty-three subjects age 47.19 ± 4.34 completed the study. There was no significant main effect of training on AIx ($p=0.26$), systolic blood pressure ($p=0.68$), or diastolic blood pressure ($p=0.50$). It is likely that the workout frequency and intensity were not substantial enough to improve artery function in healthy, middle-aged adults.

30
Title: Effects of Soil Compaction on Corn Yields
Presenter(s): Spencer Petrich
Advisor: Dr. Lee French, Agronomy
Abstract: One main goal for farmers is to increase productivity and yield. In the process of increasing productivity they may come across potential setbacks, one would be the increase in the size of machinery and the compaction on the soil. To find out the effect compaction had on corn yield, I took a tractor and drove over a row of corn multiple times. I compared the packed row with my control. The packed row averaged to produce 162 bushels/ acre and the control averaged 193 bushels/ acre. One way to reduce soil compaction is deep tillage. Farm equipment will keep increasing in size and farmers must find ways to reduce the amount of soil compaction.

31
Title: The Allelopathic Effects of Orange Peel Extract on Corn Growth
Presenter(s): Shawn Griffin, Hayden Acker & Noah Sander
Advisor: Dr. Pam Sanders, Biology
Abstract: Orange peels for orange juice companies are wasted byproducts of the company, the wasted peels show an allelopathic property and can be used as an effective herbicide. We investigated the allelopathic effects of orange peel extracts on the height and dry biomass of corn plants (*Zea mays* 'Vision'). Three-week-old corn plants were transplanted in to groups of 6 and treated in a greenhouse and watered with 25 g/L, 50 g/L, 100 g/L of orange peel extracts, or a control of tap water. Plant height was measured for 26 days and shoot dry weight at harvest. The extract showed little effect on plant height, but had an average of 31.24% inhibition on shoot dry weight.

32
Title: Allelopathic Effects of Ferulic Acid on Sweet Corn
Presenter(s): Fadumo Ismail, Hayley Gerdes, Anthonia Ameho & Katie Boerboom
Advisor: Dr. Pam Sanders, Biology
Abstract: Ferulic acid is an organic compound found in the cell walls of plants. Excess of ferulic acid has been noted to have allelopathic effects on cereal crops. We treated 24 sweet corn (*Zea mays*) plants with 0, 100, 150, and 200 mg/L of ferulic acid as needed. Heights of the plants were measured 2 times per week for 4 weeks to test if different ferulic acid concentrations would cause significant growth inhibitory effects. We hypothesized that the corn

treated with the highest concentration of ferulic acid would experience the most growth inhibition and have the lowest dry weight after the experiment. Our dry weight of corn treated with 100 mg/L ferulic acid was significantly lower than the control, while plants treated with all other concentrations were unaffected, leaving our hypothesis unsupported.

33
Title: Germination Rates of Conventional Corn at Different Temperatures
Presenter(s): Trenton Draeger
Advisor: Dr. Lee French, Agronomy
Abstract: Timing is a big factor when considering when to plant crops especially in Minnesota, depending on the weather and the amount of growing degree days per season you need to plant at the right time. Although timing is a critical aspect we also need to consider the temperature at the planting time. The rate of germinating conventional corn was studied at three different temperatures using two germination chambers and the SMSU greenhouse, the plants were set up in a CRD or completely randomized design. The control group was treatment 2 which was set up in the SMSU greenhouse at room temperature 20°C (68-70°F), treatments 1 and 3 were in germination chambers with temperatures at 5°C (41°F) and 24°C (76°F). The results show by planting at room temperature or 68°F in a stable environment with less temperature stress and an optimal conditions conventional corn has a greater germination rate.

34
Title: Computational Characterization of Intermediates in the Electrochemical Reduction of Triazine Herbicides
Presenter(s): Zachery Doose & Annie Samuelson
Advisor: Dr. John Hansen, Chemistry
Abstract: Triazine herbicides, used to control broadleaf weeds, are those derived from 2-chloro-4,6-diamino-1,3,5-triazine with various substituents. Because their activity involves interference with photosynthetic electron transport, there is interest in exploring the mechanism of their reduction. A recent electrochemical study resulted in a proposed a mechanism for the 4-electron reduction of propazine, one of the triazine herbicides. We report *ab initio* Hartree-Fock and DFT computational studies of the intermediates in this proposed mechanism for related triazine compounds. Initial results show that the carbon-chlorine bond is substantially weakened in the initial reduction steps, lending support for the proposed mechanism in which dechlorination occurs in the first 2-electron reduction. However, calculations also show lower energies for initial protonation of the ring occurring on the nitrogen atoms adjacent to the chlorinated carbon which differs from the protonated form in the proposed mechanism. This suggests that alternative pathways for this reduction may be important.

35
Title: Field Guide to the SMSU-ADM Environmental Learning Area
Presenter(s): Justin Hill & Garrett Wee
Advisor: Dr. Emily Deaver, Environmental Science
Abstract: The ADM-SMSU Environmental Learning Area is a popular place on Southwest Minnesota State University's campus to hike, view wildlife, and enjoy nature. Its 40 total acres includes 13 acres of prairie, 27 acres of coniferous and deciduous forest, and about 1.5 miles of hiking trails. After a breeding bird survey and a tree survey of the area were completed by Environmental Science students the Spring/Summer of 2017, much of the necessary information was available to create the first field guide to the area. A guide was compiled that includes a bird checklist, a mammal checklist, descriptions of common prairie plants and trees, and explanations of wetland types found in the nature area. The Field Guide was created to document the range of biodiversity in the nature area, to provide a baseline for future studies, and to provide a resource for the public to use to enhance their visit to the SMSU campus.

36
Title: Counting Bacteria Colonies Using Image Recognition
Presenter(s): Anthony Angrimson
Advisor: Dr. Kourosh Mortezapour, **C**omputer Science
Abstract:

37
Title: Mathematical Permutations of Musical Scales
Presenter(s): Kristen Bosveld
Advisor: Dr. Heather Moreland, Mathematics
Abstract: Mathematics and music are deeply connected. Which musical notes sound good together can be determined mathematically. Music can reflect patterns such as symmetry and the well-known Fibonacci sequence appears in various works of music. We explore the idea of permutations and how they arise in music. Through an in-depth study of the articles *Enumeration in Music Theory* by David L. Reiner and *Musical Scales and the Generalized Circle of Fifths* by John Clough, we examine how to calculate the number of chords and how the diatonic

scale is imbedded into the chromatic scale in the white and black keys of a piano.

38
Title: Statistical Analysis of the SMSU Women's Basketball Team
Presenter(s): Alana Christianson
Advisor: Drs. Heather Moreland and Wije Wijesiri, Mathematics
Abstract: The purpose of this presentation is to analyze statistics from the SMSU women's basketball team. By analyzing statistics from the last seven seasons, we are able to determine if there is a correlation between different variables that would lead to winning more games. We started the analysis by constructing boxplots for each variable. Then we investigated the correlation between each variable. A population regression of the variables was completed and we were able to conclude that there was a significant correlation between several of the variables. Utilizing these results will hopefully assist the team in producing better results, thus translating into victories!

39
Title: Virtual Reality Game Demonstration
Presenter(s): Daryn Thompson
Advisor: Dr. Dan Kaiser, Computer Science
Abstract: The technology of VR(Virtual Reality) is becoming increasingly popular and is being heavily invested in by companies such as Facebook, Google, and Microsoft. At the same time, the industry is experiencing a lack of quality content and games using VR. The two reasons for the lack of quality content are hardware limitations, and the design of the software for a virtual environment needs to take in consideration how eyes view objects and scenes and how the brain processes the data. User interfaces and games need be designed to decrease eyestrain and reduce chances of "simulator sickness", while at the same time giving the user a sense of presence. This project shall demonstrate the difference between a poorly designed VR game and well-designed VR experience using current best practices of VR development by contrasting two distinct user interfaces in a first-person game.

Poster Session B – Culinology, History, Hospitality Management, Justice Administration, Sociology, Theatre

40
Title: School to Prison Pipeline: The Impact of Zero Tolerance Policies
Presenter(s): Miranda Giese, Courtney Mulder, Shane Ratkovich, Hannah Redmond & Kayla Wartner
Advisor: Dr. Erin Kline, Justice Administration
Abstract: This research project examines the impacts of zero tolerance policies in schools, especially the impact that these policies have on children of color. Research has revealed that such policies have resulted in what experts refer to as the "school to prison pipeline." Furthermore, an exploration of this issue is necessary because zero tolerance policies feed students into the justice system at alarmingly high rates. Once a juvenile has entered the juvenile justice system, it is hard for that child to get out. This exploratory research has furthered our understanding of the topic as we researched scholarly journal articles pertaining to zero tolerance policies, implementation, and outcomes. After completing our research, we have concluded that zero tolerance policies are criminalizing students, and excluding them from the school systems. Suggestions for reform include pro-social programs, increasing the age of legal drop out, restorative justice circles in schools, and assessment of disciplinary action.

41
Title: Clara Ueland's Path to Leadership in the Minnesota Woman Suffrage Association
Presenter(s): Rose Schmit
Advisor: Dr. Thomas Williford, History
Abstract: The Minnesota Woman Suffrage Association (MWSA), organized in 1881, was led from 1914 until 1920 by Clara Hampson Ueland. Although she led the MWSA in its final years, her interest in the suffrage movement did not begin until well beyond the middle of her life, around 1900. Ueland's time before joining the suffrage movement in Minnesota was full of important domestic and civic work which defined who she was as an individual. Ueland's youth and personality, her experiences as the wife of a Norwegian immigrant and mother of eight children, and her involvement in a variety of social

organizations and intellectual clubs both led her to the forefront of the Minnesota suffrage movement and made her an effective force in the campaign for the franchise.

42
Title: SMSU Fans & Students Satisfaction on Concession Stands at SMSU Football Games
Presenter(s): Haley Bennett, Stacey Vue, Morgan Tyndall, Amelia Marroquin & Sushma Bakhunchhe
Advisor: Dr. Yumi Lim, Hospitality Management
Abstract: The purpose of this research project was to find out the levels of overall satisfaction, quality, and service of the SMSU concession stands. Self-administered questionnaires were distributed to the students and fans at the SMSU football game on October 19th. In total, 79 completed responses were collected. It was found that the majority of the responses were SMSU students. The mean of the overall satisfaction level for the concession stands was a 5.78 out of 7, the mean of the overall service level was a 5.79 out of 7, and the mean of the overall quality level was a 5.08 out of 7. According to the results, Chartwells could add a variety of healthier food and beverages to improve the quality level and improve their service by properly training their employees who work the concession stands.

43
Title: A Revisit to the Performance of SMSU Dining Services: comparison with the previous year
Presenter(s): Mari West, Yangi Sherpa, Samantha Mehus, Devon Lyons & Britta Iverson
Advisor: Dr. Yumi Lim, Hospitality Management
Abstract: The purpose of this study is to examine whether the performance levels of the Chartwells residential dining services and students satisfaction level of it have been improved from last year. The same questionnaires developed last year was used to measure respondents' perceptions about the satisfaction level and the performance, attributes offered by the Chartwells residential dining services. In total 163 completed responses were collected this year, and 124 completed responses were collected last year. According to the results, the overall satisfaction levels have increases from last year. Regarding the attributes performance levels most of the performance levels have increased except the performance of friendly staff and speed of service. Based on the results it is recommended that Chartwells could improve the training process of the staff in order to improve their speed of service and friendliness of staff.

44
Title: Observing Motivating Factors of Students Choosing Off Campus or On Campus Dining Options
Presenter(s): Athena Golling, Alexandra Krohn, Laxmi Shova Rana Magar & Cody Tavarez-Curtis
Advisor: Dr. Yumi Lim, Hospitality Management
Abstract: Campuses all over the U.S. offer a wide variety of dining options for university students. With varying food preferences and nutritional requests, it can be difficult to satisfy the needs of students. This research aims to better understand the motivating factors of students to choose on or off campus dining on the campus of Southwest Minnesota State University(SMSU). Whether it be price, food quality, convenience, availability, or other reasons, students often defer from using on campus dining options. Using questionnaire surveys, the thoughts and preferences of SMSU students were collected. A descriptive analysis was completed to better understand the motivating factors surrounding students' decisions to purchase on campus dining choices, buy off campus dining options, or cook home prepared meals. The results of this study provide managerial implications to the campus dining services of ways they can improve their services to meet the needs and desires of students.

45
Title: Changes in Stage Makeup Uses and Applications Over the Last 50 Years
Presenter(s): Caitlin Schmidt
Advisor: Sheila Tabaka, Theatre
Abstract: Through thousands of years, inhabitants of the Earth have been using makeup to enhance or change their features in some way or another. Ancient Egyptians are most commonly known to use makeup, and they really only had water and coal to make their products. This is where the black lining of the eyes have played a role in today's society, but it is not just today's society that had done this. The way makeup is applied and used has changed throughout the years, and those differences in application accentuates different appealing features on the face. Depending on the feature one would want to enhance or change, depends on the style of that period. Taking a look at the way makeup applications have changed throughout the last 50 years will provide proof.

46
Title: Prosthetics in Film and Television (1967-2017)
Presenter(s): Jordan Stangeland
Advisor: Sheila Tabaka, Theatre
Abstract: In a world where acting in front of a green screen with effects, backgrounds, and sometimes even entire characters generated by CGI has become commonplace, it's important to know the history and

basic processes behind practical effects that we used to use in movies and television. Taking a look back through the last 50 years at some of the most prolific special effects artists, we can rediscover and appreciate the effort and care that went into the making of prosthetics for use in films. Movie magic lies in the creation and use of these prosthetics. You'll find that the extra time and effort that went into making these prosthetics was worth it and is a tradition that we should remember and use more in the future.

47
Title: Law Enforcement and the Use of Body Cameras
Presenter(s): Muna Mohamed, Dylan Beatty, Zach Beaumaster, Jacob Broberg & Nicholas Esping
Advisor: Dr. Erin Kline, Justice Administration
A**bstract:** Use of Body Worn Cameras among Law Enforcement is largely the result of law enforcement agencies and civil rights activists agreeing that there needs to be a mechanism to protect the rights of citizens and officers. Therefore, this research project examines the effectiveness of Body Worn Cameras (BWC) as a method for reducing Police Officer misconduct. This exploratory research discusses the implementation of this technology in policing practices; how effective BWCs are at reducing police misconduct, and the unintended consequences of the use of this technology in the field. We gathered information by reviewing a series of academic journal articles, government documents, books, and news outlets. Two significant findings include problems with Police Officers' use of discretion when activating BWCs, however, data suggests a substantial reduction in complaints from citizens when BWCs are worn. When used properly, this technology has positively impacted Police Officer's relationships with the citizens they serve

48
Title: The Farmers' Holiday Association in Southwest Minnesota 1932-1933
Presenter(s): Gage Backman
Advisor: Dr. Tom, Williford**,** History
Abstract: With the Great Depression entering its peak from 1932-1933, farmers from Southwest Minnesota experienced tremendous hardship where some retaliated by participating in the Farmers' Holiday Association. The Farmers' Holiday Association believed that the best way for planters to have their demands met was through going on strike by withholding agricultural products from the market. Particularly in Southwest Minnesota, protestors blockaded major highways in order to prevent agricultural goods from entering the market until agricultural prices increased. This radical approach taken by some agriculturalists in Southwest Minnesota was also in part a reaction to the failures of past agrarian organizations to meet farmers' demands through political means. Thus, the Farmers' Holiday Association in Southwest Minnesota implemented more radical methods than any other agrarian organization prior. From 1932-1933, protestors from Southwest Minnesota were successful at blockading goods from entering the market, and they had some success in influencing state legislation before disbanding.

49
Title: The SMSU Writing Center: Then and Now
Presenter(s): Sariah Cheadle
Advisor: Sheila Tabaka, Fine Arts and Communication & Dr. Ruthe Thompson, English
Abstract: The purpose of this study was to determine, as closely as possible, the origins of the SMSU Writing Center as well as how it's evolved. Most research focused on documents found within the Striegel Archives, here at SMSU, and within the Writing Center itself. These documents include, but are not limited to: inter-department memos, budget sheets, grant requests, academic catalogs, and student directories. Several gaps in documentation of Writing Center events make it difficult to create a full history. Most evidence points toward the center first opening in 1978 under the direction of charter faculty member Mary Hickerson. From its inception to now, it is estimated that the center has provided writing help to close to 30,000 students.

50
Title: Changes in Makeup Products from 1967- 2017
Presenter(s): Paul Ragan
Advisor: Sheila Tabaka, Theatre
Abstract: Make-up products have changed since 1967. While the companies who develop and supply them, like Covergirl, Maybelline, and Revlon, have stayed relatively constant, the products themselves have evolved to match the style of their decades and to fit health guidelines. Chemicals that are now known to be hazardous to the body were used in early make-up, causing health concerns among the FDA and consumers. This poster aims to show how make-up products used by millions of people have changed and become safer over the years.

51
Title: The Duluth Lynchings of 1920
Presenter(s): Peyton Sanders
Advisor: Dr. Anita Gaul, History
Abstract: Throughout the early 1900's, racial conflict was an issue that was happening throughout the

United States and because of this issue there was a lot of tension between Americans throughout the 1900's. In 1920, Duluth, Minnesota made the news for creating more racial tension in America by lynching several young black men who were wrongly accused of raping a white woman. Later that night, three of the black men were taken from prison by a mob and lynched by the mob. These three black men were not only murdered brutally because of their skin color, but they also were arrested and taking into custody for a crime they didn't commit. The lynching of these three innocent black men led to many blacks leaving Duluth, but it also sparked an act for change in the America and a call to end racism. The black community in Minnesota embarked to establish the NAACP in Duluth and campaigned for anti-lynching legislation. Although this was a horrible act, it led to a state of change in the Minnesota and the United States.

52
Title: The O'Connor Layover Agreement
Presenter(s): Sophie Johnson
Advisor: Dr. Anita Gaul, History
Abstract: The O'Connor layover agreement was created by John O'Connor, the chief of St. Paul police forces from 1900 to 1920. He made a deal with Midwestern criminals that they could "layover" in St. Paul, provided that they committed no major crimes within the city. This led many notorious gangsters to St. Paul, such as Babyface Nelson, Al Capone, and John Dillinger. The Agreement began falling apart in 1933, when the Barker-Karpis gang kidnapped Edward Bremer. The kidnapping brought attention to the Layover Agreement, and it officially ended in 1935 after the *St. Paul Daily News* exposed many of the police officers who were involved.

53
Title: Dakota War of 1862
Presenter(s): Tamara Hellendrung
Advisor: Dr. Anita Gaul, History
Abstract: Although the Dakota war of 1862 was a short war, the impact it had on the Dakota people was very significant and continues to this day. The first impact was the hanging of the thirty eight Dakota men in Mankato. The second impact was that all of the Dakota people were exiled from Minnesota. The third was that it become legal to kill any Dakota man found in the state. To this day, the Dakota are still greatly impacted by the war. The Dakota are still scattered around the Upper Midwest, in what is called the Dakota Diaspora. Additionally, a horse ride is held annually to honor the thirty eight men killed in the hanging.

54
Title: Pink, Blue, or Yellow: Can You Raise Children Gender Neutral?
Presenter(s): Mandy Harris, Chanelle Helmers, Michael Dombrowski & Brittany Ference
Advisor: Dr. Cindy Aamlid, Sociology
Abstract: Is it possible to raise a child gender neutral? How would this affect the child? In this day and age, gender is becoming more fluid. Therefore, it seems as though it is important to know whether or not you can raise a child gender neutral right off the bat, suggesting that gender may be affected by the environment of a given person, or if one gender will eventually take over, suggesting that gender is purely based on genetics.

55
Title: Jane Grey Swisshelm: A Contradiction
Presenter(s): Brianna Krumwiede
Advisor: Dr. Anita Gaul, History
Abstract: This study analyzes the life and writings of Jane Grey Swisshelm to explain, though not excuse, her contradictory views regarding the rights of minority groups in the United States. As a newspaper editor working in St. Cloud, Minnesota in the 1850s and 1860s, Swisshelm passionately argued for the abolition of slavery and women's rights while simultaneously calling for the oppression of the Dakota people. Swisshelm's surviving writings, which include her published articles, letters, and memoir, were used to explore this contradiction. By examining these sources, it can be concluded that Swisshelm's contradictory views are based on her direct experiences with slavery and the oppression of women, her perceived connectedness of abolition and women's rights, her religious upbringing, and her Eurocentric views about the progress of the United States.

56
Title: Black Box: The Sue Cochran Kidnapping and Free Love in the 1970's
Presenter(s): Taylor Krogman
Advisor: Dr. Tom Williford, History
Abstract: In 1975, Professor Thomas Lippert and student Harold Tenneson of Southwest Minnesota State College, as the SMSU was then known, kidnapped a young woman named Susan Cochran from Purdue University, and brought her back to Marshall, Minnesota. The men had designed several experiments with the goal of causing Cochran to "fall in love" with Lippert. The goal of this paper is to determine, in addition to individual circumstances of the three people involved, the extent to which social factors of the decade, including free love, mystical thinking, and precedents set in psychological

experimentation, may have played a role in the motivation and events of the kidnapping. This study will also address the similarities and direct connections that the kidnapping and trial have to the more infamous case involving Patty Hearst that occurred at the same time.

57
Title: Preventive Controls for Human Food and How It Keeps our Food Safe
Presenter(s): Shay All Runner
Advisor: Dr. Zhenlei Xiao, Culinology
Abstract: Celiac disease is a serious autoimmune disorder triggered by/associated with the ingestion of gluten, which is a protein found in wheat, barley, rye and probably in oats. Epidemiological study showed that an estimated global prevalence of celiac disease was about 5%. Celiac patients require the exclusion of gluten from their diet, therefore, developing gluten-free products that have similar texture and taste as gluten products is a common goal of many food companies. However, it is still very challenging, especially for frozen foods which already usually don't have the same desired texture and taste. Technical ingredients can be added to improve the texture and taste. The purpose of this experiment is to test three types of technical ingredients including Xanthan Gum, Guar gum, and Ultra-Crisp® Corn starch in gluten-free frozen sweet potato biscuit and their ability to keep the biscuit's texture and flavor after freezing and reheating.

58
Title: Development of Gluten-free Pie Crusts with Good Freeze-thaw Stability
Presenter(s): Clarissa Geisel
Advisor: Dr. Zhenlei Xiao, Culinology
Abstract:

59
Title: Vogue Cover Makeup From 1967 To Present
Presenter(s): Morgan Benson
Advisor: Sheila Tabaka, Theatre
Abstract: This poster represents the evolution of Vogue cover girl makeup from 1967 to present. The most effective way to research this topic was to utilize resources from the SMSU library and databases. Having the resources for primary research is very beneficial and ensures the credibility of the research provided. Vogue introduces the incoming modern beauty trends for woman. The most apparent evolution is the change in makeup style by each decade. The makeup affects the culture and the style of American women thus causing Vogue cover girl makeup to have a significant impact on tends.

60
Title: The History of the Black Box
Presenter(s): Raxson Rax
Advisor: Sheila Tabaka, Theatre
Abstract: The Black Box Theater, many students on the campus may know it as the dark, windowless place that their Theatre Appreciation class is or was held or the place they saw that Shakespeare play that one time and dozed off. Some may even recall a few improv events or open mic nights. But, the Black Box Theater wasn't always called the Black Box. Visiting Alumni from around 40 years ago or older may recall it being the Studio Theater with less black in the box as the name would imply today. Being as it is the 50th Anniversary of the campus, It may seem appropriate to shine a light on aspects of SMSU that many may not know the history of, or have even thought about. The Black Box, having changed slightly over the years, is one said aspect of the campus that the spotlight will shine on through this poster.

61
Title: Old Age Makeup: A Process
Presenter(s): Leah Graham
Advisor: Sheila Tabaka, Theatre
Abstract: On stage and in theater there are many ways to make an actor appear to be something that they are not. Age is one of the more difficult things to change about an actor but there are methods and ways to accomplish it. One of these methods is with stage makeup, which is the topic of my research. Using two books and many reference pictures, both of actors in makeup and of my own older family members, I studied facial structure and how time affects the way people look. Then, by using makeup, I used my own face as a canvas to age myself using that knowledge and process. I learned that, for most stage plays, makeup has to be put on with a heavy hand, otherwise the lights and distance from the actor to the audience will wash out or neutralize any small details the makeup added.

62
Title: Lighting Techniques of the Past 50 Years
Presenter(s): Danny McDonnell
Advisor: Sheila Tabaka, Theatre
Abstract: Imagine if you will? A stage filled with actors, sound equipment, a set, and stage hands. What is one thing that is missing? Lights! We use them in everyday life. Whether it be a bathroom light, a living room light, or the light inside your fridge. But lights in the theater are used not only to light the stage so the actors don't fall all over the place and so the audience can see them. The lights in a show can be used for so much more. They can be used to convey a place like the woods or the inside of a small

apartment, but they can also be used to express how a character is feeling based on the brightness or even the color of the light. This presentation will take you through how lights have done this for the last fifty years and how changes in technology and just how they are positioned have made it easier to do these wonderful things.

63
Title: The Changes in Theatre Sound Technology over 50 years
Presenter(s): Jaylee Schanus
Advisor: Sheila Tabaka, Theatre
Abstract: This poster is showing the evolution of sound technology in the world of theatre, especially here at Southwest Minnesota State University. During this project, I consulted many online sources and talked to the technical director of the theatre department. I found out that even subtle changes in sound technology can make a huge difference. Sound technology in the world of theatre has greatly evolved.

64
Title: Dating Behaviors of International Students at SMSU and ECU
Presenter(s): Michelle Stoner
Advisor: Dr. Cindy Aamlid, Sociology
Abstract: The purpose of this study was to get a better understanding on the dating behaviors of international students who are studying at American universities. Between Southwest Minnesota State University and East Carolina University, we had 111 international students fill out a survey with questions regarding their dating behaviors. For this specific study, we focused on how the students were pursuing romantic relationships, like how they were looking for a dating partner and how they asked another person on a date. We found that most of the students were using friends to look for people to date and that most would ask the other person on a date in person.

65
Title: Causation of the Dakota War
Presenter(s): Josh Falk
Advisor: Dr. Anita Gaul, History
Abstract:

66
Title: The Time Around *Under Milk Wood*
Presenter(s): Thomas Knudson
Advisor: Sheila Tabaka, Theatre
Abstract: This poster hopes to highlight a show from the beginning of the college's theatre program, and by doing so, get a grasp of the differences between the programs of then and now. From the Spring of 1968: *Under Milk Wood*.

67
Title: Shakespeare at Southwest Minnesota State University
Presenter(s): Whitney McCamish
Advisor: Sheila Tabaka, Theatre
Abstract: Over the years, there has been many performances done on the Southwest Minnesota State University Main Stage and in the Blackbox Theater. Amongst those, there has been several Shakespeare plays, which include A Midsummer Night's Dream and Hamlet. After Shakespeare's death, Ben Johnson, a fellow writer, wrote that his work was "not of an age, but for all time." Shakespeare wrote his plays during the Elizabethan era, yet they have endured and are still prevalent in today's theatre. This goes to show that his control over the written and spoken word is captivating and continues to motivate actors on the stage and enthrall audiences in the crowd.

68
Title: Musicals of 1967 and How They Represent the Time Period
Presenter(s): Becca Green
Advisor: Sheila Tabaka, Theatre
Abstract: Musicals in the past and present have been used to talk about changing views in politics and various aspects of our culture. In 1967 topics such as homosexuality were considered risqué but musicals like *The killing of Sister George* were used to make light of uncomfortable situations. Other musicals, such as *Hair,* were used to acknowledge and celebrate political activists during the Vietnam war at that time. Some however are written just for fun with a popular topic of the time. For instance, *You're a Good Man, Charlie Brown* was based on the comic strip *Peanuts*. Whether it was serious or light-hearted, relevance to 1967 and that time period can be found in many of the musicals written or performed that year.

69
Title: Development of pulse flour-based pasta
Presenter(s): Megan Schultz
Advisor: Dr. Zhenlei Xiao, Culinology
Abstract: Celiac population is a large group of people who have serious celiac disease and cannot consume gluten, a protein found in wheat, barley and rye; therefore, they require a gluten-free diet. Although there are some gluten-free products on the market, the selection is very limited. In fact, the most commonly available gluten-free pasta on the market are either rice-based or corn-based. As we know,

pulses are excellent sources of plant-based protein and don't contain gluten. The objective of this work is to investigate sensory properties and consumer acceptability of pulse-based gluten-free pasta with and without adding the technical ingredients such as starches, gums and emulsifiers.

70
Title: The Dakota 38
Presenter(s): Rachel Stender
Advisor: Dr. Anita Gaul, History
Abstract: The Dakota War of 1862 had a major impact on the state of Minnesota and the Dakota people. After the execution of 38 Dakota men on December 26, 1862, the Dakota were expelled from Minnesota, had their reservations taken away, and all treaties with the US government cancelled. Additionally, the state of Minnesota set bounties on Dakota men remaining in the state, resulting in the murder of Dakota leader Little Crow in 1863. Although 155 years have elapsed since the war, it still stirs strong feelings. Today the Dakota honor the Dakota 38 with an annual ride across the state to the execution site in Mankato. Just this year (2017) a sculpture at the Walker Art Center that depicted the Dakota 38's gallows was removed after protests from the Dakota community. The Dakota War of 1862 had serious consequences, both in the immediate aftermath, and continuing to the present day.

71
Title: The Howard Lake POW Camp: 1944-1945
Presenter(s): Rachel Stender
Advisor: Dr. Tom Williford, History
Abstract: During World War Two, German prisoners of war were housed in the Wright County Fairgrounds in Howard Lake, Minnesota. These prisoners were used for labor in the Northland Canning Company in the next town over, Cokato. They were also employed in picking corn at nearby farms. The prisoners were sent to Howard Lake from Algona, Iowa, the central point from where prisoners were sent to work throughout the Midwest. With the German POW's arriving it changed the economy of Howard Lake (and surrounding communities) and impacted how the members of the community viewed the German prisoners. On the other hand, the German POW's perspective on America changed as well. It was brought to light during this time that the United States was treating their prisoners better than the Germans were treating the American POWs.

72
Title: Environmental Injustice: What It Is and Who Is Impacted
Presenter(s): Zachary Gritmacker, Kaitlyn Leach, Danielle Lohse & Nick Santos
Advisor: Dr. Erin Kline, Justice Administration
Abstract: This research explores the history of environmental injustice in the United States, and reviews movements and policies that have emerged in response to these injustices. Environmental injustice, also referred to as environmental racism, has occurred in part, due to a lack of resources available in low income and communities of color in the United States. This exploratory research provides knowledge of local injustices occurring in Minnesota, and identifies how communities have been successful in fighting injustice. We reviewed a series of up-to-date and pertinent scholarly research emphasizing environmental injustice in Minnesota. We also identified contributing factors that advance our understanding of environmental injustice, and have summarized policies that improve, reform, and promote an understanding of current environmental injustices. Implications of this exploratory research suggest that social injustices are occurring all around us, and we need to shed a light on these injustices if we want to achieve environmental equality.

73
Title: The Student Center's Changes through 50 Years
Presenter(s): Avianna McFarquhar
Advisor: Sheila Tabaka, Theatre
Abstract:

Poster Session C – Nursing, Political Science, Psychology

74
Title: Handwashing and Preventing the Spread of Clostridium Difficile
Presenter(s): Bethany Block, Ashley Bohlsen, Olive Jones & Edna Masese
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract: The organism Clostridium Difficile *(C. difficile)* causes over 10,000 deaths annually in the Unites States (CDC, 2015). The most effective way to combat this alarming number of preventable deaths is handwashing. The population most affected are those that are hospitalized, have a predisposition to

acquire the disease, and effect any age and gender. We took a look at ways to prevent the spread of C. difficile specifically related to handwashing and how we can decrease those numbers with using an intervention that is not new to nursing but highly effective. Complying with recommended hand hygiene techniques is proven to be effective in spreading and preventing C. difficile infections. If completed properly, nurses can take a simple task such as hand washing and save lives every day.

75

Title: Lice in Schools: Nit or Not
Presenter(s): Danna Steffen, RN & Tenae Aston, RN
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract: There are 6-12 million estimated cases of head lice annually. The stigma and fear of lice, myths that propagate misinformation of lice, and lack of proper education on health awareness for lice prevention all lead to decreased school attendance, decreased self-esteem, self-perception, and peer perception in children. Elementary aged children, primarily age 3-11 years old, their parents, and staff are the primary population needing education regarding head lice. Education is the primary force that will change how lice is viewed by the public as "no-nit" policies have been found to be ineffective, outdated, and result in unnecessary absenteeism. By providing health educational opportunities to school staff, students, and their families regarding head lice, school nurses can make a difference on school attendance, self-perception, and peer perception of children affected by head lice compared to elementary schools who follow the no-nit policy.

76

Title: Breastfeeding: Benefits, Tools and Resources
Presenter(s): Megan Vangsness, Teresa Haase, David Haase & Jennifer Jager
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract: Providing early prenatal education to mothers and their support system regarding the benefits of breastfeeding has proven higher success rates. Breastfeeding has direct benefits to both mother and baby. Reducing barriers that mothers may encounter when choosing breastfeeding helps increase the likelihood that a mother will breastfeed. Educating people to refer to "breast milk" as "human milk" helps to desexualize breastfeeding. Skin-to-skin helps with temperature regulation, improved bonding between mother and baby, and can help regulate blood glucose. Prenatal education, postpartum guidance, and access to resources may be beneficial with increasing breastfeeding rates and the duration that mothers breastfeed. Providing mothers with the tools and resources in their community correlates with an increased breastfeeding duration and success. Baby-Friendly Hospital Initiative (BFHI) is a program developed by the World Health Organization. Since BFHI launched in 1991 breastfeeding initiation, duration, and exclusivity have increased globally.

77

Title: Increasing Staff for Fall Prevention in Long-Term Care Facilities
Presenter(s): Myckenzie Sefkar, Darci Aslesen, and Josie Loll
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract:63.5% of accidental deaths in those over 75 years of age in the US are caused by falls. Adults 65 and older are four times more likely to die of fall-related injuries if they live in a nursing home, compared to those at home. Our main objective is to determine if increasing the number of staff will decrease the number of falls per quarter in long-term care facilities. We used our current workplaces to explain how we would increase staff, and how we utilized the extra staff to decrease the number of falls that occur within a calendar year. Increasing the number of staff available to our residents can decrease falls significantly. We will implement this research into our current fields of employment to decrease falls in those facilities.

78

Title: Mandating Influenza Vaccination for Healthcare Workers and its Effects
Presenter(s): Sarah Blom & Lindsay Mitlyng
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract: Vaccination against the influenza virus(es) is not something new, although, more recently some facilities have begun to make this mandatory for healthcare workers rather than leaving the choice up to them. Is essentially forcing a healthcare decision on healthcare workers ethical and has it been proven to be of benefit to patients, these are some questions that need to be asked. In reviewing the literature we found that current research does not agree on the efficacy of mandated healthcare worker influenza vaccination in the protection of patients, mostly due to limited knowledge and small research groups. However, research agrees that the vaccine can be effective if well matched with the season and feel continued support for voluntary vaccination along with hand washing and masking are essential. Although current data may not support enforced healthcare worker vaccination there are other approaches available to protect both patient and healthcare workers.

79
Title: Keeping it at the bedside
Presenter(s): Kayla Moser, Liz Bunjer, Sheena St. Aubin & Kim Anderson
Advisor: Dr. Nancyruth Leibold, Nursing
Abstract: Bedside reporting for in-patients is an evidence-based exchange of report between nurses that is done by patient's bedside to allow interactive communication between nurse and patient to improve patient outcomes. We researched articles about bedside reporting to investigate if this increased patient satisfaction in hospitals, promoted safety, accountability and communication between medical personnel. The research showed that bedside reporting improved nursing and patient satisfaction, and created financial savings by catching medication errors, falls, and nursing overtime. By implementing bedside reporting nurses could promote higher quality care, teamwork, and reduction of errors.

80
Title: Affordable Housing Shortage in Greater Minnesota
Presenter(s): Austin Olson
Advisor: Dr. David Sturrock, Political Science
Abstract: The affordable housing shortage in Greater Minnesota is affecting every corner of the state. This is a cause for alarm, because economic growth in several Minnesota counties is depended on how much housing is available within them. This shortage is being caused by the lack of new affordable housing units being built in Greater Minnesota, and the social and economic barriers that limits the ability of people to afford buying houses and resorting to rental properties. There have been employee, employer, and community responses to this situation that have been devised to help Minnesotans limit this burden put upon them. With these responses in place it is helping, but indicates how precarious the situation is. It will only continue to get worse without state or federal intervention to jump start the building of more affordable housing properties in Greater Minnesota.

81
Title: Police Training and Immigrant Contact in Southwest Minnesota
Presenter(s): Muna Mohamed
Advisor: Dr. David Sturrock, Political Science
Abstract: The main focus of this research project is to draw attention to Police Training and Immigrant Contact in the Southwest Minnesota region. Immigrants have been growing rapidly in the state of Minnesota with Somalis being the dominant immigrant group. The aim of this exploratory research is to show the police training of our law enforcement in Southwest Minnesota. In preparation for this research project, I interviewed officers and immigrants in Marshall, Minnesota to collect data between their interactions. The greatest barriers officers might have and training officers how to interact with newer immigrants. In addition, we identified contributing factors that shape our understanding of police training. Summarizing strategies for improving, reforming, and providing an opportunity to raise awareness about police training in contemporary American culture. The implications for this exploratory research suggest that there are some type of class or course officers need to go through to enhance their knowledge when encountering new immigrants.

82
Title: Disparities in Handling of Petty Crimes in Marshall, Minnesota
Presenter(s): Saul Eugene
Advisor: Dr. David Sturrock, Political Science
Abstract: In an era in which many questions, arguments and protests have broken out regarding racial bias amongst police departments, it becomes increasingly more important to find out what is going on in your own back yard. This in-depth study into how the Marshall Police Department handles minor crimes within the city ought to help shed some light regarding whether or not the racial bias that has been proven in other parts of the country is occurring in the rural Southwest Minnesota. The research done will be in search of any disparity in treatment of minorities, or if all color, races and ethnicities are receiving the fair and equal treatment that they deserve from the Marshall Police Department.

83
Title: No Vacancies: Addressing Southwest Minnesota's Childcare Shortage
Presenter(s): Katherine Lee
Advisor: Dr. David Sturrock, Political Science
Abstract: The state of Minnesota is currently seeing a childcare shortage, which significantly impacts Southwest Minnesota. The childcare shortages are forcing families to make life changing decisions based on childcare availability leading to loss of residents, employee retention, employee attraction, and increased absenteeism. Assessment will be made of the extent of childcare shortages, its economic effect on communities, and the barriers creating issues for childcare availability in Minnesota. There are a variety of issues and barriers that communities and the state must consider to address the childcare shortages. No one-size-fits-all policy or solution is going to provide relief for the projected shortfall of childcare spaces. Communities and the state will need to work together to create and implement childcare shortage solutions

84
Title: Mental Health Care Workforce Shortage in Greater Minnesota
Presenter(s): Gage Backman
Advisor: Dr. David Sturrock, Political Science
Abstract: There is a mental health care workforce shortage throughout Greater Minnesota. In comparison to other states, the number of psychiatrists for rural Minnesota is significantly less compared to the national average. Specifically, nine out of eleven geographical regions of Minnesota have a mental health care workforce shortage. With such a problem on hand, action has to be taken now. Fortunately, there are some solutions, such as recruitment and training, which can remedy the mental health care crisis in Greater Minnesota. In regards to training, one option that can improve the workforce shortage involves creating more educational opportunities for mental health programs in Greater Minnesota. Another option is to ensure that there are greater access and affordability to supervisory hours for mental health related jobs. For recruitment, some solutions involve the expansion of HealthForce Minnesota Scrubs Camps to regions of Greater Minnesota, and the increasing of funding for programs that promote mental health care fields to the public.

85
Title: Developmental Disabilities due to Fetal Alcohol Spectrum Disorder
Presenter(s): Deewan Bajracharya & Pushpa Chhantyal
Advisor: Dr. Scott Peterson, Psychology
Abstract: Alcohol consumption during pregnancy has been linked to a wide variety of disabilities and deformities which are collectively recognized as Fetal Alcohol Spectrum Disorder (FASD). Approximately 31 to 34 out of 1000 live births in United States and Canada are born with FASD. Of all the possible consequences of prenatal exposure to alcohol, the most identified and concerning are the facial deformation and inhibited cognitive abilities. Depending on the concentration and time of exposure of alcohol, a fetus may develop other disabilities such as secondary psychological disorders, significantly low IQ, memory impairment and decreased attention span. Amongst all proposed mechanisms that lead to fetal developmental disorders, the most accepted explanation approaches the modification of neural wiring via change in lengths and diameter of neural cells. The exposure to alcohol also causes disruption of various signaling mechanisms essential for the migration of these neural cells to responsible sites of the brain.

86
Title: The Fall 2017 Inclusive Fitness Programs' Effects on Participants' Depression, Aggression, and Self-Esteem Levels
Presenter(s): Sarah Mayfield & Hannah Palmeter
Advisor: Dr. Scott Peterson, Psychology
Abstract: Individuals with a neuromuscular disease or spinal cord injury and rely on a wheelchair for transportation have higher risk of developing depression, high aggression, and low self-esteem. Past studies of exercise illustrated the physiological benefits but few psychological benefits. The purpose of the study was to compare levels of depression, aggression, and self-esteem before and after the 8-week inclusive fitness program. This study used a questionnaire that was filled out before pre-testing and after post-testing; Then scored according to the 5-point scale (strongly disagree=0 to strongly agree=4). No changes were found among subjects' aggression ($p=0.36$), and self-esteem levels ($p=0.13$) but a trend for improvement was found in depression levels ($p=0.04$). Due to the limited number of subjects and short duration this study may need to be repeated with more subjects over a longer period to significantly influence these measures.

87
Title: The Influence of Level of Extroversion on Time Perception
Presenter(s): Amanda Hartmann, Tyler Punke, Mady Sowle & Zachairley Eisden
Advisor: Dr. Scott Peterson, Psychology
Abstract: Our group is studying the influence of the level of extraversion on time perception. The influence of extraversion is important in finding how you perceive time, whether it is fast or slow. By finding out how your personality affects time perception, you can find out important aspects of yourself. We have performed an experiment by having a student take a personality test and then have them tell us when they think a minute has passed as we are timing them. Our hypothesis is that we believe that extroverts will perceive time as slower, thus overestimating the length of a minute. Extroverts tend to have a slower internal clock than introverts, which is what we based our hypothesis on. We can infer this from previous research that has been done on extraversion and time perception.

88
Title: Time Perception among "Gamers" vs. Non-"Gamers"
Presenter(s): Emily Buchert, Quinn Swenson & Kaitlin Vos
Advisor: Dr. Scott Peterson, Psychology

in reaction time and time perception between gamers and non- gamers. Gaming and video games are more mainstream than ever before. Finding evidence that gaming is beneficial, means we can utilize video games to our advantage as educators and researchers. We placed participants into two groups based on their answers to our questionnaire. To categorize participants as gamers or non-gamers, they were questioned on how many hours a week they played computer/console games. Participants were then asked to complete short computer tasks designed to test reaction time, and time perception. We then compared gamers to non-gamers in terms of their time perception and reaction time based on performance in the computer tasks. The implications of gamers having faster reaction time and improved time perception can lead to these people to having an edge in certain real life situations like driving.

89
Title: Impact of Parental Divorce on Child Development
Presenter(s): Dawa Rai & Tara Thapa Magar
Advisor: Dr. Scott Peterson, Psychology
Abstract: Parental separation is a painful process that disrupts the lives of many families. Children's adjustments to parental separation can be stressful. Family changes during early childhood can have some negative influences on children's cognitive skills, psychosocial well-being, social relations, and emotional regulation. Many studies have examined the relationship between parental separation and children's academic performance and achievement, behavioral problems, emotional attachment and cognitive functioning. Some of the studies have found that the adverse effects of the separation on children's development did not last long. Furthermore, some studies have attributed the adverse effects to risk factors such as interparental conflict, financial difficulties, and maternal depression. Supportive family and parenting quality can be helpful to overcome these stressful situations. For future research, more focus is needed on causation of how, whom and when parental separation negatively impacts, rather than focusing on the mean difference between divorced and intact family.

90
Title: Attention from Dot-to-Dot
Presenter(s): Jacob L. Benson, Amanda L. Johnson & Crystal R. Yearous
Advisor: Dr. Scott Peterson, Psychology
Abstract: This experiment studies the correlation between attention and time perception. According to attention and time perception go hand in hand. Our attention and time perception change with different tasks and when presented with distractions. To test this, two groups were given Dot-to-Dot puzzles to complete. Group A had visual access to a timer, while Group B did not, during their puzzle task performance. Both groups were presented with noise distractions and given surveys afterward to gauge their attention and time perception. With this experiment, we hope to demonstrate that participants with visual access to a countdown timer will connect fewer dots and perceive time as moving faster. This would be due to split attention between multiple stimuli, taking attention away from their "internal clock." Implications of this experiment should show that time perception changes with each task and distraction.

91
Title: Time Perception and Memory for Complex and Simple Paintings
Presenter(s): Brooke Thompson, Jenifer Willemssen, Jada Hill, Samantha McNeel
Advisor: Dr. Scott Peterson, Psychology
Abstract: Memory is a huge part of our lives, it defines our past and lets us relive lifetime events. Time allows us to perceive the duration of an event that has occurred. Our experiment consisted of a total of 20 participants. The participants were split into two groups of 10, but tested individually. The first group was shown two paintings, one at a time, first a complex painting and then a simple painting. For each painting, they were told to raise their hand when they believed a minute had passed. The ordering was reversed for participants in the second group, they were first shown the simple painting and then the complex painting. After the participants viewed both paintings, they were asked to recall what they remembered by writing down the details of the paintings. We hypothesized that when looking at the paintings, participants would believe they looked at the complex painting longer than the simple painting and would recall more details from the complex painting

92
Title: The Effect of Emotion on Time Perception
Presenter(s): Andrea Fuerstenberg, Elias Mensah & Tegen Thon
Advisor: Dr. Scott Peterson, Psychology
Abstract: Perceived emotions that are triggered by something either internal or external can make our time perception feel long or short depending on the emotion. In previous research done on the topic of emotions and time perception, it has been found that

negative emotions make our perception of time seem longer, while positive emotions make our perception of time seem shorter. In this study, participants watched seven videos that were meant to elicit certain emotions while watching them and then recorded their estimation of how long each video was. The hypothesis of this research was that having positive emotions, such as amusement and tenderness, will make participant's time perception speed up, meaning they will underestimate the length of the video, while having negative emotions, such as anger, sadness, disgust, and fear, will make participants time perception slow down, meaning they will overestimate the length of the video.

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Title: How Does Management Affect Nurse Retention?

Presenter(s): Sherry Helleksen

Advisor: Dr. Nancyruth Leibold, Nursing

Abstract: Nurse managers with effective strategies in place, retain and recruit quality staff. Managers that educate mentors, promote workplace empowerment, instill organizational commitment, and job satisfaction have higher retention rates. Retention of qualified nurses benefit other nurses, the organization, and the people receiving care. Nurse turnover is time consuming, expensive, affect staff nurse moral, create safety concerns, and decreases productivity. This report will contain evidence-based research on how effective magnet certification, nurse management strategies, style, and mentorship of new staff can decrease nurse turnover and increase the retention of nurses in acute care hospitals.

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