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SSD Committee

Cynthia Beel-Bates *Nursing - Undergraduate Programs*

Bopaiah Biddanda *Annis Water Resources Institute*

Robert Deaner *Psychology*

Karen Gipson *Physics*

Matthew Hart *Chemistry*

Lindsey Kloeckner *University Promotions Office*

Susan Mendoza *Integrative Learning*

Melissa Morison *Classics*

Debbie Morrow *Library*

Felix Ngassa *Chemistry*

Ross Reynolds *Physics*

Mark Schwartz *Anthropology*

Nancy Shontz *Biology*

Suganthi Sridhar *Biomedical Sciences*

Patricia Videtich *Geology*

Janet Vigna *Biology*

Shelley Sickrey *College of Interdisciplinary Studies*

Welcome to Student Scholarship Day 2009

It is with great pleasure that we welcome you to celebrate the diversity and excellence of faculty-student collaboration at GVSU. In its 14th year, Student Scholarship Day continues to grow in scope, including six hundred students and mentors in over three hundred presentations. We are excited to support the achievements of these students representing seventy diverse majors across the university. We encourage you to visit presentations of interest in a variety of disciplines and presentation formats, and to engage these students in meaningful discussions of their work. This event is a true celebration of creative thought and practice.

Many have contributed to make this growing event a success. First, we thank the College of Interdisciplinary Studies and Dean Wendy Wenner for mentoring this day. The support of the CoIS office staff has been invaluable. We are especially grateful for the hard work and patience of Shelley Sickrey, who made this process manageable and to Ashlee Swider and Geoff Hickox for coordinating the volunteers.

We thank the members of the 2009 SSD committee, Cynthia Beel-Bates, Bopaiah Biddanda, Robert Deaner, Karen Gipson, Matthew Hart, Lindsey Kloeckner, Susan Mendoza, Melissa Morison, Debbie Morrow, Felix Ngassa, Ross Reynolds, Mark Schwartz, Nancy Shontz, Suganthi Sridhar, Patricia Videtich, Janet Vigna and Shelley Sickrey for their dedication and continuous flow of creative ideas. It takes an entire year to put together a program like this, and we appreciate the hours spent engaging with us in this process.

Once again Ben Rapin and Dan Slaughter deserve our gratitude for the tremendous amount of work they put into Web Registration for SSD. They are an outstanding team. We would also like to thank the Kirkhof Center staff, Fred Mooney and Kellie Pnack-Cater, for their assistance and patience. Our deepest thanks to Campus Dining for its generous contribution.

Thank you to Leanne Dunlavey in the University Promotions Office for her outstanding work on the Abstract Book and SSD 2009 promotion material. This year's visual theme illustrates how an event like Student Scholarship Day brings together the scholarly and creative work of individuals to shape and transform understanding.

Thanks to our student, faculty, and staff volunteers for their commitment to the university's mission and values, as evidenced by their involvement in this important activity. We value the time and effort given to this event.

A very special thank you goes to the faculty mentors who work collaboratively with undergraduate and graduate students in their scholarly and creative pursuits. We know it takes a great deal of time and dedication, but these experiences make a formidable impression on the education of GVSU students. We applaud your commitment and passion for teaching and learning.

And finally, a day like this does not happen without outstanding students like this year's SSD presenters. These students have sought ways to connect their classroom experiences with scholarly and creative practice. They have engaged in a process of discovery that is often difficult and demanding. We thank these students for taking full advantage of their liberal education at GVSU. We are proud of their achievements and excited to share their success.

Please enjoy this day of celebration. Attend the many presentations available throughout the day. We extend a special invitation to attend the presentation given by this year's Keynote Speaker, Dr. Jennifer Blackmer from Ball State University. It is sure to be a day of enlightening experiences.

Susan Mendoza
Director, Integrative Learning, *College of Interdisciplinary Studie*

Janet Vigna
Associate Professor, Biology, *College of Liberal Arts & Sciences*

TRiO Ronald E. McNair

Post-Baccalaureate Achievement Program

The McNair Scholars Program is designed to prepare highly talented undergraduates to pursue doctoral degrees and to increase the number of individuals (from target groups) on college and university faculties.

The McNair Scholars are highly talented undergraduate students whose parents have no 4-year college degree and are low-income, or groups underrepresented at the graduate level for doctoral studies. The program accepts students from all disciplines.

The McNair Scholars receive academic counseling, advising, and GRE preparation. In addition, they're matched with a Ph.D. faculty mentor to conduct research and attend a McNair research conference to present their findings. In the first semester of their senior year, the scholars receive assistance with the graduate school application process.

McNair Scholars is a TRiO program funded through the United States Department of Education and Grand Valley State University.

The 2008 McNair Scholars presenting at this year's SSD include:
Kimberly Anthony, Tiffany Cross, Christopher Denison, Stefanie Manee, David Martin, Anthony Rodriguez, Ryan Rosso, Samantha Schenk, Megan Taliaferro, Benjamin Winegard

More information about the program can be found on the website at www.gvsu.edu/mcnair

S3 Student Summer Scholars

The Student Summer Scholars Program (S3) provides funds for a student and faculty mentor to devote twelve weeks to a research and/or creative project during the spring/summer semester. Through these grants and the mentorship of a faculty member, the S3 program offers a unique opportunity for undergraduate students to do hands-on, professional research and creative practice in their chosen field. Combining academics, field work, and a reflection component provides students with a meaningful learning experience that helps to prepare them for graduate school and future careers.

For each S3 participant, the project begins with an innovative and thoroughly researched proposal. With guidance from faculty mentors, students identify a research question or an area of creative practice and shape the structure of their project. The value of mentorship is an important part of S3. Experienced faculty mentors act as support and sounding board for their students.

By building on a foundation of academic and critical thinking skills provided by undergraduate courses, self-motivated students can use S3 to further their knowledge in a specific area while learning to incorporate academics with professional work. S3 provides students with a new lens through which to view their long-term educational, work, and life plans.

The 2008 Student Summer Scholars presenting at this year's SSD include:
Andrew Bellenir, Brittany Benson, Rebecca Bolen, Laura Dahmer, Michelle Frasco, Emily Henk, Derek Janssens, Kevin Maupin, Elise Miller, Brandon Moblo, Connie Pan, April Russell, Kyle Schneider, Carrie Schoenborn, Andrew Sisson, Norrissa Thomas, Leonard Van Gelder, Kirk Wyatt, Sandi Xhumari

More information about the program can be found on the website at www.gvsu.edu/s3

History of Student Scholarship Day

BY NEAL ROGNESS AND SHELLEY SICKREY

In the summer of 1995, a small group of faculty members in the Science and Mathematics Division met to explore the feasibility of creating an event where students could present their findings from faculty-mentored research to a university-wide audience. P. Douglas Kindschi, Dean of Science and Mathematics, was enthusiastically supportive, thus Student Research Day (SRD) was born.

It was decided to hold the event on April 12, 1996, in conjunction with the dedication and celebration of the new Seymour and Esther Padnos Hall of Science. The first-time event was expected to draw about thirty student participants. All expectations were exceeded when the registration period ended with over 150 presenters committed to present almost 100 presentations. The first event was a tremendous success; however, it was unknown whether SRD could be a successful "stand alone" event. These fears were quickly allayed when the second annual Student Research Day was held in April of 1997 and proved to be a great success with a similar level of participation.

The event became popular enough to get requests from students outside of science and mathematics majors who wanted to present their work. An effort began to make the event truly university-wide, which then Provost Glenn Niemeyer whole-heartedly supported. Students from all majors were encouraged to present and/or exhibit their faculty-mentored scholarly work at the event. To help make the event more inclusive, its name was changed from Student Research Day to Student Scholarship Day. The first university-wide event doubled in size with nearly 300 students giving almost 200 presentations in 1998. The first SSD keynote speaker was Dr. Robert Powell, Professor of Biology at Avila College, who talked about "Student/Faculty Collaboration: Teaching and Scholarship."

What began as an event primarily composed of science and mathematics majors has grown to include student presentations representing majors from across the university. The GVSU community has truly embraced this annual event as a day in which to take pause and proudly celebrate the scholarly achievements of students from the past year. Student Scholarship Day continues to grow, both in size and scope. The event continues to encompass interdisciplinary relationships among the presentations. Individually, the presentation is clear and focused. Taken as a whole, a larger, more inclusive picture of collaboration and learning emerges.

Keynote Lecture

2204 KIRKHOF CENTER AT 4:00 P.M.

The Gesture of Thinking:

What the Sciences and Humanities can Learn from the Performing Arts

ABSTRACT

In this talk, playwright and Professor of Theatre Jennifer Blackmer chronicles the creation of The Human Faustus Project, a play exploring the ethical gray areas of genetic research that she wrote collaboratively with fifteen undergraduates as part of a fellowship project sponsored by the Virginia B. Ball Center for Creative Inquiry. The resulting work received a staged reading at Indiana Repertory Theatre, and has been performed at Ball State University, and for the Council on Undergraduate Research in Washington, D.C. The Human Faustus Project serves as a model for the tremendous potential and power of research projects driven by undergraduates, and how immersive learning can speak to a new generation of learners in any number of fields.

Students today are suffering from an advanced case of "hardening of the categories." As the world evolves, forging interconnectedness, web-based learning and the idea economy, our educational systems clamp further down, forcing knowledge into standardized tests, FTE hours, state rankings and government funding. As institutions across the country accumulate mountains of data on student successes, our undergraduates find themselves learning how to learn in the most rigid of environments. Their experience of the world, however, is anything but rigid. Can the undergraduate experience, in four short years, accurately respond to the world these students are about to enter? Should it? Is there a way to merge fundamental, systematic learning with practical, meaning-making experiences?

Jennifer Blackmer

Assistant Professor, Department of Theatre & Dance, Ball State University

Jennifer Blackmer is a freelance playwright and theatre director, and an Assistant Professor of Theatre at Ball State University. Her play The Human Faustus Project, created collaboratively with fifteen undergraduates at the Virginia B. Ball Center for Creative Inquiry, premiered at Ball State in November 2007, and was also seen as the opening session for the Council on Undergraduate Research Dialogues conference in Washington, D.C. Other plays include Delicate Particle Logic, which will be read at the Playwright's Center in Minneapolis in April, On Again with Fresh Courage, a play about Anne Frank currently running at the Children's Museum of Indianapolis, the first English translation of Morimoto Kaoru's A Woman's Life (with Guohe Zheng), and Bounty, a new play commissioned by the Minnetrista Cultural Center. This summer, Jennifer will again work with Ball State undergraduates to collaboratively create a new play about the women involved in the Manhattan Project.

Poster Presentations

Henry Hall Atrium, Kirkhof Center
9:00 A.M.—4:00 P.M.

See page 15 for detailed schedule.

Oral Presentations

Kirkhof Center
8:00 A.M.—3:40 P.M.

See page 25 for detailed schedule.

Demonstrations

Kirkhof Center West Lawn
1:00 A.M.—2:00 P.M.

Panel Presentation

2259 Kirkhof Center
9:00 A.M.—10:00 A.M.

See page 135 for detailed schedule.

Film Screenings

Kirkhof Center, Area 51
12:00 P.M.—5:00 P.M

See page 135 for detailed schedule.

Keynote Lecture

2204 Kirkhof Center
4:00 P.M.

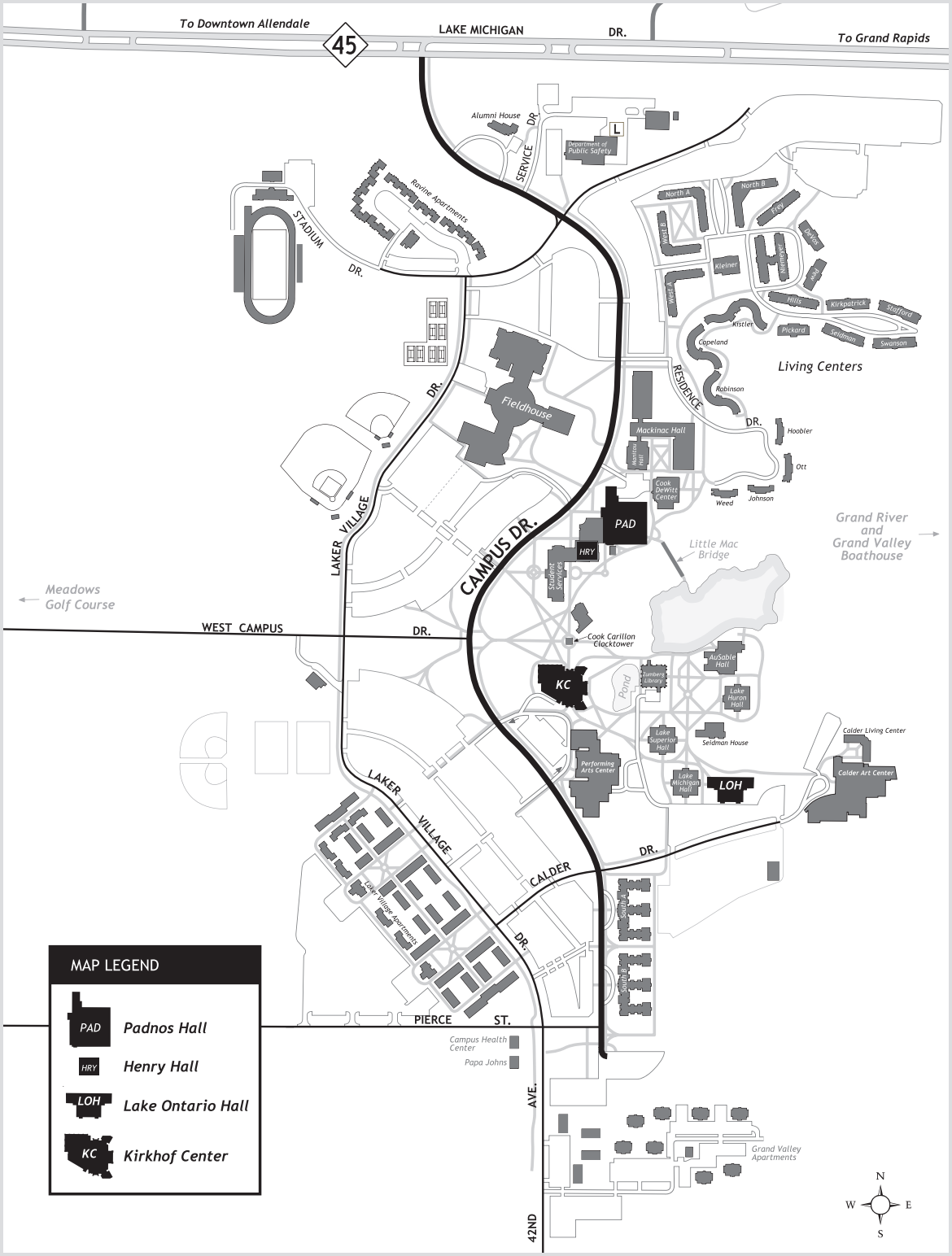
Statement from the Artist

Leanne Dunlavey

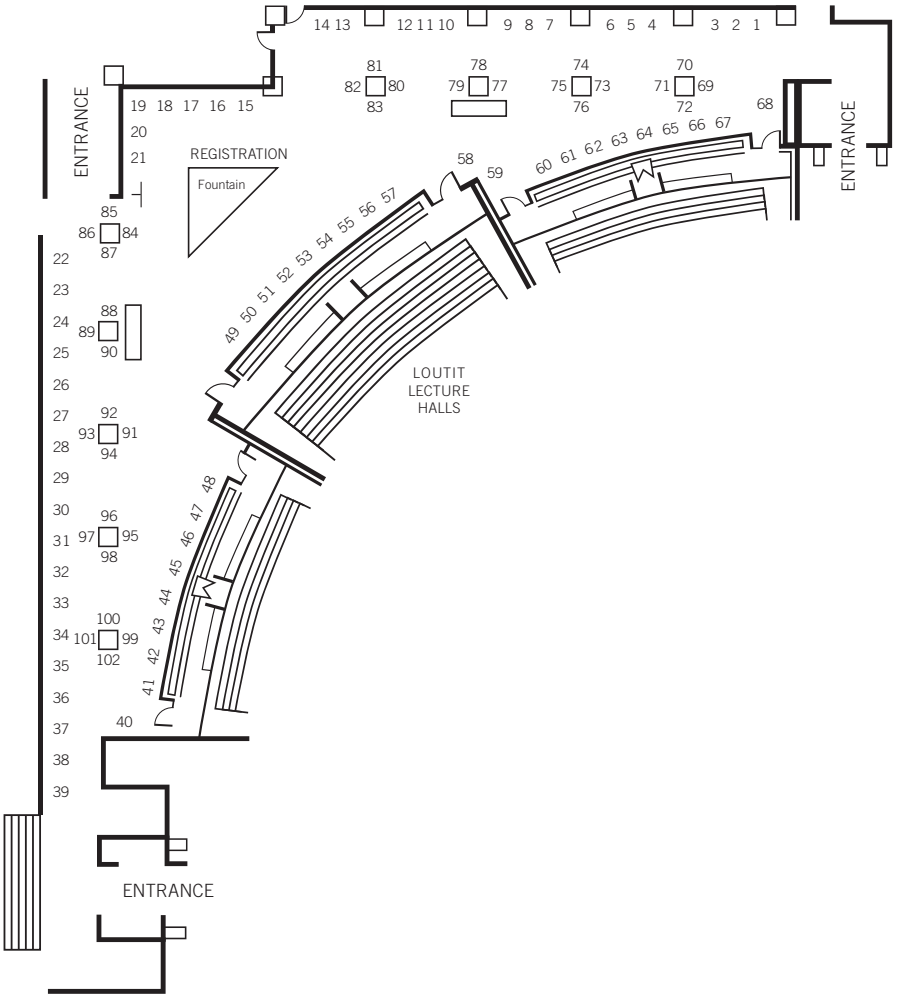
While I was thinking of different possible design aesthetics for Student Scholarship Day, I tried to stay conscious of migration, which was this school year's Community Read Project theme. The theme helped to shape my concept of the migration of information. It also made me contemplate the impact that the migration of information has had on culture(s) and knowledge worldwide. I was especially intrigued by the interconnectedness of wind patterns. Explorers, such as Christopher Columbus came to mind, and the important role that wind played in the process of shaping the global community. Much like different areas of studies, wind patterns conceptually represented elements with their own unique characteristics which together work in constant motion.

Wind's behavior of continuous transformation gave away to the idea of bold intersecting shapes that ultimately created a whole. The color palette was chosen to represent earth and air, as well as the contrast between strong and delicate design elements embodied this relationship. My hope was to illustrate wind as a dynamic force - just like the role of each scholar in creating the outcome of Student Scholarship Day.

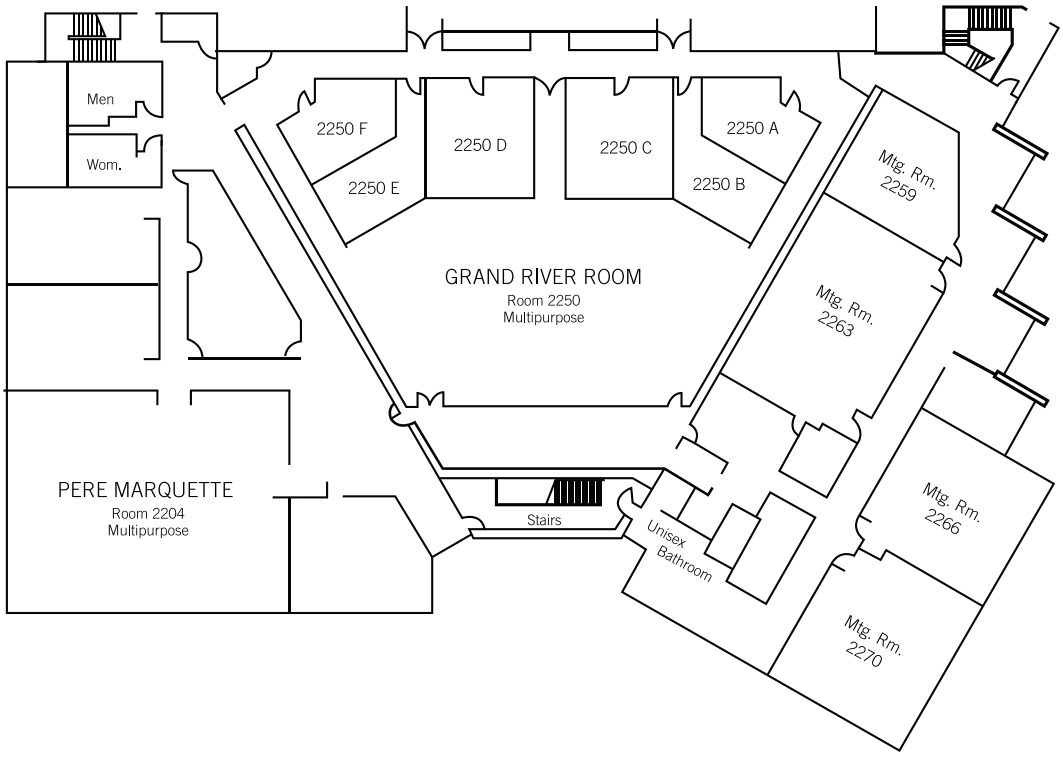
Allendale Campus Map



Henry and Padnos Hall Poster Location map



Kirkhof Center Second Floor Map



Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 1	The Importance of Culturing All Negative Specimens from the Rapid Strep A Antigen Screen *Stephanie Smith, Sarah Brown* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 2	Computational Study of Carbonmonoxymyoglobin *James Marr* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 3	Factors Affecting Quality Sleep In Intensive Care Unit Patients and Nursing Implications *Claire Bodtke, Erin Hasper, Alex Kolascz, Julie Walters, Julie McLean, Celia Loef* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 4	Seasonal Cycle of Carbon in Muskegon Lake: Search for Driving Forces *Angela Defore* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 5	Target Inquiry: A Teacher Case Study *Kristina Emery* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 6	Evaluation of Local Parks Using the Recreation Opportunity Spectrum with an Additional Education Factor *Melissa Buzzard* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 7	Analysis of a Cyclic Peptide Library to Identify Proteins that Effect hilA Expression and Salmonella Invasion *Julie Rosochacki* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 8	A Nutrition Intervention to Improve Diet Quality of Meals Served to Homeless Men *Marina Leybzun, Corinne Brown, Brittany Lorenz, April Dutcher, Xuan Dinh, Leah Mathewson, Jason Dika, Michael Kane, Crystal White* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 9	Capillary Electrophoretic Detection of *Candida Albicans* Fungi in Blood *Ryan Nelson* Participants attending from 2:00 p.m. until 3:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 10	Sexual Differences in Parental Effort During the Nestling Period in Tree Swallows *Bradley Houdek, Lisa Bol, Kyle Burgher, Maegen Kish* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 11	Toward Construction of a Modular Raman Spectrometer for Solid, Aqueous, and 'Quasi-Liquid' Samples *Steve Asiala* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 12	Performance on a Mirror-tracing Task as a Function of Brain Hemisphere Domnance *Elle Gray* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 13	The Mineralogy of Material between Gypsum Nodules in the Mississippian Michigan Formation: Wyoming, Michigan *Mallory Morell, Kelvin Koster, Steve ` Holzworth* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 14	A Novel Cu- and Amine-Free Sonogashira Cross-Coupling in the Alkynylation of 2'-Deoxyadenosine *Brandon Haines* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 15	Sensory Stimulation and Recovery Outcomes in Comatose Patients *Jennifer Pietraz, Amber Kortering, Brooke Muzio, Andrea Lachniet, Nikki Hickens, Jordan McAskin* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 16	Factors that Affect Egg Mass in Tree Swallows *Kyle Burgher, Maegen Kish, Lisa Bol, Bradley Houdek* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 17	Determining Characteristics of Insoulable Residue in Mississippian Dolomite from a Gypsum Mine in Wyoming, Kent County, Michigan *Kate Amrhein, Sarah Dettloff, Sara Bostelman* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 18	Preferred Method of Pain Control in Infants During Circumcision *Alison Anzell, Mark Brengel, Meagan Pimm, Jesse Henderson, Jill Hulka* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 19	Optimum Environment for Post-Operative Ambulation Following a Total Knee Replacement *Jennifer DeVries, Lindsey Kosbab, Mackenzie Goodell, Chasha Gaines, Kathryn O'Brien, Alyson Marchal* Participants attending from 10:00 a.m. until 11:00 a.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 19	Optimum Environment for Post-Operative Ambulation Following a Total Knee Replacement *Jennifer DeVries, Lindsey Kosbab, Mackenzie Goodell, Chasha Gaines, Kathryn O'Brien, Alyson Marchal* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 20	A Comparison of Hologic Invader Technology to Digene Hybrid Capture 2 for the Detection of High-Risk Human Papillomavirus DNA in Cervical Specimens. *Molly Dobb* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 21	Deep Vein Thrombosis Prevention in Post-Operative Patients of All Ages *Jessica Bickford, Amber Osborne, Jessica Werling, Dane Stahl, Natalie Grabowski, Kiera Brown* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 22	The Effect of Reminiscence Therapy on Elderly in Long Term Care *Debra Jones* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 23	Comparing the Effects of Individual and Group Exercise on Rate of Perceived Exertion and Performance *Megan Carter, Lauren Fitch* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 24	The Acute Effect of Testosterone on the Renal Vasculature *Pranjali Dakwale* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 25	A Picture Gallery of Microbial Mats from Lake Huron and Around the World *Mimoza Grajqevci* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 26	Shelljoust: An Exploration of Computer Security *Andrew Bellenir, Rich Martin, Mike Lowis, Nick Doorn, Joshua Hulst* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 27	Target Inquiry: Can Professional Development Change Teachers' Beliefs and Instructional Practices? *Karen Luxford* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 28	A Review of the Global Situation of Classical Phenylketonuria *Andrea Steinbach* Participants attending from 1:00 p.m. until 2:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 29	Patient Controlled Analgesia Versus Patient Controlled Epidural Analgesia *Erin Williams, Elizabeth Semeyn, Jennifer Nezwek, Laura Lindstrom, Sara Kooiker* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 30	An Investigation of the Factors Contributing to Life Satisfaction in a Non-religious Sample *Jim Kloet* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 31	A Comparison of Energy Healing Modalities *Jennifer Taylor* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 32	Using Visual Supports to Promote the Play Skills of Young Children with Autism Spectrum Disorders *Melissa Bach, Valerie Weber* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 33	An Analysis of Isolation by Distance Based on Microsatellite Loci in Polistes Metricus *Jessica Trahey* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 34	Pressure Ulcer Prevention In An Acute Setting: Identifying A Need For Change *Amy Delaney* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 35	Positional Behavior in 3 Age Groups of Free Ranging *Rhesus Macaques* *Marie-Angela Della Pia* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 36	Effects of Previous Environment and Travel Patterns on Spatial Scaling *Justin Persoon* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 37	Synthesis of Piperazine-Based α-Helix Peptidomimetics for the Disruption of the HIV-1 Rev-RRE RNA Interaction *Shannon Murphy, Sarah Wood* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 38	Orientation Strategies of Crayfish when Incurring Damage to their Olfactory Chemoreceptors *Fatema Husaini* Participants attending from 1:00 p.m. until 2:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 39	How do the Stressors of Pain and Noise Affect the Patient Healing Process? *Danielle Dobbs, Daniel Vandenberg, Linzy Duvall, Anna Dawson, Amber Uhlenbrauck* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 40	Periodization for a 400 Meter Collegiate Sprinter *Christine Hartnett, Katie Folkema* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 41	Chemical Warfare Agent Recognition and Quantification *Benjamin Eggleston* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 42	Sleep Quality Study with Web-based Survey Methodology *Susan Eadelman* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 43	Paleomagnetism of the Michigan Formation (Mississippian) from a Gypsum Mine Wyoming, Michigan *Christine Barszewski, Catherine Carlisle, Benjamin Matzke* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 44	An Investigation of Correlation Between Tree Ring Indices and Climate in Allegan County *Ashley Meyer* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 45	Bacterial Analysis of Michigan Cherry Wines *Emily Henk* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 46	Climate Change and Deforestation in Southeast Asia *Rebecca Brittain* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 47	Play Behavior in Three Sympatric Species: Mantled Howler Monkeys (*Alouatta palliata*), White-Faced Monkeys (*Cebus capucinus*), and Black-Handed Spider Monkeys (*Ateles geoffroyi*) *Rebecca Brittain* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 48	Geographic Information System (GIS) Mapping of Tobago for Geologic Research in Trinidad and Tobago, West Indies *Anthony Rodriguez* Participants attending from 1:00 p.m. until 2:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 49	Periodized Strength and Conditioning Program for Competitive Indoor Climbing: Brooke Derouin *Amber Leonard* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 50	Religious Fundamentalism and Misfortune: Evidence for the Just World Belief *Greggory Hampshire* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 51	Global Positioning System (GPS) Determination of Motions, Neotectonics, and Seismic Risk in Trinidad and Tobago *Anthony Rodriguez* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 52	Control of Hdc Expression: Initial Results From Reporter-Gene Fusion Studies *Elise Miller* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 53	Production and Consumption Rhythm in Muskegon Lake: Trends through the Years *Maggie Weinert* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 54	The Implications of the 2006 Canadian National Census on Ontario's Population and Linguistic Landscapes *Erin Murphy, Colleen Kerr, Lamia Ghannam, Alexis Alt, Rebecca Birman, Alexis Alt, Nikolas Goodrich, Anne Marie Carson, Daniel McCulfor, Theresann Pyrett, Kim Hurkmans* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 55	Reproductive Responses of Arctic Plants to Temperature Variation *Robert Slider* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 56	Evidence Based Practice Guidelines to Reduce Lifestyle Risk Factors in Pregnant Women *Lindsey Kitti* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 57	Using Corridor Designer to Model Wildlife Corridors for African Elephants in Kenya *Anne Santa Maria, Elizabeth McMurray* Participants attending from 12:00 p.m. until 1:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 58	Transfer of Image Reversal from Dancing to Mirror Tracing *Trevor Essique, Cameron Groenewoud, Hanna Partlo* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 59	The Impact of Nursing Fatigue on Clinical Decision Making *Katie Dyball* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 60	Successful Breastfeeding and the Role of Infant Dietary Supplementation *Katelynn Dodd, Michelle Spring, Donald Wolf, Julie Kenyon, Tyler Loveless, Tammy Kool* Participants attending from 11:00 a.m. until 12:00 p.m
Henry Hall Atrium 61	The Effect of Various Colors on Human Reaction Time *Andrea Mitchell, Carolyn Callery* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 62	Effectiveness of Acupuncture in the Treatment of Pain in the Fibromyalgia Patient *Katelyn Nelson, Jackie Murphy, Dan Gritters, Allison Ogrodzinski, Sally Esman, Sarah Blair* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 63	How Wide is that Peak? Progress Towards Measuring Line Broadening Coefficients in Infrared Spectroscopy with Small Gas Phase Molecules. *Trevor Lott, Todd Major* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 64	Progress Towards the Synthesis of a Novel Indane Derivative as a Regulator of TAAR Activity *Kevin Maupin* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 65	Investigating Lean Methods in Various Hospitals *Sarah Bradley* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 66	Nest Site Characteristics and Reproductive Success in Tree Swallows *Melissa Bobowski* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 67	The Distribution of Crayfish Species in the Tributaries of the Grand River, MI *Norrissa Thomas, Tyler Snoap, Jacob Frisbie* Participants attending from 10:00 a.m. until 11:00 a.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 68	In Neural Stem Cells of the Developing Central Nervous System the Notch RBP-J Signaling Pathway Regulates NFIA Expression During Glial Differentiation *Derek Janssens* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 69	Determination of Paleolatitude of the Mississippian Marshall Sandstone Jackson, Michigan *Esther Posner, Stephen Zdan, James Buzzell, James Barr* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 70	Strength and Conditioning for the Mixed Martial Artist *Leonard Van Gelder, Marc Wagner* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 71	The Relationship Between Nurse Education Level and Quality Care *Aimee VandenBerg, Erin Tidd, Kelsey DeMull, Orena Kidder, Sarah Cain, Morgan Smagala* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 72	Microsatellite Loci Reveal a Genetically Homogenous Population in the Geographically Widespread Paper Wasp, Polistes Metricus *Sarah Jones* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 73	Nutritional Assessment of Food Served in Heartside Area Missions Anthony *Matson, Amy Peterson, Shannon Lee, Laura Haiderer, Rachel Prince* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 74	Modifications of Coronary Vascular Reactivity due to Oxidative Stress *Kanchan Tiwari* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 75	Synthesis of Derivatives of 3-Aminoquinazolinone and 2'-Deoxyguanosine as Potential Inhibitors of FAK and Src *Kirk Wyatt* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 76	Catalytic Hydrogenation of Threitol over Pd/C Catalyst *Amanda Hanks* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 77	Predicting Cosmetic Surgery Attitudes among College Women *Amanda Mitchell, Samantha Schenk* Participants attending from 10:00 a.m. until 11:00 a.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 78	Economical Simulation of Extraterrestrial Environments *Derek Loutzenhiser* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 79	Dramaturgical Production History of William Shakespeare's Macbeth *Rebecca Takacs* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 80	Using Adult and Peer Video Models to Teach Play to Children with Autism Spectrum Disorder *Justin Persoon, Jessika LaPres, Chelsea Callow* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 81	Obesity *Mark Brengel* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 82	Grain Size Analysis of Sands in Dunes, Rivers, and Beaches: Ottawa County, Michigan *Kevin Kane, Austin Westhuis, Kyle Siemer* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 83	Post-Stroke Adjustment of Caregivers *Krista Tarrant* Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 84	Development of an Intensive Weight Management Program *Julie Eriksson* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 85	Investigation of the Silaallyl Anion *Randall Breckon* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 86	Sport and Personality: Exploring the Relationship Between Extraversion and Neuroticism in Relation to Team, Individual, and Non-Sport Preference *Rebecca Nixon, Dawn Heerspink* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 87	Effects of Competition on Sport Performance *Austin Averill* Participants attending from 12:00 p.m. until 1:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 88	Textural Analysis of Sands from a Modern Beach and Fossil Terraces at Guyamara Bay, Trinidad and Tobago *Adam Wrubel, Christopher Denison, Curtis Barclay* Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 89	Training for Your Peak Soccer Performance: Female High School Soccer Team *Danica Rodriguez, Sarah Knipper* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 90	Cyclohexene Derivatives in Transfer Hydrogenation *Nathan Craft* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 91	St. Joseph and Benton Harbor, MI: A Comparison Using GIS *Kendell Joseph, Laurel Walker* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 92	Best Clinical Practice for Treatment of Deep Vein Thrombosis *Michelle Douglas, Katie Kooiker, Jamie Resler, Heidi Lafranboise, Sandra VanDyke, Bryan Veenstra* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 93	Who Cares About Success? *Lindsy Matteoni, Erika VanDyke* Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 94	Seed Dispersal Success of Transplanted Species in a Longleaf Pine Savannah Restoration Experiment at the Savannah River Site, South Carolina *Corey Kapolka* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 95	Cultural, Biomedical and Economic Barriers to Malaria Interventions *John Troost* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 96	Graphics Processor-Based Implementation of Bioinformatics Codes *Andrew Bellenir* Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 97	When Vision Fails; Proprioception, and Motor Coordination Completing a Motor Skill *Kate-Alice Martin* Participants attending from 3:00 p.m. until 4:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Henry Hall Atrium 98	Coprolites in the Mississippian Michigan Formation, Western Michigan *James Bennett II, Chad Williams, Ashley Taylor* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 99	Neurobehavioral Effects of Exposure to Methylmercury in Adult Zebrafish (*Danio rerio*) *Crystal Lamb, Lillian Schaefer* Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 100	Acyl-Enzyme Complex of the Class B-Lactamase OXA-1 and Doripenem *Kyle Schneider* Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 101	Densitometric Analysis of Rodent Brain Protein Extract *Ron Kress, Brian Britz* Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 102	Cloning and Sequencing of Sonic Hedgehog in the Southern Flying Squirrel *Beth Lubeck* Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center KC1	A GIS-Based Approach to Study Fossil Plate Motions in the South American-Caribbean Plate Boundary, Southern Basin, Trinidad *Stephen Zdan* Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center KC2	Antibacterial Properties of a Telomerase Inhibitor *Kyle Kilpatrick* Participants attending from 12:00 p.m. until 1:00 p.m.
Kirkhof Center KC3	Anterior Cruciate Ligament Reconstruction: Autograft or Allograft *Erin Caverly* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC4	Fatigue, Inter-Shift Recovery and Clinical Decision Making Regret Among Critical Care Nurses *Kim Michels* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC5	Effects of a Biological Pesticide, Bti, on Frog Larval Development in Aquatic Communities *Kristina Powers* Participants attending from 1:00 p.m. until 2:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC6	Mural, Painting and Art Education Project with African Refugees and the African Community Center of West Michigan *Carrie Schoenborn* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC7	Screening of Potential Anti-telomerase Drugs an Anti-proliferative Study on Prostate Cancer Cell Lines (PC3) *Viralkumar Patel* Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center KC8	Examination of Leukocyte Alkaline Phosphatase Stain Results Using Sodium Heparin and EDTA Tube Anticoagulants. *Sonya Heerema, Keri Jastifer, Candice Workman* Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center KC9	Using Change Theory to Implement an Evidence-based Bladder Protocol *Debra Brown Bayus* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC10	Gender Specific Categorization by Parents *Nikki Turnbull* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC11	Wii Fit and Wii Sport: Examing Physical Activity and Psychological Responses in College Students *Kendall Cook , Alicia Beste* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC12	Determination of Energy Expenditure during Pregnancy and Comparison to the Compendium of Physical Activity Values *Laura Dahmer* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC13	Design and Synthesis of Peptide Substrates for Focal Adhesion Kinase (FAK) Using Solid Phase Peptide Synthesis Strategies *Katherine Stahrr* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC14	A Method Correlation between A Siemens Bayer Rapidpoint 400 and Corning pH meter 430 *Kevin Cole, Jeffrey Hatfield* Participants attending from 3:00 p.m. until 4:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC15	The Constitutionality of Intelligent Design *Patrick Anderson* Participants attending from 2:00 p.m. until 3:00 p.m.
Kirkhof Center KC16	The Acute Effects of Histamine, Histidine, and Vitamin C on the Vascular Reactivity of Coronary Arteries *Zach Heathman, Devon Banda, Andy Bosch, Omkar Hirekhan* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC17	The Role of Physical Activity in Children with Autism Spectrum Disorders A Review of the Benefits and Barriers *Renae Burke* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC18	Transition to Adulthood: A Cross-National Study *Meghan Gallaway* Participants attending from 12:00 p.m. until 1:00 p.m.
Kirkhof Center KC19	Sustainable Grand Rapids *Matthew Donahue* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC20	Assessing Surface Runoff at Grand Valley State University using Arc Hydro, Storm Water Management Software 5.0, and Data Collected from Four Gage Stations Located in the Ravines *James Barr* Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center KC21	Determination of Notch Signaling is Sufficient to Induce Astrocyte Differentiation Gene Expression by Neural Progenitors in the Developing Central Nervous System *Sarala Sarah, Tiffany VanderKlay* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC22	The Effects of Shift Work on Sleep Deprivation Among Nurses Working in Critical Care. *Michelle Heriford* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC23	Analyzing Mars Impact Craters using GIS *Philip Kenroy* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC24	Emerging Adulthood: Cultural and Personal Perspectives *Sean Townshend* Participants attending from 10:00 a.m. until 11:00 a.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC25	Chambira and Palm Densities in the Peruvian Amazon *Anel Guel* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC26	The Puzzling Mathematics of Sudoku *April Russell* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC27	How a Periodization Strength and Condidtioning Progam can Benefit a Bodybuiler *Matt Kaminski, Aaron Golombek* Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center KC28	Motivating Rural Women Toward Health Promotion: One Community's Story *Jennifer Dentler* Participants attending from 2:00 p.m. until 3:00 p.m.
Kirkhof Center KC29	Infant Deliveries in the Emergency Department: Provider Preparedness *Carole Donazzolo* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC30	A Study of the Effects of pH and Common Water Contaminants on the Accustain® Wright Stain *Kirsten Postma* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC31	The Effect of Music on the Rate of Perceived Exertion While Performing Graded Exercise *Jaimie Biermann, Elizabeth Klesmith* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC32	Facial Width Predicts Violent Crime *Stefan Goetz* Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center KC33	Microbial Fuel Cell as a Demonstration of Bacterial Physiology *Michael Millican* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC34	Dynamic Student Study Groups - - CANCELLED *Kurt O'Hearn* Participants attending from 9:00 a.m. until 10:00 a.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC35

Combination Training in the Advanced Long Distance Runner

Crystal White, Mayumi Garcia

Participants attending from 2:00 p.m. until 3:00 p.m.

Kirkhof Center KC36

Exploring the Use of Dendrochronology as a Local Climate Indicator: Grand Valley State University Campus, Allendale, Michigan:

Nathan Noll

Participants attending from 9:00 a.m. until 10:00 a.m.

Kirkhof Center KC37

The Design of Focal Adhesion Kinase Substrates and Specificity Determination Using ELISA Assays

Evan Lund

Participants attending from 2:00 p.m. until 3:00 p.m.

Kirkhof Center KC38

Current Status and Trends of PCB Congeners in Fish from Muskegon Lake and White Lake

Autumn Trombka

Participants attending from 9:00 a.m. until 10:00 a.m.

Kirkhof Center KC39

Enhancing Performance and Preventing Osteoporosis in Master-Level Female Cyclists

Kathleen Johnson, Christine Russcher

Participants attending from 1:00 p.m. until 2:00 p.m.

Kirkhof Center KC40

Toward the Synthesis of a Series of Phenyl Vinyl Ether Complexes of Iron. Establishing the Correlation Between Metal-Olefin Bond Asymmetry and Reactivity

Daniel Wood, David Duran

Participants attending from 10:00 a.m. until 11:00 a.m.

Kirkhof Center KC41

Future Art Educators Learning About Special Needs Students' Art Making Through Service Based Collaboration

Stephanie McGinnis, Mary Powell, Rebecca Bloem, Kayla Bragg, Kelsey McCarty, Laura Stoklosa, Becky Bartlett, Lisa Maleski

Participants attending from 9:00 a.m. until 10:00 a.m.

Kirkhof Center KC42

The Rush to Restoration: Stressing the Need for Initial and On-going Assessment of Oak Savanna and Prairie Ecosystem Restoration Projects

William Counterman

Participants attending from 9:00 a.m. until 10:00 a.m.

Kirkhof Center KC43

Finding the Rank of an Elliptic Curve

Clifford Taylor

Participants attending from 11:00 a.m. until 12:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC44	Effects of Fatigue on Free Throw Biomechanics *Kevin Wolf* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC45	A Periodization Strength and Conditioning Program for Competitive Powerlifting Athletes *Tanya Schlink* Participants attending from 2:00 p.m. until 3:00 p.m.
Kirkhof Center KC46	Lifespan Osteoporosis Prevention: Evaluation of Modified Osteoporosis Knowledge Test *Brooke Borgeson-Gray* Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center KC47	Characterizing the Population Genetic Structure of Polistes metricus: Microsatellite Loci Linked to RNA Encoding Genes Provide a Way of Detecting the Effects of Selection. *Tiffany Young* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC48	Evaluation of Obstetrical Patients in the Emergency Department: Policy Revision *Natasha DeHaan* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC49	Bilateral Transfer In Relation To Kicking Accuracy *Katelyn Wood, Andrew Templeton* Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center KC50	Familiarity as an Aid in Wayfinding for Older Adults *Amanda Himes* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC51	Adopting Best Practices Guidelines for Hyperlipidemia *Amy Klein* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC52	Three Dimensional Laser Scanning of the Ravine Slope Behind Lake Ontario Hall *Alexander Frye* Participants attending from 2:00 p.m. until 3:00 p.m.
Kirkhof Center KC53	Target Inquiry: Teacher-Perceived Barriers to Inquiry Instruction *Christina Billman* Participants attending from 2:00 p.m. until 3:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC54	How to Improve Your Fastball in Softball *Josh Green, Becca McClearen* Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center KC55	A Cross-Sectional Study on the Effects of Increased Collection Time on Sweat Volume Retrieval and Chloride Concentration During Sweat Chloride Testing *Kristin Antkoviak* Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center KC56	The Effect of Fatigue on Mucsle Activation in Healthy Female Shoulders *Matthew Sumner* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC57	Pilgrimage and the Jewish Perspective *Tiffany Cross* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC58	Periodization Program for Professional Beach Volleyball Athletes *Andrea Shefferly, Ranae Jernagan* Participants attending from 12:00 p.m. until 1:00 p.m.
Kirkhof Center KC59	What You Didn't Know About the Position of Labor in the United States *Lindsay Bolles, Stacy Thomas, Jessica Saigh, Jesse Bazan, Megan McCarthy, Nicole Goulet* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC60	The Effects of Sports on Motor Ability *Molly Cohn, Ashley Trieu* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC61	How Dependent Is the United States on Middle East Oil? *Samer Umran* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC62	The iPhone and World of Warcraft *Matt Elzinga, Michael Preuss, Ben Tjapkes, Dean Davis, Ryan Putans, Aaron Carbaugh* Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center KC63	Effects of Asn152 Mutation on Substrate Selectivity of P99 Cephalosporinase *James Ruble, Jenna Tomlinson* Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center KC64	A Periodized Exercise Training Program for the Amateur Motocross Racer *Sara Johns, Amanda Shands* Participants attending from 11:00 a.m. until 12:00 p.m.

Poster Presentations

9:00 A.M.—4:00 P.M.

Kirkhof Center KC65	Enhancing the Collegiate Basketball Player's Performance through the Improvement of Strength in Motion and Explosive Power *Erica Evans, Vanessa Simerson* Participants attending from 9:00 a.m. until 10:00 a.m.
Kirkhof Center KC66	An Exploratory Study of the Relationship between Natural Hazards and Poverty Levels *Andrea Blanchard* Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center KC67	What World Do You Live In? *Dana Kern* Participants attending from 12:00 p.m. until 1:00 p.m.

Oral Presentations

9:00 A.M.—4:00 P.M.

8:00 A.M.

Kirkhof Center 2250AB	A Comparison of Labs: Pre-Determined vs. Open-Ended Outcomes *Kyle McDonald*
Kirkhof Center 2250C	Socioeconomic Status and Outcome After Mild Traumatic Brain Injury Rehabilitation Patrick Smith, Matt Larsen, Chris Ulrich
Kirkhof Center 2250D	Exploration of a Qualitative and Quantitative Approach to Assessment of a Community Based Mentorship Program *Kathleen Godinez, Holly Ferris*
Kirkhof Center 2250EF	Readmission of Patients with Heart Failure: A Retrospective Analysis of the Up-Titration of Cardiac Medications and Readmission Rates *Katherine Bussone, DeeAnna Holbrook, Sara Sundell-Norlin*
Kirkhof Center 2259	The Effect of Intracellular and Extracellular Density on Gravitropic Curvature of Rice Roots *Lindsey Heldt*
Kirkhof Center 2263	Restoring Agricultural Lands: Analysis of Soil Compaction and Germination *Heath Meyer*

8:00 A.M. CONTINUED

Kirkhof Center 2269	Risk Assessment for Osteoporosis in Adults Treated for a Distal Radius Fracture *Katie Wright, Chad Smith, Amber Somerset*
Kirkhof Center 2270	A Statistical Consulting Experience: Service Learning in Education Courses *Tara Fast*

8:20 A.M.

Kirkhof Center 2201	Investigation of Fundamentals of Wind Power Generation for Small-Scale Applications *Christine Vander Laan*
Kirkhof Center 2250EF	The Cavendish Balance *Lisa Genovese*
Kirkhof Center 2263	Role of Retained Structures for Bird Communities in Managed Forests in Snoqualmie, Washington *Nicholas VanDyken*
Kirkhof Center 2269	Investigating Academic Service Learning: A Statistical Consulting Experience *Ryan Corcoran*
Kirkhof Center 2270	A New Method to Infer Trail Dimensions Based on Ecosystem Types *Martha Haglund*

8:40 A.M.

Kirkhof Center 2250EF	Presence of Positive Selection Pressure Among Fresh Water VHSV Isolates as Compared to Marine Isolates *Viralkumar Patel*
Kirkhof Center 2269	Investigating the Enrollment in Theme and Culture Classes: A Statistical Consulting Experience *Sheldon Robinette*

9:00 A.M.

Kirkhof Center 2201	Statistical Analysis of Kent County Breastfeeding Rates *Nicole Arradaza*
Kirkhof Center 2250C	A GIS Model of Gas Energy Infrastructure at GVSU, Allendale *Drew Smith, Anthony Petersen, Mary Lyons, Chelsey Carlson, Carrie Hause*

Oral Presentations

8:00 A.M.—4:00 P.M.

9:00 A.M.CONTINUED

Kirkhof Center 2263

A Comparison of the Knowledge of Hormone Replacement Therapy between Caucasian and African American Women
Aleksandra Lieckfield, Karen Ozinga

Kirkhof Center 2269

Hit the Books Running Campaign
Charlotte Sasinowski

Kirkhof Center 2270

An Internship Experience at The Statistical Consulting Center
Allison Wehr

9:20 A.M.

Kirkhof Center 2250C

A Statistical Consulting Experience: Analysis of Differences in Class Size of GVSU's General Education Foundation Courses
Katie Green

Kirkhof Center 2250D

"I don't never know what ails him" - Problems of Articulation in Flannery O'Connor's Wise Blood
Tshering Bhutia

Kirkhof Center 2263

Modeling Habitat Suitability for Cougar in the Upper Peninsula of Michigan
Joseph Severson

Kirkhof Center 2269

Evaluation of Spring Flow, Bacterial Contamination, and Distribution of Fresh Water Resources in the Vicinity of Verrettes, Haiti
Andrew Sisson

Kirkhof Center 2270

Do Ambulance-based 12-lead ECGs Decrease the Door-to-intervention Time in ST Segment-elevated Myocardial Infarction (STEMI) Patients?
Jennifer Partenio, Vinh Ho, Amy Hicks, Gregory Niedzwiecki, Erin Murphy

9:40 A.M.

Kirkhof Center 2250AB

Identification of Developmental Genes in the Southern Flying Squirrel (*Glaucomys volans*)
Mitchell Sydloski

Kirkhof Center 2263

Distinguishing Forest Types within Van Zoeren Woods
Anthony Holm

Oral Presentations

8:00 A.M.—4:00 P.M.

10:00 A.M.

Kirkhof Center 2201

Transgender and Transsexual Tendencies: The Cultural Impact of Loki's Gender Exploration and Transgression:
Benjamin Knight

Kirkhof Center 2250AB

Sandra Day O'Connor and her Influence on the Supreme Court
Patrick Miller

Kirkhof Center 2250C

Gender Differences in Job Satisfaction Among Physician Assistant Faculty
Molly Downing, Rachelle Franks, Megan Smith

Kirkhof Center 2250D

A Comparison of Tests given when English is a Second Language: A Statistical Consulting Experience
Lindsey Quaderer

Kirkhof Center 2250EF

Second Generation Succession in a Family-Owned Business: Exploring Age and Gender Issues
Alaina Ebenhoeh

Kirkhof Center 2259

Accreditation and Standardization in Therapeutic Recreation Curricula
Elizabeth Hungerford, Renae Sauter, Stephanie Kurcab, Alisha Betcher , Michelle Viane

Kirkhof Center 2263

Changing Climate and the Response of Birds
Nicholas Berghuis

Kirkhof Center 2269

Follow-Up Assessment for Osteoporosis in Adults Treated for a Distal Radius Fracture Sustained from a Low Trauma Injury
Kimberly Shaw, Lyndsay Wilkens, Sarah Wretschko

Kirkhof Center 2270

Expansion of Southerly Distributed Species in the Arctic in Response to Warming
Jennifer Liebig, Jeremy May

10:20 A.M.

Kirkhof Center 2201

Exploring Mexico City with Spatial Information Technology: A GIS Approach
Eduardo Diaz

Kirkhof Center 2250AB

Bacterial Analysis of Michigan Cherry Wines
Emily Henk

Kirkhof Center 2250C

Community and Institutional Partnerships in Art Education
Kelly Junis, Autumn Paulson, Gabriel Conlon, Megan Oswalt, Jessica Schultz

Oral Presentations

8:00 A.M.—4:00 P.M.

10:20 A.M. CONTINUED

Kirkhof Center 2250D	Analyzing Recurrent Events Data More Efficiently *Dung Pham*
Kirkhof Center 2250EF	Tests of English as a Foreign Language: A Statistical Consulting Experience *David Ratz*
Kirkhof Center 2259	A Comparison of the Statistical Software Programs R and SAS *Dave Vanthof*
Kirkhof Center 2263	Exploring the TR Process Across Settings *Lindsay Dalach, Emily McCormick, Melanie Schafer, Amanda Loomis, Sarah Engel*
Kirkhof Center 2269	Liberal Education among Prisoners *Ben Tolman*
Kirkhof Center 2270	Illuminating the Night Sky: Exploring Light Intensity and Security on GVSUs Allendale Campus *Donald Curry, Anna Christie Smith, , Ashley DuRocher, Erin Hayden*

10:40 A.M.

Kirkhof Center 2201	Russian Settlement of Siberia *Stephanie Moravec*
Kirkhof Center 2250AB	Logging Off Reality *Katherine Seif*
Kirkhof Center 2250C	Cadmium Telluride Thin Film Photovoltaic Cells *Paige Lampen*
Kirkhof Center 2259	Reimbursement of Therapeutic Recreation Services *Jamie Clark, Hillary Fisher, Niki Reams, Ashley Quist, Sara Langlois*
Kirkhof Center 2263	Agricultural vs. Native Prairie Areas Usage by White Tail Deer *Paul Rogers*
Kirkhof Center 2269	Reproductive Technology in Western Society: Ambiguity Over Biological Parenthood and the Patriarchal Control Of Women *Linsey Cory*
Kirkhof Center 2270	A Statistical Consulting Experience: Studying the Theme Completed by the Different Majors *Bradford Dykes*

11:00 A.M.

Kirkhof Center 2201	Wavelets and the NFL *Geoff Patterson*
Kirkhof Center 2250AB	A Basic Primer on Industrial Security Firms *Joe Woods, Travis Cornwell*
Kirkhof Center 2250C	The Substance of Death: The Effect of Mortality Salience on Substance Use *Timothy Ecklesdafer, Derek Doughty*
Kirkhof Center 2250D	An Analysis of Historic Ceramics at Indian Landing (20BA02) in Hastings, MI *Casey Huegel*
Kirkhof Center 2250EF	Civil Society in Russia: Unhealthy symptoms that lead to a dreary diagnosis *Charla Waeiss*
Kirkhof Center 2259	Spin Wave Theory for Ferromagnets *Stephen Gardner*
Kirkhof Center 2263	Specialized Modalities in the TR Curriculum: Increasing Competency of Entry-Level Practitioners *Christine Hart, Ben Hroncich, Laura Edwards, Andrea DeBolt*
Kirkhof Center 2269	Overcoming the Barriers of Geoscience Education at the Elementary Level *Michelle Frasco*
Kirkhof Center 2270	Post-Operative TKA Complications in Diabetic Versus Non-Diabetic Patients *Megan Goff, Lauren Shaw*

Oral Presentations

8:00 A.M.—4:00 P.M.

11:20 A.M.

Kirkhof Center 2201	An Exploratory Study of the Relationship between Traffic Tickets and Traffic Accidents in Michigan *Joshua Cudney*
Kirkhof Center 2250AB	The Effects of Stretching on Agility Performance *Leonard Van Gelder*
Kirkhof Center 2250C	Analyzing Angular Momentum in Figure Skating Jumps *Jessica Stark*
Kirkhof Center 2250D	Child's Play - Colonialism and Childhood in R. K. Narayan's Swami and Friends *Tshering Bhutia*
Kirkhof Center 2250EF	Sports Economics: Evaluating the Left Tackle *Andrew Cylkowski*
Kirkhof Center 2259	Palestinian and Iraqi Women Refugees: An Examination of the Past Sixty Years *Kimberly Anthony*
Kirkhof Center 2263	Wildlife Rehabilitation and Charismatic Megafauna *Megan Mutchler*
Kirkhof Center 2269	*e*Racing Cervical Cancer: Analyzing Visual Representations of Gardasil *Jessica Bacon*
Kirkhof Center 2270	Turtle Community Structure in Great Lakes Coastal Wetlands *Alex Wieten*

11:40 A.M.

Kirkhof Center 2201	Making Connections *Brian Farlow*
Kirkhof Center 2250AB	International Information Flows, Patenting and Outsourcing *Daniel Sanchez-Garcia*
Kirkhof Center 2250C	Space Dynamics *Kyle Golenbiewski*
Kirkhof Center 2259	The Aravind Eye Care System: Is it Replicable in the US Health Care Model? *Bradford Dykes*

11:40 A.M. CONTINUED

Kirkhof Center 2263	Van Zoren Woods Relative Health Evaluation *Lisa Farr*
Kirkhof Center 2269	Predicting GVSU Physician Assistant Student Success *Sara Smith*
Kirkhof Center 2270	Betweenness of Sets *Geoff Patterson*

12:00 P.M.

Kirkhof Center 2250AB	Maternal Images and Lovers' Qualms as Depicted by Hugo Wolf in his Spanisches Liederbuch *Theresa Zapata*
Kirkhof Center 2250D	Determination of the Function of the Gene N-Twist on Neural Progenitor Differentiation in the Developing Spinal Cord *William Johnson*
Kirkhof Center 2250EF	Temperature Dependence of Positronium Decay Rates in Gases *Jonathan Reinhard*
Kirkhof Center 2263	The Paradox of Prompts: A Reading and Discussion *Alexandra Fluegel*
Kirkhof Center 2269	Comparing Two Scales of Perfectionism from a Developmental Perspective: A Statistical Consulting Experience *Christopher Karsten*

12:20 P.M.

Kirkhof Center 2201	Studying Potential Drug Interactions in the Regulation of the Diaphanous-related Formins *Brittany Benson*
Kirkhof Center 2250AB	Grapes and Groundstone: Reconstructing the Economy of a Middle Bronze Age Site in Southeastern Turkey *Diana Klein*
Kirkhof Center 2250C	The Metamorphosis of Orpheus *Michelle LeMieux*

Oral Presentations

8:00 A.M.—4:00 P.M.

12:20 P.M. CONTINUED

Kirkhof Center 2250D	Body Work: Limbs, Loves, and Other Extensions *Michelle Potgeter*
Kirkhof Center 2250EF	Friendships: A Graph Theory Relationship *Nam Vo, Jacob Dunklee*
Kirkhof Center 2259	Consulting with a Purpose: Expanding Michigan's Wilderness with Sleeping Bear Dunes *Kathryn Schurr*
Kirkhof Center 2263	The True Character of Afranius, A Devil Incarnate *Lisa Crandall*
Kirkhof Center 2269	Beyond Eroticism: Women, Webcams, and the Public / Private Divide *Amy Kerns*
Kirkhof Center 2270	Great Lakes Extreme Ecosystems: A Look into Groundwater Vent Communities in Lake Huron *T. Garrison Sanders, Jr.*

12:40 P.M.

Kirkhof Center 2201	Laws of Heaven: A Mythopoetic Project *Jennifer Folkerth*
Kirkhof Center 2250AB	Redox Enzyme Activity Under Simulated Extreme Martian Conditions *Renee Bouley*
Kirkhof Center 2250C	Performers of Feminism: Liberating Women's Voices During the 2nd and 3rd Waves *Kait LaPorte*
Kirkhof Center 2250D	White Slavery in Early 20th Century Chicago: Progressive Reformers and their Subjects *Stefanie Manee*
Kirkhof Center 2250EF	Baseball at the Turn of the Century: Guiding American Men down the Right Base Path *Megan Shannahan*
Kirkhof Center 2259	The Marriage of Suzanne: Discourses on Women in Beaumarchais' The Marriage of Figaro *Rebecca Bolen*

12:40 P.M CONTINUED

Kirkhof Center 2263	Bulgakov's Lesson *Zachary Verwey*
Kirkhof Center 2269	A Statistical Consulting Encounter: An Analysis of GVSU General Education Theme Enrollments *Corina Lau*
Kirkhof Center 2270	I am Grand Valley: A Comprehensive Public Relations Campaign *Suzanne Cutway*

1:00 P.M.

Kirkhof Center 2201	Visualization of Secondary Structure Using Passive Stereoscopy *Jason Pell*
Kirkhof Center 2250AB	Considering Language Convergence in Ontario: An Examination of Variation in Hearst French *Ryan Rosso*
Kirkhof Center 2250C	Stage Directions in Sophocles' Antigone *April Conant*
Kirkhof Center 2250D	Aging in Place in Assisted Living *Rachel Wilmore*
Kirkhof Center 2250EF	Numerical Simulation of the Dynamics of Many-body Physical Systems *Benjamin Keen*
Kirkhof Center 2263	Bulgakov's Theory of History in Master and Margarita *Stephanie Moravec*
Kirkhof Center 2269	School of Choice and Diversity: A Mid-sized City Case Study *Megan Taliaferro*
Kirkhof Center 2270	Identification of the Met Phosphorylation Site Regulated by the Prostate Tumor Metastasis Suppressor Protein CD82 *Penny Berger*
Kirkhof Center 2259	A Trip with the Beast *Michelle Thomas*

Oral Presentations

8:00 A.M.—4:00 P.M.

1:20 P.M.

Kirkhof Center 2201	GPU-accelerated Fluid Dynamics *Dirk Hekhuis*
Kirkhof Center 2250AB	Merck's Ad5 Phase IIb HIV-1 Vaccine Clinical Trials: Conjectures on Failure *Philip Hellman*
Kirkhof Center 2250C	Urban Redevelopment and Migration into the City *Elizabeth McMurray*
Kirkhof Center 2250D	Roman Heavy Cavalry: A Misjudged Maneuver? *Matthew Ordowski*
Kirkhof Center 2250EF	Self-Reported Communication Variables and Dating Violence: Using Gottman's Marital Communication Conceptualization *Stacy Beebe*
Kirkhof Center 2259	Histology of Coronary Arteries; Foundations for Engineering Off the Shelf Vessels *Jamie Davis, Lisa Hyde*
Kirkhof Center 2263	Applications of Graph Theory to Social Networking on the Internet *Christopher Morris*
Kirkhof Center 2269	Microarray Analysis of CD82 Expression in Prostate Tumor Cell Lines *Vanitha Bhoopalan*
Kirkhof Center 2270	Facet Specific Determinates of Salary Satisfaction Among Physician Assistant Faculty *Christopher Davis, Joshua Thornhill, Sarah Thomson*

1:40 P.M.

Kirkhof Center 2201	Outsourcing Computation: GPU-Enhanced MATLAB *Stephen Paslaski*
Kirkhof Center 2250AB	Climate Change Effects on Water Resource Availability and Ensuing Social Conflicts in the Near East *Andrew Sisson*
Kirkhof Center 2250C	A Comparison of Treatment Modalities and Survival Rates Among Patients with Adenocarcinoma of the Pancreas and Patients with Other Pathologic Types of Pancreatic Cancer *Stacey Pniewski, Elizabeth Jacobs, Dana Pigorsh, Jennifer Caswell*

Oral Presentations

8:00 A.M.—4:00 P.M.

Kirkhof Center 2250D	An Analysis of Student Life Surveys: A Statistical Consulting Experience *Daniel Zimmerman*
Kirkhof Center 2259	Equal Circle Packing *Sandi Xhumari*
Kirkhof Center 2263	The Daughter of the Sun in Indo-European Mythology *Lauren Janicki*
Kirkhof Center 2269	Recreational Impacts on Ecosystem Processes: Potential Effects of Recreational Boat Traffic on Metabolism in the Little Susitna River, Alaska *Nicholas Ettema*
Kirkhof Center 2270	Mini-Kingdoms and Ivory Towers: A Critical Analysis of Higher Education in Modern Civil Society *David Martin*
	2:00 P.M.
Kirkhof Center 2201	Changes in Plant Canopy Structure in Response to Warming *Jeremy May*
Kirkhof Center 2250C	From Concept to Publication *Brianne Goodyear*
Kirkhof Center 2250D	Investigating Student Organization Involvement of On and Off Campus Students through a Statistical Consulting Experience *Sara Ramirez*
Kirkhof Center 2250EF	Genetics and the Indo-European Homeland Problem *Rachel Wilmore*
Kirkhof Center 2259	Types of Sacrifice in The Trickster of Seville and Don Juan Tenorio *Chris Vanderlip*
Kirkhof Center 2263	Residential Adaptive Management Plan Using the Principles of Permaculture *Kara Daniel*
Kirkhof Center 2269	A Qualitative Analysis of Physician Assistant Faculty Job Satisfaction *Jenny Hopp, Heather Schaap, Ken Almas*
Kirkhof Center 2270	Failed Men: The Postwar Crisis of Masculinity in France 1918-1930 *Brandon Moblo*

Oral Presentations

8:00 A.M.—4:00 P.M.

2:20 P.M.

Kirkhof Center 2201	Strategies to Improve Geographic Literacy in K12 Education Using GIS, GPS, and Multimedia *Laurel Walker, Kendell Joseph*
Kirkhof Center 2250AB	A Statistical Consulting Experience: Analyzing Student Opinions of the Structured Learning Assistance Program *Kaitlyn Ratkowiak*
Kirkhof Center 2250C	Rectangle Visibility Graphs *Clifford Taylor*
Kirkhof Center 2250D	Who Was David Weiser? *Megan Bolthouse*
Kirkhof Center 2263	The City of God Amid the Fourth Century Christian Revolution: *Timothy Flanders*
Kirkhof Center 2270	Assessing the Business Location of Siciliano's Market, Grand Rapids, MI *Maxwell Dillivan*

2:40 P.M.

Kirkhof Center 2250AB	The Effectiveness of Structured Learning Assistance with Introductory Math Courses at GVSU *Kelly Corwin*
Kirkhof Center 2250D	Staging Mann's Death in Venice *Lily Guerrero*
Kirkhof Center 2250EF	GVSU Ceramics & Michigan K-12 Collaborative Teaching Project *Meghan Kelly, Stephanie Voelck, Matt LaFleur, Stephanie Reahm, Nora Hipshear*
Kirkhof Center 2263	Pitch Pine and Oak Regeneration Success in Prescribed Fire Treatments at Camp Edwards, Bourne, MA *David Chambers*

3:00 P.M.

Kirkhof Center 2250D
Apollonian and Dionysian Characters in Works of Thomas Mann
Alison Reddick

Kirkhof Center 2259
A Comparison of the Change in Body Mass Index Between Patients who received a Total Hip Arthroplasty Versus a Total Knee Arthroplasty
Mercedes Liscomb, Kristina Oosterhouse, Alyssa Aubry

Kirkhof Center 2263
Using GIS to Optimize Plant Diversity and Habitat Suitability
Sarah Chartier, Martha Haglund, Kristina Venlet, Michael Haas, Michael Workman

Kirkhof Center 2269
Exploring Permanent Property
Tiffany Cross

3:20 P.M.

Kirkhof Center 2201
What's Better...Court or Arbitration? You Decide
Tomeia Floyd

Kirkhof Center 2250AB
Evaluating the Structured Learning Assistance Program: A Statistical Consulting Experience
Nicole Arradaza

Kirkhof Center 2250C
A Comparison of the Outcomes of Laparoscopic Versus Open Nissen Fundoplication
Allison Schultz, Laurin Slater, Elizabeth Lawrence

Kirkhof Center 2259
Cyber-Sexual Harassment: The Development of the Cyber-Sexual Experiences Questionnaire
Samantha Schenk

Kirkhof Center 2269
Social Science Texbook Representations of Evolutionary Theory
Benjamin Winegard

Kirkhof Center 2270
I Can Connect Nothing With Nothing: Stylistic Sterility in T.S. Eliot's "The Wasteland":
Maureen Di Virgilio

Film Presentations, Panels, and Demonstrations

9:00—2:00 P.M.

	9 A.M.
Kirkhof Center 2259	Spanish Poetry Panel *Jaime Malone*
	9—9:30 A.M.
Kirkhof Center Area 51	Clinical Laboratory Science Recruitment and Awareness *Josh Mireley, Falon Gray, and Rebecca McAuliffe*
	11—11:30 A.M.
Kirkhof Center Area 51	What Every Business Student Should Know About Industrial Security Firms *Joe Woods and Travis Cornwell*
	11:30 A.M.—12 P.M.
Kirkhof Center Area 51	Goal Setting: Setting Your Own Within An Organization *Malorie Obrecht and Justin Pitt*
	1—2 P.M.
Kirkhof Center *West Lawn*	Early Weapons Technology: The Atlatl - Precursor to the Bow and Arrow *Alexander Atkin*

Poster Presentations Abstracts

NOTES 8:00 A.M.—4:00 P.M.

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 1

The Importance of Culturing All Negative Specimens from the Rapid Strep A Antigen Screen

Presenter(s): Stephanie Smith, Sarah Brown

The Rapid Strep A Antigen Screen (RSAAS) is a test performed in hospital laboratories to screen for the presence of Group A Beta Hemolytic Strep (GABHS), the organism that causes strep throat. Because throat cultures are more sensitive than the screening tests, most hospitals perform a throat culture to verify all negative results. However, a local hospital has an orderable test that does not require the culture if the results of the screen are negative. Serious complications other than strep throat can arise in patients that are not treated for GABHS infections, so it is very important to confirm that the organism is not causing an infection. 100 specimens which had a negative result for the RSAAS will be obtained from the hospital and then cultured onto blood agar plates. If a significant number of false negatives occur for the RSAAS, we can provide evidence to the hospital that would substantiate a change in their protocol when dealing with negative RSAAS results.

Sponsor(s): Linda Goossen

HENRY HALL ATRIUM 2

Computational Study of Carbonmonoxymyoglobin

Presenter(s): James Marr

By using ultrafast spectroscopy to examine the frequency of carbon monoxide bound to myoglobin, timescales of the fluctuation in frequency over time can be generated. This reveals variations of the molecular environment as time changes. However, the fluctuations of frequency in time, obtained from experiments, cannot be directly linked to specific molecular dynamics in the protein. This can be overcome by using computer models of molecular dynamics coupled with quantum mechanical calculations, to computationally probe the frequency of the carbon monoxide. The simulation can then be used to calculate experimental observables, such as the infrared lineshape. Of the two conformations of the protein seen while running molecular dynamics, the lineshape generated for the main conformation was $4cm^{-1}$ and for the other conformation it was $5.5cm^{-1}$. If the experimental lineshape was decomposed to its main components, the width of the individual components would be about twice our results.

Sponsor(s): Christopher Lawrence

HENRY HALL ATRIUM 3

Factors Affecting Quality Sleep In Intensive Care Unit Patients and Nursing Implications

Presenter(s): Claire Bodtke, Alex Kolascz, Julie McLean, Erin Hasper, Celia Loef, Julie Walters

Statement of Problem: Many intensive care unit patients do not achieve quality sleep. Sleep is important for healing and immune function. High noise levels, pain, frequent interruptions, and environmental conditions such as temperature and uncomfortable beds are barriers to quality sleep. Significance of Problems: Without adequate sleep, a person's healing process while hospitalized in the intensive care unit may be adversely affected. Statement of Purpose: The purpose of our research is to find what factors most affect the quality of sleep, specifically for patients admitted to the intensive care unit, and to identify potential effective nursing interventions. Conceptual and Theoretical Underpinning: Middle-Range Theory of Unpleasant Symptoms. Methods: A review of the literature was conducted *via* CINAHL and PubMed using key terms (sleep quality, hospitalized patients, sleep disruptions, nursing interventions, complications). To be Determined: Summary of Findings; Implications.

Sponsor(s): Amy Hoffman, PhD, RN

HENRY HALL ATRIUM 4

Seasonal Cycle of Carbon in Muskegon Lake: Search for Driving Forces
Presenter(s): Angela Defore

Lakes are key players in the global carbon (C) cycle, and environmental variables can be important drivers of productivity. Since 2004, we have studied intra-annual primary production (P) respiration (R) and associated environmental variables to access seasonal changes of organic C cycling in Muskegon Lake. Discrete and continuous measurements were employed to detect changes in dissolved oxygen (DO) which can then be used to estimate P and R. Preliminary results suggest that in general Muskegon Lake produces more C than it consumes , explaining why it is a productive fishery ground. P was positively correlated with inorganic nutrients and light transparency, whereas R was positively correlated with temperature. Studies are underway to determine the use of field deployed sensors which take continuous measurements of DO to determine influence of seasons and associated environmental variables on C metabolism and identify conditions in which Muskegon Lake becomes a source or sink of C.

Sponsor(s): Bopi Biddanda

HENRY HALL ATRIUM 5

Target Inquiry: A Teacher Case Study
Presenter(s): Kristina Emery

Target Inquiry (TI) is an innovative, 2½ year professional development program that provides teachers with first-hand experience in science inquiry as well as inquiry instruction methods through participation in three core experiences: research experience for teachers (RET), materials adaptation, and action research. Data were collected throughout the program from various sources including interviews, journals, Inquiry Teaching Belief (ITB) Instrument, Science Teaching Efficacy Belief Instrument (STEBI), Reformed Teaching Observation Protocol (RTOP), and ACS Exams. Results show that the TI program impacts teachers' content knowledge, beliefs about science inquiry, self efficacy, outcome expectancy, and instructional practices. This poster is a single teacher's case study showing how the above beliefs and practices changed over the course of the TI program. It will also address implications for future professional development programs in regard to the TI program experience.

Sponsor(s): Deborah Herrington, Ellen Yezierski

HENRY HALL ATRIUM 6

Evaluation of Local Parks Using the Recreation Opportunity Spectrum with an Additional Education Factor
Presenter(s): Melissa Buzzard

We used the Recreation Opportunity Spectrum (ROS) to analyze local parks and determine if Van Zoeren Woods (VZW) offered unique recreation opportunities in the Zeeland area. Purchased by Zeeland Charter Township ten years ago, VZW is undeveloped and could be used for recreational and educational purposes. All state, county, and local parks and unimproved open spaces within an 8-mile radius of Van Zoeren were selected using ArcGIS 9.2. Thirty-four total properties were identified and analyzed based off the six ROS management factors plus an additional factor of education, whose ratings ranged from primitive to modern. Comparing the medians in each of the categories using the non-parametric chi-square, Van Zoeren Woods was found to be unique in its unimproved state. We made recommendations to the township to improve access and educational facilities at VZW.

Sponsor(s): Erik Nordman

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 7

Analysis of a Cyclic Peptide Library to Identify Proteins That Effect hilA Expression and Salmonella Invasion

Presenter(s): Julie Rosochacki

Salmonella enterica serovar Typhimurium is a gram-negative bacterium that produces a localized gastroenteritidis. For this disease to occur, Salmonella must recognize its environment and activate a 40 kb region of DNA known as Salmonella Pathogenicity Island 1 (SPI-1). These genes manipulate normal host cell function and facilitate the directed uptake of the bacteria into the host cell. The expression of SPI-1 is tightly regulated by various environment conditions and these signals are regulated through multiple pathways. The central regulator of SPI-1 is the transcriptional activator hilA. In collaboration with Brad Jones at the University of Iowa, we have acquired a plasmid library that produces random cyclic peptides. We are screening this library against a hilA::lacZY reporter in an effort to identify cyclic peptides that inhibit the activation of hilA. Once we have identified these inhibitors we will characterize the effects of these peptides on Salmonella invasion.

Sponsor(s): M. Aaron Baxter

HENRY HALL ATRIUM 8

A Nutrition Intervention to Improve Diet Quality of Meals Served to Homeless Men

Presenter(s): Marina Leybzun, Crystal White, Leah Mathewson, Xuan Dinh, Jason Dika, April Dutcher, Corinne Brown, Michael Kane, Brittany Lorenz

Nutrition inadequacy is one of the identified problems of homelessness. There are approximately 2,000 homeless men living in the Heartside neighborhood. Downtown Ministries, an organization initiated by GVSU students, requested assistance in improving the nutrient content of the meals served. The purpose of this research was to assess the diet quality of food served by Downtown Ministries in order to conduct a nutrition intervention. As a class project in conjunction with an ongoing GVSU research project, the preparation of Downtown Ministries meals were observed and recorded to obtain exact ingredients. Meals served to participating Heartside residents were collected and weighed to determine portion sizes. The nutrient content of meals served were then compared to the Dietary Reference Intakes to assess diet quality. An appropriate nutrition intervention to improve the diet quality served by Downtown Ministries is planned based upon the results of our findings.

Sponsor(s): Deborah Herrington, Ellen Yezierski

HENRY HALL ATRIUM 9

Capillary Electrophoretic Detection of Candida Albicans Fungi in Blood

Presenter(s): Ryan Nelson

In the past few decades, capillary electrophoresis (CE) has gained popularity in molecular analytical separations due to its inherent advantages over other chromatographic techniques. Recently, there has been increasing interest in applying this technique to the separation and analysis of colloidal particles including viruses, bacteria, and fungi, as there is a great need for a rapid assay of these microorganisms in various branches of the food, pharmaceutical, and medical industries. Numerous challenges still exist, however, in the development of a CE-based method for microbial analysis. The focus of this proposal is to develop rapid CE based technique for the detection of Candida albicans fungi in blood samples that alleviates these issues. Techniques including coating the cells with surfactants or polymers to produce a uniform surface charge, adding ionic run buffer additives to induce cellular aggregation, and stacking cells into a single compact zone for detection.

Sponsor(s): Erik Nordman

HENRY HALL ATRIUM 10

Sexual Differences in Parental Effort During the Nestling Period in Tree Swallows

Presenter(s): Bradley Houdek, Lisa Bol, Maegen Kish, Kyle Burgher

Parental effort (PE) influences the success of young in birds. Amongst experienced breeders, female Tree Swallows (*Tachycineta bicolor*) make more PE during the nestling period than do males. In 2008, we collected data on nestling feeding, nest sanitation, brood defense, and total time spent foraging for aerial insects at nests of first-time breeding female swallows that nested at GVSU. We hypothesized that first-time breeding females make more PE than do males. We observed PE at 16 nests during both the first and second half of the nestling period. There were significant differences between females and males during the second half of the nestling period but not the first. Female PE remained constant across the nestling period, but male PE significantly decreased from early to late nestling period. These results are consistent with the hypothesis that females make more PE than do males during the nestling period in Tree Swallows.

Sponsor(s): M. Aaron Baxter

HENRY HALL ATRIUM 11

Toward Construction of a Modular Raman Spectrometer for Solid, Aqueous, and 'Quasi-Liquid' Samples

Presenter(s): Steve Asiala

Raman spectroscopy has been proven to be an effective method for both qualitative and quantitative chemical analysis, making use of a molecule's vibrational modes. Raman spectroscopy's benefits include the relatively low cost of production of a working spectrometer and its capacity for analysis of aqueous samples. Our research group has constructed such a spectrometer, which can be modified to probe both solids and aqueous solutions. New modifications in the spectrometer's design, such as line-up optimization and changing the angle of incidence to Brewster's angle, are geared toward developing a method for tracking nitrates and sulfates in the quasi-liquid layer (QLL) at the ice/water interface.

Sponsor(s): Stephanie Schaertel

HENRY HALL ATRIUM 12

Performance on a Mirror-tracing Task as a Function of Brain Hemisphere Dominance

Presenter(s): Elle Gray

This study seeks to determine whether mid-brained people who function equally out of both brain hemispheres will perform better on a task that combines left-brained and right-brained activity than those who have one hemisphere of their brain dominant over the other. Data for this study will take the form of written questionnaire responses and scores from the mirror tracing task. Participants will first complete a brain hemisphere dominance questionnaire and then complete a timed mirror-tracing task. The researcher will score the questionnaire and mirror-tracing task and statistically analyze data in a between-subjects manner.

Sponsor(s): Bradley Ambrose, Edward Baum, Jim Scott

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 13

The Mineralogy of Material between Gypsum Nodules in the Mississippian Michigan Formation: Wyoming, Michigan

Presenter(s): Mallory Morell, Steve Holzworth, Kelvin Koster

Dark, fine grained material is found between gypsum nodules in the Mississippian Michigan Formation in an inactive mine in Wyoming, Michigan. This material could be comparable in composition to the shale or dolomite associated with the gypsum. Samples of gypsum containing this insoluble residue as well as shale and dolomite were collected from the mine. The gypsum was taken from various layers to see if nearby lithologies affect the composition of material between the nodules. These samples will be analyzed by x-ray diffraction and scanning electron microscopy to compare the mineralogy and morphology of the material to that of the shale and dolomite. The mineralogy of the material will indicate if it originated as detritus (clays) or a precipitate (dolomite). It may be that a relative freshening of seawater stopped the precipitation of gypsum while allowing clays to settle out of suspension or carbonate to precipitate and accumulate on the gypsum crystals.

HENRY HALL ATRIUM 14

A Novel Cu- and Amine-Free Sonogashira Cross-Coupling in the Alkynylation of 2'-Deoxyadenosine

Presenter(s): Brandon Haines

Methodology to prepare alkynylated 2'-deoxyadenosine derivatives at the C-6 position was developed through the Sonogashira cross-coupling reaction. Extensive optimization of a simple system was employed to provide the best conditions for reacting 6-bromo-2'-deoxyadenosine with various terminal alkynes. The CuI species used seemed to promote unwanted homocoupling of the aryl bromides during optimization. Cu-free and amine-free conditions were developed to eliminate the homocoupling and produce the desired alkynylated 2'-deoxyadenosine derivatives in good to moderate yields. Our results will be presented.

Sponsor(s): Felix Ngassa

HENRY HALL ATRIUM 15

Sensory Stimulation and Recovery Outcomes in Comatose Patients

Presenter(s): Jennifer Pietraz, Andrea Lachniet, Jordan McAskin, Nikki Hickens, Brooke Muzio, Amber Kortering

Each year two million people in the United States are affected by traumatic brain injury and many enter into a comatose state as a result of their injury. The toll of these injuries is emotionally, physically, and economically taxing to all parties involved. Being the primary caregivers to these patients, nurses must advocate for the best possible outcomes, which is congruent with the Florence Nightingale theory of nursing. This theory focuses on person, health, environment and care which help better the quality of life. The purpose of this study is to examine existing literature by searching CINHAL and MEDLINE databases using keywords such as coma, stimulation, and sensory in order to determine the effectiveness of such sensory stimulation programs. Research with comatose patients should focus on determining the most effective stimulation interventions so that nurses may advocate for structured stimulation programs and frequent assessment of patient progress.

Sponsor(s): Phyllis Gendler

HENRY HALL ATRIUM 16

Factors that Affect Egg Mass in Tree Swallows

Presenter(s): Kyle Burgher, Lisa Bol, Maegen Kish, Bradley Houdek

Environmental factors and female quality have been known to influence egg mass in Tree Swallows (*Tachycineta bicolor*). Egg mass is positively correlated with nestling weight at hatching and subsequent survival. In 2008, we noted the laying sequence and measured masses of eggs laid by swallows in their first breeding season on the GVSU campus. Weather data were recorded at a nearby weather station. Egg masses were not significantly influenced by environmental factors (e.g., air temperatures, average rainfall, and daily average wind speeds prior to laying). Laying order had a significant effect on egg mass: eggs 1-3 were significantly lighter than were eggs 4-6. These results suggest that first-time breeders, unlike more experienced swallows, did not respond to environmental factors by varying their investment in egg production.

Sponsor(s): Michael Lombardo

HENRY HALL ATRIUM 17

Determining Characteristics of Insoulable Residue in Mississippian Dolomite from a Gypsum Mine in Wyoming, Kent County, Michigan

Presenter(s): Kate Amrhein, Sara Bostelman, Sarah Dettloff

During the Mississippian Period the area around Michigan was covered by a shallow sea. When seawater evaporated in semi-enclosed regions, gypsum precipitated. The gypsum, along with shale and dolomite, is part of the Michigan Formation and is exposed in an inactive mine in Wyoming. The presence of dolomite suggests periodic freshening of seawater allowing carbonates to form. Clastic sediments, deposited concomitantly with carbonates, may help to uncover clues about the depositional environment. Dolomite samples were dissolved and the insoluble residues were x-rayed and studied using binocular and scanning electron microscopes (SEM) to determine mineralogy, grain size, and surface texture. The goal of this study is to analyze the clastic sediments in the layers of dolomite to determine if, based on clastic input, there were variations in the environment during accumulation of the dolomite. In addition, those analyses may give clues to the source of the clastic sediments.

Sponsor(s): M. Aaron Baxter

HENRY HALL ATRIUM 18

Preferred Method of Pain Control in Infants During Circumcision

Presenter(s): Alison Anzell, Meagan Pimm, Jill Hulka, Mark Brengel, Jesse Henderson

Problem Statement: Pain management interventions for infant circumcision do not always adequately control infant pain levels. Proper pain control is sometimes not deemed necessary for infants by health care professionals. Often pain cues from infants are not recognized during the circumcision process. Significance: Uncontrolled pain can lead to developmental delays and other physiological problems. Summary of Research: Research indicates that infants circumcised without the use of any analgesia had the highest pain score on the behavioral infant pain scales (such as the FLACC, RIPS, and PIPP scales). Compared with those using non-pharmacological methods alone, those that used analgesics as well as non-pharmacological methods experienced the greatest pain relief. Methods: CINAHL (keywords: circumcision, infant, pain management) and PubMed (keywords: neonate, pain, circumcision) will be searched. Implications: The results of this review can influence nursing practice.

Sponsor(s): Phyllis Gendler

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 19

Optimum Environment for Post-Operative Ambulation Following a Total Knee Replacement

Presenter(s): Jennifer DeVries, Lindsey Kosbab, Chasha Gaines, Alyson Marchal, Kathryn O'Brien, Mackenzie Goodell y

Early ambulation after total knee replacement is necessary; however, pain levels can increase the difficulty of this task. Neuman's System Model assists in understanding the problem as it explains how the nurse's goal should be to maintain the client system stability with positive patient-environment interaction. Early post-operative ambulation can decrease the use of patient-controlled analgesia, syncope experiences, and the incidence of deep vein thrombosis. Research has shown that the amount of pain a patient feels post-operatively can be reduced with pre-operative education, music, adequate sleep, intrathecal injections in place of general anesthesia and proper timing of pain medications. Nurses can prepare their patients pre-operatively about the post-operative experience and better manage the environment around ambulation. This research will search CINALL Plus and ProQuest Medical Library with key words ambulation, total knee replacement, post-operative, and environment.

Sponsor(s): Phyllis Gendler

HENRY HALL ATRIUM 20

A Comparison of Hologic Invader Technology to Digene Hybrid Capture 2 for the Detection of High-Risk Human Papillomavirus DNA in Cervical Specimens

Presenter(s): Molly Dobb

The Spectrum Health Molecular Diagnostics Laboratory currently uses the Digene Hybrid Capture 2 with a manual extraction process for the detection of high-risk HPV DNA from cervical specimens. A new method, Hologic Invader Technology, has recently become available and this new method is thought to have improved sensitivity and specificity, as well as a reduction in labor when coupled with an automated extraction procedure. This project is a validation study of Hologic Invader Technology for comparison to the current testing method, Digene Hybrid Capture, along with sample preparation automation. 400 -1000 de-identified cervical specimens submitted for routine testing during the course of the study will be used. The results of the two testing methods will be compared and discrepant values will be subject to further testing. Research will begin in February 2009 following IRB approval.

Sponsor(s): Linda Goossen

HENRY HALL ATRIUM 21

Deep Vein Thrombosis Prevention in Post-Operative Patients of All Ages

Presenter(s): Jessica Bickford, Jessica Werling, Natalie Grabowski, Amber Osborne, Kiera Brown, Dane Stahl

Problem Statement: Deep Vein Thrombosis (DVT) occurs in approximately 2 million Americans each year and can lead to significant health problems. According to Nightingale's nursing theory, creating a setting suitable for ambulation will help prevent DVT in post-operative patients. Significance of the Problem: DVTs develop most commonly in the legs. Potentially, these blood clots can dislodge and move throughout the body causing severe problems such as a pulmonary embolism. DVT is more common in women and pulmonary embolism is the leading cause of maternal death associated with childbirth Purpose: To evaluate the most effective ways to prevent DVT in post-operative patients. Methods: CINAHL and PubMed with keywords: Deep Vein Thrombosis, Prevention, Ambulation, Ted Hose will be searched. Results: Ambulation and Ted Hose have been used to prevent DVTs. Implications for Nursing: Since DVT is preventable; nurses need to determine the best evidence for providing appropriate care.

Sponsor(s): Phyllis Gendler

HENRY HALL ATRIUM 22

The Effect of Reminiscence Therapy on Elderly in Long Term Care

Presenter(s): Debra Jones

The purpose of this presentation is to discuss the effect of reminiscence therapy on elderly individuals in long-term care facilities. Reminiscence therapy (RT) is the process of looking back at past events, emotions and thoughts in order to improve emotional status of an elderly individual with a goal of adaptation and enhanced quality of life. From both national and international studies, RT has been shown to lessen depressive symptoms, improve mood, cognitive functioning, self-esteem and life satisfaction in the elderly. Due to the increasing number of elderly individuals, reminiscence therapy can be an important tool; however, there is a need for more standardized applications and protocol development. This poster presentation will describe RT and summarize its usefulness as an intervention for rural long term care elderly residents. Recommendations for future study will also be presented.

Sponsor(s): Gretchen Schumacher

HENRY HALL ATRIUM 23

Comparing the Effects of Individual and Group Exercise on Rate of Perceived Exertion and Performance

Presenter(s): Megan Carter, Lauren Fitch

The purpose of this experiment is to determine if an individual's performance and rate of perceived exertion (RPE) are affected by whether or not they exercise with a partner. Previous studies have examined the relationship between group exercise and performance, but other research has not used the specific variables that this study proposes to compare. The test will consist of two bike phases, one with a partner and one without. Each phase is divided into four-minute stages at three different intensities followed by a five minute cool down. Technicians will monitor participants' heart rate, self-determined revolutions per minute (RPM) and RPE . As the third phase, participants will take a survey to assess their workout habits, motivation and level of competitiveness. Data collected from each of the three phases will be compared to discover if one method is more effective than the other.

Sponsor(s): Edward Baum, Jim Scott, Bradley Ambrose

HENRY HALL ATRIUM 24

The Acute Effect of Testosterone on the Renal Vasculature

Presenter(s): Pranjali Dakwale

Endocrine cells in the kidney secrete specific hormones (e.g. aldosterone and erythropoietin) responsible for regulating electrolyte levels in body fluids, the rate of red blood cell formation, and the regulation of blood volume. By maintaining solute concentrations and blood volume, the kidney regulates blood pressure. Blood pressure is also controlled by dilation or constriction of blood vessels. It has been demonstrated that certain androgens, such as testosterone, induce dilation of blood vessels. If the acute effects of testosterone on the renal vasculature are determined, the potential impact on blood pressure regulation may be better understood. Therefore, this experiment is being conducted to determine the acute effects of testosterone on the renal and segmental arteries of the kidney. It is anticipated that testosterone will act as a vasodilator in both renal and segmental arteries when studied in vitro.

Sponsor(s): Francis Sylvester

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 25

A Picture Gallery of Microbial Mats from Lake Huron and Around the World

Presenter(s): Mimoza Grajqevci

Underwater explorations in Great Lakes have revealed hotspots where cyanobacterial microbial mats cover the lake floor bathed by high sulfate and low oxygen groundwater. Mats recovered from Lake Huron' s sinkholes showed the presence of diverse and abundant microbes and micrometazoa likely living in symbiosis with the microbes. These filamentous cyanobacteria can form brilliant purple, green or whitish mats, and perform different kinds of metabolism: oxygenic or anoxygenic photosynthesis or chemosynthesis. Microbial mats are also found in other parts of the world. In sulfate-rich lakes of Yellow Stone, Mexico, Switzerland and Antarctica, cyanobacteria and associated microbes form similar structures on the sediment surfaces. We constructed a picture gallery of microbial mats that includes aerial, diver and microscopic views. Finding similar microbial mat communities in different geographical locations raises interesting questions regarding their origins, mode of dispersal and roles.

Sponsor(s): Bopi Biddanda

HENRY HALL ATRIUM 26

Shelljoust: An Exploration of Computer Security

Presenter(s): Andrew Bellenir, Rich Martin, Nick Doorn, Joshua Hulst, Mike Lowis

We are currently developing shelljoust, a computer game that guides players through different levels of computer security. Under the guidance of a computer-controlled mentor, players will be presented with several hacking problems of increasing difficulty. Upon completion, this game will be usable by both computer science security classes and independent users to gain in-depth understanding of security or to simply enjoy a good challenge.

Sponsor(s): Jamal Alsabbagh

HENRY HALL ATRIUM 27

Target Inquiry: Can Professional Development Change Teachers' Beliefs and Instructional Practices?

Presenter(s): Karen Luxford

National and State science curriculum documents call for teacher use of inquiry-based instruction. A key factor that influences teachers' abilities to change their teaching practices is their beliefs. Target Inquiry (TI) is a research-based professional development program at Grand Valley State University designed to improve the quality and frequency of inquiry instruction by impacting teachers' beliefs about inquiry instruction. This poster examines how teachers' beliefs and classroom practices changed as a result of the first two TI program experiences, a research experience for teachers (RET) and inquiry materials development. Data from semi-structured interviews using the Inquiry Teaching Beliefs Instrument were read and analyzed to identify changes in teaching beliefs and instructional practices. Classroom observations using the Reformed Teaching Observation Protocol were also conducted to document changes in classroom practices. Findings will be presented.

Sponsor(s): Deborah Herrington, Ellen Yezierski

HENRY HALL ATRIUM 28

A Review of the Global Situation of Classical Phenylketonuria

Presenter(s): Andrea Steinbach

Phenylketonuria (PKU) is an autosomal recessive disorder with high blood phenylalanine; if untreated it causes mental retardation but if treated the patients can have normal IQ. In developed countries PKU screening/treatment has been applied for 75 years, resulting in normal IQ in almost all the patients. PKU is rare in some countries and prevalent in others. For PKU treatment to be sustainable it should be cost effective, which is correlated with the disease incidence. To see whether cost effectiveness and the PKU screening are correlated, we performed a literature review for the incidence of PKU and the presence of PKU screening in many countries and found no correlation between these two; PKU screening was performed in some countries with low, but not in others with high incidence. It is an ethical responsibility and a financial necessity for the WHO to empower the latter nations to start PKU screening programs for reducing the prevalence of mental retardation in their populations.

Sponsor(s): Noor Ghiasvand

HENRY HALL ATRIUM 29

Patient Controlled Analgesia Versus Patient Controlled Epidural Analgesia.

Presenter(s): Erin Williams, Jennifer Nezwek, Laura Lindstrom, Sara Kooiker, Elizabeth Semeyn

Problem Statement: Postoperative pain is not always well managed even though patient outcomes and satisfaction are improved by doing so. Pain management methods that are most effective for middle to older adult postoperative patients need to be identified. Significance of Problem: Pain can elicit different physiological responses in the body, which in turn can delay recovery from surgery and lead to additional post-surgical complications. Purpose Statement: The purpose of this investigation is to explore whether there is a difference in the amount of pain a patient is reporting while using patient controlled analgesia (PCA) as compared to patient controlled epidural analgesia (PCEA) infusion. Methods: Utilized literature review using peer-reviewed, double blinded, randomized controlled trials found using PubMed, CINAHL and Cochrane Library online databases. To Be Determined: Conceptual Underpinning, Summary of Research, and Implications

Sponsor(s): Amy Hoffman, PhD, RN

HENRY HALL ATRIUM 30

An Investigation of the Factors Contributing to Life Satisfaction in a Non-religious Sample

Presenter(s): Jim Kloet

While the relationship between life satisfaction and social support has been explored in religious persons, non-religious groups have been largely ignored. The present investigation aims to understand how perceived social support and confidence in one's philosophical/religious views contribute to life satisfaction scores in a large non-religious sample.

Sponsor(s): Luke Galen

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 31

A Comparison of Energy Healing Modalities

Presenter(s): Jennifer Taylor

The purpose of this poster is to illustrate a comparative review of energy healing modalities discovered through an independent study with Gayla Jewell PhD, RNC, NP in the fall semester of 2008. The explored energy modalities include Reiki, Qigong, Therapeutic Touch, and Healing Touch. The reviewed literature was primarily collected from the CINAHL and MEDLINE databases, whereby 23 studies were evaluated based on content, rigor, and applicability to nursing practice. Several congruent themes were identified that span across the modalities including peace/relaxation, centeredness, mixed results, quality of life, connection/community, and spiritual awareness. This poster is proposed to describe each energy modality, identify the relevant themes, and convey the value to nursing practice.

Sponsor(s): Noor Ghiasvand

HENRY HALL ATRIUM 32

Using Visual Supports to Promote the Play Skills of Young Children with Autism Spectrum Disorders

Presenter(s): Melissa Bach, Valerie Weber

This study implements a multicomponent intervention package of visual supports to facilitate play skills in 6 young children with ASD. Children will first be observed during baseline free play sessions with an age-appropriate dramatic play activity. Then training sessions will occur: participants will (1) view a visual play book on the computer that will verbally and pictorially describe the play activity, and (2) participate in training with an adult who will model, prompt and reinforce appropriate play steps as depicted in a series of visual cues. Participants will review the visual play book and will also have visual cues available to support them in completing steps in the dramatic play, but no verbal or physical prompts will be provided. Play behaviors and play language will be recorded throughout. When possible, probe sessions with typical peers and new materials will also occur to determine the generalized effects of the intervention on play skills and social interactions.

Sponsor(s): Jamie Owen-DeSchryver, Amy Matthews

HENRY HALL ATRIUM 33

An Analysis of Isolation by Distance Based on Microsatellite Loci in Polistes metricus

Presenter(s): Jessica Trahey

Polistes metricus is a primitively eusocial paper wasp found over a broad geographic range throughout the eastern United States. The wide range of environments in which *P. metricus* is found drives the question of how selection and limited gene flow may have acted to differentiate geographically distant populations. We examined genetic differentiation in *P. metricus* by genotyping over 450 samples at 12 highly polymorphic microsatellite DNA loci. Microsatellites are hyper-variable regions of tandemly repeated motifs, such as AAT or CAT. Five of the loci we used have been recently developed and shown to be linked to coding genes while the other 7 are not known to be linked to coding regions. We report the results of an analysis of isolation by distance which looks for genetic differentiation as a function of geographic distance.

Sponsor(s): Michael Henshaw

HENRY HALL ATRIUM 34

Pressure Ulcer Prevention In An Acute Setting: Identifying A Need For Change

Presenter(s): Amy Delaney

The rates of pressure ulcers (PU) acquired during an acute care hospitalization stay are increasing. A recent 2008 national survey published in the Journal of Wound Ostomy Continence Nursing (J WOCN) reports that thirty four states (N=17,260) had a 7% rate of inpatients acquiring a PU during their stay. New laws passed October 1, 2008 state facilities will no longer be reimbursed for PU developed while hospitalized. The purpose of this study was to examine and analyze data collected on an acute care surgical specialty unit consisting of 30 beds, obtained from quarterly reviews by a pressure ulcer prevention team. Data was collected using a retrospective chart review and a self developed collection tool. The data collected identified a need for change in regards to the current method of pressure ulcer prevention. Based on these results, future planning includes development of a pressure ulcer prevention protocol to be introduced to staff using Lewins Force Field as a guide.

Sponsor(s): Judith Corr

HENRY HALL ATRIUM 35

Positional Behavior in 3 Age Groups of Free Ranging Rhesus Macaques

Presenter(s): Marie-Angela Della Pia

Rhesus macaques *(Macaca mulatta)* display a variety of behaviors, many of which are related to how an individual moves and positions itself within the environment. Behavior in this context is referred to as positional behavior, and includes the locomotion and position preferences of an individual. This analysis will serve as a basis for further studies regarding various factors that may influence an individual's positional repertoire. This study is a re-analysis of 625 hours of observational data taken on 42 semi free-ranging adult rhesus macaques at The Caribbean Primate Research Center on Cayo Santiago Island, Puerto Rico, between July 1997 and August 1998. Subjects are divided into three age groups, Old, Middle, and Young, and by sex. By examining positional behaviors, such as sit, lie, and locomote (quadrapedal movement) in terms of frequency and duration, this study seeks to determine whether there are differences in positional behavior between the age groups and sexes.

Sponsor(s): Judith Corr

HENRY HALL ATRIUM 36

Effects of Previous Environment and Travel Patterns on Spatial Scaling

Presenter(s): Justin Persoon

Have you ever wondered why a place you deemed near seemed out of reach to your friend? A common folk theory about spatial scaling is that the environment of origin (EO) one grows up in, determines one's future perception of distance and scale. This study empirically tested whether or not the scale of, or habitual movement patterns within, the (EO) might influence later perceptions of spatial scale within the new university environment (UE). Incoming freshman (N=118) were tested in the first month of their fall semester. All particpants completed surveys regarding past and present environments and movement patterns within those environments. In one condition (n=35) participants judged pairs of locations as near or far. In another (n=34), participants were asked to retrace their movements on 2 weekdays and 2 weekend days. Preliminary findings suggest that past movement patterns influenced spatial scaling and movement patterns within UE.

Sponsor(s): Penney Nichols-Whitehead

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 37

Synthesis of Piperazine-Based ∝-Helix Peptidomimetics for the Disruption of the HIV-1 Rev-RRE RNA Interaction

Presenter(s): Shannon Murphy, Sarah Wood

The goal of this research is to disrupt protein-RNA interactions with small molecule a-helix peptidomimetics. The interaction we are targeting is the a-helical REV peptide binding to the major groove of HIV-1 RRE-RNA. This molecular recognition event is fostered by electrostatic interactions between lysine and arginine side chains on the REV peptide and the RRE-RNA backbone. This binding event is a crucial component in the HIV viral life cycle; disruption could stop the progression of HIV. We plan to synthesize different scaffold structures including: triazoles, ditriazoles, triamines, piperazines and diketopiperazines and test their ability to bind to the RNA helix. This can offer insight to our current knowledge of a-helix-RNA interactions and hopefully help pharmaceutical companies design drugs that will cure RNA targeted diseases.

Sponsor(s): Shannon Biros

HENRY HALL ATRIUM 38

Orientation Strategies of Crayfish when Incurring Damage to their Olfactory Chemoreceptors

Presenter(s): Fatema Husaini

Among the sensory systems that organisms have evolved, the chemical senses (olfaction and taste) are important sources of ecological information for terrestrial and aquatic organisms. Crayfish are found in environments where visual communication is limited by turbidity of rivers and streams. Conditions in rivers favor animals with well-adapted olfactory systems that compensate for the decreased light transmission. Crayfish use olfactory appendages (antennules) as important collectors of information in these environments. Unfortunately theses appendages are commonly damaged in nature by predators or in combat with other crayfish, which limits olfactory information and consequently negatively impacts their search strategies. We examined how crayfish adapt when their olfactory systems are challenged. This study tested how lesioning the chemoreceptors on crayfish antennules affected their ability to locate an odor source.

Sponsor(s): Daniel Bergman

HENRY HALL ATRIUM 39

How Do the Stressors of Pain and Noise Affect the Patient Healing Process?

Presenter(s): Danielle Dobbs, Linzy Duvall, Amber Uhlenbrauck, Daniel Vandenberg, Anna Dawson

Statement of Problem: Exposure to unnecessary pain and noise appears to be an issue in the healing process for medical-surgical patients. Unresolved pain and excess noise may result in restlessness, agitation, and lack of sleep which may impede the healing process. Significance of Problem: Exposure to stressors in the medical-surgical unit may affect a patient's ability to heal and may lead to prolonged hospitalization, increased health care costs, decreased patient satisfaction, and have an adverse effect on their physical and emotional well-being. Statement of Purpose: The purpose of this study is to explore how the stressors of unresolved pain and excess noise affect the process of healing in medical-surgical patients. Methods: A review of the literature using terms and key words (i.e., pain, noise, healing) via CINAHL, PubMed, ProQuest, and Medical Library. To Be Determined: Conceptual Underpinning; Summary of Research; and Implications

Sponsor(s): Amy Hoffman, PhD, RN

HENRY HALL ATRIUM 40

Periodization for a 400 Meter Collegiate Sprinter

Presenter(s): Christine Hartnett, Katie Folkema

The final and most inspiring race at all track and field competitions is the 400 by 400 meter relay primarily due to its complexity in distance and the caliber of athlete that it takes to run this race perfectly. There are many aspiring runners but becoming a successful relay runner involves a high degree of muscular endurance, power and strength to support the speed that is needed to be competitive in the 400 meter dash. The purpose of this study was to create a comprehensive periodization training program for a collegiate 400 meter sprinter. The methodology used in this research investigated the importance and manipulation of proper nutrition, resistance and endurance training. Limitations that are included in this area are inadequate number of previous studies specific to 400 meters and the large amount of variation in coaching techniques. This research will positively impact sprinters and coaches by fully preparing them in all aspects to create a successful collegiate athlete.

Sponsor(s): Amy Crawley

HENRY HALL ATRIUM 41

Chemical Warfare Agent Recognition and Quantification

Presenter(s): Benjamin Eggleston

Terrorism and war are becoming greater threats in the world today. This research is focused on constructing a chemical warfare sensor system which can be used quickly and inexpensively. Electrochemical Impedance Spectroscopy (EIS) is used for the detection and quantification of specific chemical warfare agents. EIS is a measure of electrochemical aspects of physicochemical systems over a wide range of frequencies of applied electrical potential. The physicochemical systems our research explores include chemical warfare agent simulants of Sarin and Soman. A potential is applied over a range of frequencies across a doped polyaniline sensor and the resulting current response varies based on a number of physicochemical properties of the system. We can then identify and quantify compounds that have partitioned into the polyaniline matrix. With increasing fears of terrorist attacks, rapid and reliable chemical warfare agent detection and quantification is a timely research direction.

Sponsor(s): Cory DiCarlo

HENRY HALL ATRIUM 42

Sleep Quality Study with Web-based Survey Methodology

Presenter(s): Susan Eadelman

Over the last few decades, caring for an individual with a severe and persistent mental illness has moved from the institution to the home. Caring for an individual at home can be physically, emotionally, socially, and financially stressful. Inadequate sleep will affect functioning in all these areas. A good amount of research identifies sleep disturbances as a common stressor for caregivers of individuals with Parkinson's, Alzheimer's, cancer, chronic illness, and autism to name a few. To date there is no research focusing on sleep quality for caregivers of individuals with a severe mental illness. This population is the focus of a study in progress that will use a web-based questionnaire. Review of literature pertaining to caregivers and sleep, an outline of the study plans, and a discussion of benefits and limitations to web-based survey methodology will be presented.

Sponsor(s): Andrea Bostrom

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 43

Paleomagnetism of the Michigan Formation (Mississippian) from a Gypsum Mine: Wyoming, Michigan

Presenter(s): Christine Barszewski, Catherine Carlisle, Benjamin Matzke

In order to decipher Earth history and reconstruct paleo-plate positions, determination of paleolatitude is critical. Fortunately, remanent magnetization in minerals can reveal the latitude at the time of deposition of the sediments in the rocks. By studying paleomagnetism of the Mississippian rocks in Wyoming, Michigan, we hope to infer the latitude when they originally formed. Oriented shale, dolomite and gypsum samples from the Michigan Formation were collected from an inactive mine in order to determine the direction and intensity of the magnetic field when the rocks were deposited. A spinner magnetometer was used to find the paleoinclination and declination from which a paleolatitude can be calculated. Paleomagnetic analyses should produce results that support the literature, which suggests that Michigan was located at a low latitude during the Mississippian period.

Sponsor(s): Patricia Videtich, Patrick Colgan

HENRY HALL ATRIUM 44

An Investigation of Correlation Between Tree Ring Indices and Climate in Allegan County

Presenter(s): Ashley Meyer

My objective was to see if tree-ring widths of oaks, near Hamilton, Michigan could be correlated to summer precipitation or temperature. A correlation would imply tree-rings could be used to reconstruct climate in years without records. Eight cores were taken in the Hamilton East Quadrangle in Allegan County from oaks on end moraines. Ring widths were measured to the nearest 0.001 mm by scanning cores on a flat-bed scanner and measuring them in a graphics program. A best-fit line was fit to the ring-width data and tree-ring indices were calculated to correct for natural slowing of ring growth with time. Indices were calculated by dividing the measured value by the value predicted by the best-fit line. Excel was used to create graphs that compared indices to June, July, August temperature and precipitation form 1920 to 2008. It was found that ring-width did not correlate to summer precipitation or temperatures. The oaks may not be sensitive to drought in fine grained glacial soils.

Sponsor(s): Patrick Colgan

HENRY HALL ATRIUM 45

Bacterial Analysis of Michigan Cherry Wines

Presenter(s): Emily Henk

The process of winemaking utilizes a number of microorganisms to enhance the quality and final flavor of wine. Some of the major microorganisms are lactic acid bacteria (LAB) and acetic acid bacteria (AAB). Since most wines are made with grapes, the typical flora of grape wine is well established, but the flora of cherry wine is unknown. The goal of this study is to identify the species of bacteria in cherry wine. Bacteria from cherry wine were grown on media plates. We used PCR to isolate a specific variable region of the 16S ribosomal RNA gene, a region that differentiates between different bacteria. These PCR products were purified, quantified and sent to be sequenced. The sequences will be entered into an online database where the genera of the bacteria can be determined. Some preliminary results show that Acetobacter, a genus of AAB, are present in the flora of cherry wines. Additional identification tests will include catalase testing, Gram staining and colony shape analysis.

Sponsor(s): Margaret Dietrich

HENRY HALL ATRIUM 46

Climate Change and Deforestation in Southeast Asia

Presenter(s): Rebecca Brittain

Deforestation has contributed to climate change by altering the landscape, reducing the carbon sink, and increasing the GHG emissions from decaying vegetation. Moreover, climate change also has many impacts on forests through elevated CO2 levels, increased temperatures, and changing precipitation patterns. Tropical rainforests have experienced accelerating rates of deforestation and are likely to continue to be impacted by climate changes. The goal of this research is to explore a number of positive feedback relationships between climate change and deforestation in SE Asia. We will use historical climate records from the National Center for Atmospheric Research and climate change scenarios generated by Atmosphere Ocean General Circulation Models and MAGICC-SCENGEN software in order to explore the impact of increasing CO2 levels and temperature and precipitation changes in Southeast Asia. We will also investigate the role of deforestation as one the major drivers of climate change.

Sponsor(s): Elena Lioubimtseva

HENRY HALL ATRIUM 47

Play Behavior in Three Sympatric Species: Mantled Howler Monkeys (Alouatta palliata), White-Faced Monkeys (Cebus capucinus), and Black-Handed Spider Monkeys (Ateles geoffroyi)

Presenter(s): Rebecca Brittain

For many mammals and especially for primates, play behavior is crucial in developing fundamental social skills and for improving motor skills. This study explored differences in the levels of conspecific play between the three sympatric subject species, with differing dispersal patterns and feeding ecologies: mantled howler monkeys (*Alouatta palliata)*, white-faced capuchin monkeys (*Cebus capucinus*), and black-handed spider monkeys (*Ateles geoffroyi*). Contextual data of play at the troop level was examined and analyzed, as were the differences between age classes and the amount of play observed. To address these variables, behavioral observations were collected using instantaneous focal sampling at one-minute intervals, for a collective total of 50.07 observational hours on the three species combined. All observations were carried out at El Zota Biological Field Station and Puerto Viejo, Costa Rica

Sponsor(s): Judith Corr

HENRY HALL ATRIUM 48

Geographic Information System (GIS) Mapping of Tobago for Geologic Research in Trinidad and Tobago, West Indies

Presenter(s): Anthony Rodriguez

In this study, I will be using a Geographic Information System (GIS) to create a digitized map of the island of Tobago, which is one of the twin islands that make up the nation of Trinidad and Tobago, West Indies. I intend to convert a geologic map of Tobago into digital format for the purpose of georeferencing it onto ArcGIS 9.3 to establish its location in terms of coordinate systems. Layers will be created and applied to this digital map as well in order to incorporate geological units, elevation, and other layers of significance. This finalized GIS map of Tobago will be used for future geologic research on the island of Tobago.

Sponsor(s): Peter Wampler

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 49

Periodized Strength and Conditioning Program for Competitive Indoor Climbing

Presenter(s): Brooke Derouin, Amber Leonard

There have been many challenging extreme sports, but nothing could be as physically and mentally challenging as rock climbing. Rock climbing tests stamina, patience, skill, and willpower. The purpose of this research was to devise a strength and conditioning program for an intermediate indoor rock climber who was preparing for a speed climbing competition. Competitive climbing is a relatively new sport and currently has limited amounts of research available. As the popularity of this sport continues to grow at such a rapid rate, there is a need for safe and effective periodized strength and conditioning programs that encompass both mind and body training. This periodized training program focused on the basic strength related to the movement patterns of climbing and attempted to help delay fatigue and reduce injury. Although this research is currently untested, successful completion of this program should result in peak performance prior to competition.

Sponsor(s): Amy Crawley

HENRY HALL ATRIUM 50

Religious Fundamentalism and Misfortune: Evidence for the Just World Belief

Presenter(s): Greggory Hampshire

One common belief is that the world operates in a just fashion; negative events only happen to bad people. This Belief in a Just World (BJW) skews individuals assessment of blame. Religious fundamentalists (RF) may endorse a stronger BJW as they believe that a supernatural power such as God constitutes the distributive mechanism of justice. In the present study, students were categorized into the top (HF) and bottom (LF) 25% of fundamentalism. Participants read three scenarios in separate domains (economic, medical, and personal) with differing outcomes (good, bad). Afterwards, participants made attributions for the outcomes, first in open-ended responses, then from a list of choices (e.g., God, fate, own actions). Participants low in RF held targets to be less deserving of a bad outcome than a good one; the HF group believed the target was more deserving of a bad outcome. Religious fundamentalism is related to attributing greater deservingness of outcomes (i.e., a stronger BJW).

Sponsor(s): Luke Galen

HENRY HALL ATRIUM 51

Global Positioning System (GPS) Determination of Motions, Neotectonics, and Seismic Risk in Trinidad and Tobago

Presenter(s): Anthony Rodriguez

In this study, I will be using a Geographic Information System (GIS) to create a digitized map of the island of Tobago, which is one of the twin islands that make up the nation of Trinidad and Tobago, West Indies. I intend to convert a geologic map of Tobago into digital format for the purpose of georeferencing it onto ArcGIS 9.3 to establish its location in terms of coordinate systems. Layers will be created and applied to this digital map as well in order to incorporate geological units, elevation, and other layers of significance. This finalized GIS map of Tobago will be used for future geologic research on the island of Tobago.

Sponsor(s): John Weber

HENRY HALL ATRIUM 52

Control of Hdc Expression: Initial Results from Reporter-gene Fusion Studies

Presenter(s): Elise Miller

Histamine is a biogenic amine used as a neurotransmitter by photoreceptors and central histaminergic neurons. Histidine decarboxylase (HDC) is the enzyme that synthesizes histamine, using histidine as a substrate. We seek to understand how tissue- and developmental-specific expression of Hdc is controlled. The genomic region containing the Hdc promoter was fused to eGFP (enhanced Green Fluorescent Protein) to determine if this promoter control region is sufficient for normal Hdc expression. A 4.3 kb genomic Xho1-Nco1 fragment was fused to the enhanced green fluorescent protein (eGFP) in the pGreen Pelican transformation vector. Initial analysis of the pHdc-eGFP transformant flies using fluorecence microscopy determined that the pattern of eGFP expression appeared to be similar (but incomplete) to that expected for Hdc. The results suggest that the 4.3 kb 5' portion of the Hdc locus may be sufficient to direct expression in some, but not all tissues that express the Hdc gene.

Sponsor(s): Martin Burg

HENRY HALL ATRIUM 53

Production and Consumption Rhythm in Muskegon Lake: Trends through the Years

Presenter(s): Maggie Weinert

Recent studies of the global carbon cycle have implicated lakes as important sites where land-derived as well as in-lake produced carbon are actively processed. That is, inland waters such as lakes are not just passive conduits between land and the oceans. By looking at inter-annual changes in dissolved oxygen within the water column the amount of carbon being photosynthesized and respired can be estimated. Beginning in 2004, Muskegon Lake has been part of a long-term study of the Production (P) and Respiration (R). Muskegon Lake is a drowned river mouth lake directly connected to one of the Great Lakes, and supports one of the most productive fisheries within the Lake Michigan basin. This poster will examine the inter-annual trends in Gross Primary P and R from 2004-2008. Preliminary results demonstrate seasonal increases in both P and R during the growing season (spring-summer-fall), and a tendency for increasing P rates in recent years.

Sponsor(s): Bopi Biddanda

HENRY HALL ATRIUM 54

The Implications of the 2006 Canadian National Census on Ontario's Population and Linguistic Landscapes

Presenter(s): Erin Murphy, Lamia Ghannam, Daniel McCulfor, Colleen Kerr, Rebecca Birman, Theresann Pyrett, Nikolas Goodrich, Alexis Alt, Anne Marie Carson, Kim Hurkmans, Alexis Alt

The francophone communities of Northern Ontario have been thoroughly impacted by the dominance of the English language. Given population decline observed over at least the past twenty years which is particularly evident in census data for 2001, much question remains as to the status of the French language throughout the area. Recently, population and language data from the Canadian National Census for 2006 have become available. By analyzing official data from this census and by comparing it to data from 2001 and 1996, we will first investigate whether a decline in population has continued across the region, and then attempt to establish a correlation between general population changes and the status of French. Once we have determined what demographic changes have occurred (if any) in Northern Ontario, we will be in a position to assess the impact that this demographic situation has had on the maintenance of French.

Sponsor(s): Daniel Golembeski

HENRY HALL ATRIUM 55

Reproductive Responses of Arctic Plants to Temperature Variation

Presenter(s): Robert Slider

The Arctic has seen a marked rise in temperature over the past decade and recent climate studies have indicated that warming is likely to continue at a rapid pace. Studies have been conducted examining the responses of tundra plants to experimental warming in an effort to forecast the impacts of climate change on plant communities. Results have indicated that responses vary greatly by species. To further examine these findings this study looked at the responses of plants to natural temperature variation. When mean Thawing Degree Days from Snowmelt (TDDsm) were compared to mean date of flower burst in 32 species, linear relationships were established with a resulting r2 range of 0.00-0.96. Linear regressions were also run comparing mean TDDsm with inflorescence height for 34 species, yielding an r2 range of 0.00-0.82. Findings support those of previous studies; suggesting that temperature may correlate strongly with reproductive effort in some Arctic plants, but not with others.

Sponsor(s): Robert Hollister

HENRY HALL ATRIUM 56

Evidence Based Practice Guidelines to Reduce Lifestyle Risk Factors in Pregnant Women

Presenter(s): Lindsey Kitti

Literature indicates that registered nurses have an integral role in caring for women during pregnancy. The purpose of this study was to conduct a literature review of research articles related to the care of women in order to establish evidence based practice guidelines to reduce lifestyle risk factors that may contribute to complications in pregnancy for the woman or the baby. Existing data from CINAHL and PubMed were used to identify the modifiable lifestyle factors which can reduce pregnancy risks. These databases incorporate nursing based research into the literature. A critical appraisal of relevant articles was performed to determine the quality and validity of the obtained data. Nursing interventions obtained through the gathering of empirical evidence will be developed into a policy/protocol used by RNs caring for pregnant women.Desired outcomes are healthy mother and baby. Expected study findings have implications for staff nurses, advanced practice nurses, and nursing educators.

Sponsor(s): Joy Washburn

HENRY HALL ATRIUM 57

Using Corridor Designer to Model Wildlife Corridors for African Elephants in Kenya

Presenter(s): Anne Santa Maria, Elizabeth McMurray

Habitat fragmentation is increasingly common, especially for the African elephant in Kenya, where anthropogenic stressors such as urban sprawl and expanding agriculture have divided its once extensive habitat into fragmented islands, a phenomenon also known as island biogeography. To combat this problem, wildlife corridors are used. A wildlife corridor is a continuous swath of land expected to be the best route for one species to travel from a potential population core in one wildland block to a potential population core in another wildland block. In the case of the African elephant, the wildlife blocks in question are usually protected areas within the country that are deemed the most suitable habitat. We used CorridorDesigner, in ArcGIS 9.3 to create and evaluate theoretical wildlife corridors. We connected the fragmented islands with theoretical wildlife corridors in hope of sustaining the African elephant population in Kenya.

Sponsor(s): Wanxiao Sun

HENRY HALL ATRIUM 58

Transfer of Image Reversal from Dancing to Mirror Tracing

Presenter(s): Trevor Essique, Hanna Partlo, Cameron Groenewoud

The purpose of this study was to see if a relationship exists between dancing in front of a mirror and performing the mirror tracing test. First, the participants were administered a participant survey. Following the survey, each subject took a mirror tracing test. Participants in this study were female Grand Valley State University students with and without dancing experience. Data was evaluated using statistical analysis.

Sponsor(s): Jim Scott, Edward Baum, Bradley Ambrose

HENRY HALL ATRIUM 59

The Impact of Nursing Fatigue on Clinical Decision Making

Presenter(s): Katie Dyball

While there are few definitive studies regarding nursing fatigue and clinical decision making, fatigue-related errors have been well documented in other occupations, such as truck drivers and flight crews. These studies have shown that the effects of fatigue on performance are manifested in impaired cognitive and psychomotor skills. Judgment, problem solving, accuracy, concentration, and alertness are just a few of the many skills negatively impacted. Nurses are not immune to these effects. Considering that many nurses work the night shift, are forced into mandatory overtime, and/or work twelve hours at a time, it is not a surprise that fatigue plays such a significant role in patient safety. This presentation looks to explore nursing fatigue, work schedules, and decision making in nursing.

Sponsor(s): Linda Scott

HENRY HALL ATRIUM 60

Successful Breastfeeding and the Role of Infant Dietary Supplementation

Presenter(s): Katelynn Dodd, Julie Kenyon, Tyler Loveless, Tammy Kool, Donald Wolf, Michelle Spring

Statement of Problem: Hospital policies hinder nurses from supporting dietary supplementation to newborns unless medically necessary. Often newborns lay awake crying due to unmet nutrient needs during the 72 hour period before production of milk. Dorothea Orem's framework is useful as a self care theory to understand the needs of mothers and their infants. Significance of Problem: New mothers are often frustrated with their infant's unmet demands which undermine their maternal confidence and breastfeeding success. Summary of Research: Women who discontinued breastfeeding within the first 4 weeks stated that perceived inadequate milk supply was the main reason. Dietary supplementation is often disadvantageous and is an indicator of unsuccessful breastfeeding. CINHAL and PubMed will be searched using terms: breastfeeding, weight loss, neonate, supplementation. Implications: Nurses should implement the most appropriate approach to neonatal dietary supplementation during breastfeeding.

Sponsor(s): Phyllis Gendler

HENRY HALL ATRIUM 61

The Effect of Various Colors on Human Reaction Time

Presenter(s): Andrea Mitchell, Carolyn Callery

Does the color of a light affect how fast you can react to it? The purpose of this experiment is to determine whether or not humans react faster to red, yellow, green, blue or purple. The experiment will be conducted using a program on

a laptop that shows a white screen and displays colored boxes in the center of the screen at random times. Subjects will be asked to react as quickly as possible to the colored box. The reaction times for each color will be compared to determine if color has a significant effect on reaction time. We hypothesize that the subjects will react to colors with shorter wavelengths, such as blue and purple, faster because of the increased energy levels in these wavelengths. If the brain perceives some colors faster than others, this knowledge can be applied to many areas in every day life (emergency signals, object that are easily lost, etc.).

Sponsor(s): Bradley Ambrose, Jim Scott, Edward Baum

HENRY HALL ATRIUM 62

Effectiveness of Acupuncture in the Treatment of Pain in the Fibromyalgia Patient

Presenter(s): Katelyn Nelson, Jackie Murphy, Allison Ogrodzinski, Sarah Blair, Dan Gritters, Sally Esman

Fibromyalgia patients with ineffective pain management experience interference with activities of daily living and emotional well-being. Fibromyalgia is a debilitating disease affecting six million Americans. On average it costs $12,000 per year to treat. There is no known successful treatment for fibromyalgia; therefore, it is important to seek alternative pain management. Orem's Self-Care Model is helpful in understanding these partients' needs. Research suggests that acupuncture is effective in many patients with fibromyalgia, primarily on a short-term basis. Medical databases with key words acupuncture, fibromyalgia pain, alternative pain treatment, and fibromyalgia will be searched. Research would inform nursing practice as to how to assist patients dealing with unmanaged fibromyalgia pain.

Sponsor(s): Phyllis Gendler

HENRY HALL ATRIUM 63

How Wide is that Peak? Progress Towards Measuring Line Broadening Coefficients in Infrared Spectroscopy with Small Gas Phase Molecules.

Presenter(s): Trevor Lott, Todd Major

Spectral line broadening is the widening of spectral lines as a function of local conditions around gas phase molecules. The two main contributors to line broadening are Doppler broadening, which results from molecular motion towards and away from the light source, and pressure broadening, which results from molecular collisions. Pressure broadening line widths provide valuable information about the forces between molecules during collisions. We report progress towards the measurement of pressure broadening coefficients of carbon dioxide and carbon monoxide. The technique we use is wavelength modulation spectroscopy using an infrared laser at 1.6 microns, an absorption cell, and a balanced detector.

Sponsor(s): George McBane, Stephanie Schaertel

HENRY HALL ATRIUM 64

Progress Towards the Synthesis of a Novel Indane Derivative as a Regulator of TAAR Activity

Presenter(s): Kevin Maupin

3-iodothyronamine, T1AM, is a bioactive metabolite of the thyroid hormones, thyroxine, T4, and 3,5,3 -triiodothyroxine, T3. Research has shown that T1AM is a potent activator of the Trace Amine Associated Receptor, TAAR1. Physiologically, T1AM rapidly induces responses in opposition to those seen by T3 and T4. Several potent agonists have been identified. However, reported antagonists have been modest at best. Previous research in our lab has shown

an interesting regulatory pattern for TAAR1. R-Apomorphine exhibited dose-dependant activation of TAAR1, while S-Apomorphine exhibited inhibition. The synthesis of novel indane derivatives, described herein, share homology with T1AM and apomorphine. These compounds allow us to control stereocenters and the overall conformation of the ethyl amine portion which we believe are related to the exhibited regulation of TAAR1. Development of these compounds could lead to a better understanding of TAAR1 role in biology and may have medicinal value.

Sponsor(s): Matthew Hart

HENRY HALL ATRIUM 65

Investigating Lean Methods in Various Hospitals

Presenter(s): Sarah Bradley

In completing my senior thesis, I have obtained primary-source information on how the Lean method is used in healthcare to provide cost effective and quality care for the patient. This data was collected with the use of a questionnaire during an interview process with healthcare professionals. The Lean method was originally implemented in automobile manufacturing and has primarily been used in that industry ever since. It emphasizes eliminating waste, lowering costs, and improving efficiency. New movements in health care are suggesting use of the Lean system to ensure quality and affordable care for patients. The rising cost of health care is an ongoing problem within the United States. Organizations, insurance companies, federal programs, and individuals all struggle to keep up with these increasing costs. As the Lean methods become more popular in the health care sector, it is important to investigate their use and effectiveness in hospitals.

Sponsor(s): Jane Toot

HENRY HALL ATRIUM 66

Nest Site Characteristics and Reproductive Success in Tree Swallows

Presenter(s): Melissa Bobowski

If nest site characteristics impart benefits to Tree Swallows (*Tachyncineta bicolor*), then individuals should prefer nest sites that have features that have a positive influence on reproductive success. Literature on Tree Swallows nesting in both artificial and natural nest sites showed a common trend in the qualities of sites that are regularly used; swallows preferred nests that were away from wooded areas and faced south-southeast. I used data collected from Tree Swallows nesting in nest boxes from 1996-2005 at GVSU to examine the small-scale geographic patterns of nest site use and reproductive success using Geographic Information System (GIS) and spatial statistics. Nest site use was measured by the occupancy rate in individual boxes and reproductive success by the total number of young fledged from each box. Results showed that Tree Swallows preferred to nest in some areas of the site over others and those that occupied the preferred area had the greatest reproductive success.

Sponsor(s): Michael Lombardo, Erik Nordman

HENRY HALL ATRIUM 67

The Distribution of Crayfish Species in the Tributaries of the Grand River, MI

Presenter(s): Norrissa Thomas, Tyler Snoap, Jacob Frisbie

Invertebrates make up a large part of the world's biological diversity and perform essential ecological functions. Many invertebrates are under threat of extinction due to extreme transformations of habitats. Crayfish are one such threatened invertebrate. Crayfish are keystone species in many freshwater systems. Keystone species are those species most important in shaping the ecology of a system. Crayfish are an important resource for many animals and affect species diversity and abundance. Specifically, crayfish can adversely affect ecosystems by removing plants, making the water turbid. They also prey on fish eggs reducing their numbers. There are 415 species of crayfish in North America of which eight are found in Michigan. We examined crayfish biodiversity and distribution within the Grand River system. Our study identified three species of crayfish and the invasive zebra mussel that could alter crayfish populations.

Sponsor(s): Daniel Bergman

HENRY HALL ATRIUM 68

In Neural Stem Cells of the Developing Central Nervous System the Notch/RBP-J Signaling Pathway Regulates NFIA Expression During Glial Differentiation

Presenter(s): Derek Janssens

During early development NSCs first primarily give rise to neurons (neurogenesis) and later give rise to glia (gliogenesis). The Notch/RBP-J is believed to be a critical regulator of this neurogenic to gliogenic switch. Although it is known that Notch inhibits neurogenesis through the expression of the Hes genes, the mechanism for Notch-dependent gliogenesis has not been characterized. We are determining if Notch signaling controls the expression of the astrogliogenic gene NFIA. We identified putative binding sites for RBP-J, a transcriptional co-regulator of canonical Notch signaling, in the NFIA promoter region, and found that disrupting Notch signaling in NSCs of the developing CNS by deletion of the gene for RBP-J causes a decrease in NFIA expression. This indicates that Notch/RBP-J signaling is necessary for NFIA expression. A Luciferase Assay is underway to test if the putative RBP-J binding sites identified in the promoter region of NFIA are of functional significance.

Sponsor(s): Merritt Taylor

HENRY HALL ATRIUM 69

Determination of Paleolatitude of the Mississippian Marshall Sandstone: Jackson, Michigan

Presenter(s): Esther Posner, James Barr, James Buzzell, Stephen Zdan

Paleomagnetism, the study of past magnetic fields recorded in rocks, provides scientists with evidence to reconstruct past plate motions, determine paleo-latitudes, and test the details of plate tectonics. In this research, we will measure detrital remanent magnetism induced by a past magnetic field within shale and sandstone units of the Mississippian Marshall Formation. One inch cubes were cut from a core from a borehole in Jackson, Michigan, and tested using a spinner magnetometer and alternating field demagnetization. Magnetic mineralogy will be determined to test our hypothesis that detrital remanent magnetism is the carrier of remanent magnetism in the samples. Paleo-inclination and declination from a suite of samples will be used to infer paleolatitude.

Sponsor(s): Patricia Videtich, Patrick Colgan

HENRY HALL ATRIUM 70

Strength and Conditioning for the Mixed Martial Artist

Presenter(s): Leonard Van Gelder, Marc Wagner

Mixed Martial Arts (MMA) is one of the fastest growing professional sports in the USA. MMA competition involves professional athletes from a variety of martial art disciplines that combines both stand-up fighting and ground-based fighting. These competitions require high levels of strength, power, speed, balance, and muscular endurance. The purpose of this presentation was to propose a periodized strength and conditioning program designed to peak a professional MMA fighter for a championship fight. This program was built around the fundamentals of exercise science, as well as current methods for training the MMA fighter. A limiting factor to this program was that it was not empirically tested prior to presentation. However, every effort was be made to produce a scientifically based practical program designed around maximizing the performance of the MMA athlete.

Sponsor(s): Amy Crawley

HENRY HALL ATRIUM 71

The Relationship Between Nurse Education Level and Quality Care

Presenter(s): Aimee VandenBerg, Orena Kidder, Erin Tidd, Sarah Cain, Kelsey DeMull, Morgan Smagala

Problem Statement: Positive patient outcomes are critical for success in nursing. By identifying factors that influence positive patient outcomes, nurses can optimize the care a patient receives. One factor that may impact the quality of care patients experience is the level of educational preparation of the registered nurse. Significance of Problem: This is significant because it provides valuable information regarding whether or not a Bachelor of Science in Nursing Degree should be required in comparison to less education. Statement of Purpose: The purpose of this study is to examine nurses' educational preparation and its correlation with positive patient outcomes such as quality of care. Methods: A literature review was conducted via CINAHL, JAMA, and PubMed using key words such as patient safety, nurse education level, and patient outcomes. To Be Determined: Conceptual Underpinning; Summary of Research; and Implications

Sponsor(s): Amy Hoffman, PhD, RN

HENRY HALL ATRIUM 72

Microsatellite loci Reveal a Genetically Homogenous Population in the Geographically Widespread Paper Wasp, Polistes metricus

Presenter(s): Sarah Jones

Polistes metricus is a widely distributed North American paper wasp found throughout the eastern United States. In this study, we collected samples with which to assess genetic variation and characterize population structure within the *Polistes metricus* population. In the summer, 2008, we traveled throughout the eastern United States, nearly 8000 miles, collecting samples from 275 colonies located at 27 collection sites in 15 states. Samples were collected with aerial nets from buildings on college campuses, as well as state and local parks, and stored in ethanol for subsequent genetic analyses. We genotyped a small subset of samples for preliminary analyses at six microsatellite loci and analyzed population structure via Bayesian analysis and neighbor joining trees. Both analyses found that the population was genetically homogeneous over its entire range, indicating high levels of gene flow over surprisingly large distances.

Sponsor(s): Michael Henshaw

Poster Presentations Abstracts

HENRY HALL ATRIUM 73

Nutritional Assessment of Food Served in Heartside Area Missions

Presenter(s): Anthony Matson, Shannon Lee, Laura Haiderer, Amy Peterson, Rachel Prince

Those who are homeless or in transitional housing have a limited ability to obtain food that meets their nutritional needs. Shelters and soup kitchens concentrated in the Heartside District of Grand Rapids, Michigan provide meals to the homeless and those in transition. Nutritional value of the food served may be limited by the kitchens' resources and their staffs' understanding of nutrition. This project assesses the nutritional value of food served to the homeless in the Heartside District. The goals are twofold: To evaluate the nutrient content of food served in soup kitchens to the homeless adult population in the Heartside District and to determine the impact of nutrition education of staff at soup kitchens on the nutrient content of food served to the homeless adult population in the Heartside District. Three sites that feed the homeless participated in this study: Gods Kitchen, Guiding Light Mission, and Mel Trotter Ministries.

Sponsor(s): Lisa Sisson

HENRY HALL ATRIUM 74

Modifications of Coronary Vascular Reactivity due to Oxidative Stress

Presenter(s): Kanchan Tiwari

Coronary arteries supply blood to the myocardium and they are the site of various metabolic pathways, including those involving redox reactions. When redox reactions become poorly regulated, free radicals and other reactive oxygen species are released in coronary arteries. It is hypothesized that free radicals play a role in the genesis of cardiovascular disease. A potential non-enzymatic redox reaction resulting in the production of superoxide involves vitamin C and imidazole. Our objective is to evaluate the role of superoxide in altering the vascular reactivity of coronary arteries. We hypothesize that imidazole and vitamin C react to form superoxide resulting in alterations in coronary artery vascular reactivity. The dihydroethidine assay will be used to assess superoxide levels in coronary arteries following incubation with imidazole and vitamin C.

Sponsor(s): Francis Sylvester

HENRY HALL ATRIUM 75

Synthesis of Derivatives of 3-Aminoquinazolinone and 2'-Deoxyguanosine as Potential Inhibitors of FAK and Src

Presenter(s): Kirk Wyatt

Protein kinases play an important role in post-translational cellular signaling by regulating cell growth, differentiation and apoptosis, among other cellular activities. Furthermore, protein kinase (PK) deregulation has been implicated in many diseases, including cancer. For this reason, there has been considerable interest in the development of PK inhibitors, which could lead to the discovery of new cancer-treating drugs. Derivatives of 3-aminoquinazolinone and 2'-deoxyguanosine were synthesized as potential ATP-competitive inhibitors of the Src and FAK protein tyrosine kinases, and the effectiveness of the synthesized derivatives as protein tyrosine kinase inhibitors was quantified using ^{32}P-ATP radioisotope assays. Preliminary results of our inhibition studies will be presented.

Sponsor(s): Laurie Witucki, Felix Ngassa

HENRY HALL ATRIUM 76

Catalytic Hydrogenation of Threitol over Pd/C Catalyst

Presenter(s): Amanda Hanks

The high consumption rate of petroleum is leading to the search for new, renewable sources of energy. Carbohydrate-derived alcohols such as threitol or erithritol can be excellent raw materials, as they can undergo reactions to form intermediates in commodity and specialty chemical synthesis and fuel production. Using hydrogen gas, the hydrogenation of threitol over a heterogeneous 5% Pd/C catalyst was implemented. The reactions were carried out using a Parr reactor at 200° C and a total pressure of 200 psi. 1H-NMR spectroscopy, using a water suppression technique, was used to characterize the product mixtures. This revealed a decreased reactant concentration, yet no product formation under the conditions used. The threitol concentration started at 0.2002 M and fell to 0.1729, 0.1638, and 0.1365 M after reaction times of 2, 7.5, and 18 hours. It is likely that the hydrogen gas concentration was too low to cause a reaction, thus future trials should use higher hydrogen concentrations.

Sponsor(s): Dalila Kovacs

HENRY HALL ATRIUM 77

Predicting Cosmetic Surgery Attitudes among College Women

Presenter(s): Amanda Mitchell, Samantha Schenk

We examined cosmetic surgery attitudes in a sample of undergraduate women. Attitudes about the use of cosmetic surgery, particularly as a way of enhancing career and social life, were positively related to measures of self-objectification, interest in physical appearance, exchange orientation to relationships, and materialism. Regression analyses indicated that materialism and body shame emerged as significant predictors.

Sponsor(s): Donna Henderson-King

HENRY HALL ATRIUM 78

Economical Simulation of Extraterrestrial Environments

Presenter(s): Derek Loutzenhiser

To test a biocatalytic system in Martian conditions, a Simulated Martian Environment Chamber (SMEC) is created. This chamber fulfills two objectives: to serve as an affordable method to test in the extreme conditions of Mars, to test in other planets' atmospheres, also to examine possible non-aqueous biocatalytic systems to perform carbon dioxide to oxygen conversion. The construction of the SMEC is realized by using spare components and other commonly available components found in an average university chemistry laboratory environment. This is a priority in order to minimize the expense of the chamber so that a greater number of undergraduate research teams, both locally and elsewhere, would be able to build similar environment chambers while working under relatively small budgets. Even without sophisticated construction or equipment, temperatures as low as -70 degrees Celsius, pressures as low as 0.5 millibars, and a Martian like 95% carbon dioxide atmosphere are achieved.

Sponsor(s): Cory DiCarlo

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 79

Dramaturgical Production History of William Shakespeare's Macbeth

Presenter(s): Rebecca Takacs

Macbeth has been performed almost continuously since it was first produced in 1611. While the text of the play has remained more or less constant, there have been many unique aspects to each performance throughout the centuries. These distinctive aspects are what lend themselves to modern performances that deviate from the standard Elizabethan staging. By thoroughly investigating these historic productions, directors of modern adaptations can access a wealth of knowledge that allows them to effortlessly stage an original production. The goal of this dramaturgical production history was to uncover the individual themes and motifs of successful Macbeth performances throughout the centuries as a means to more thoroughly understand the types of staging techniques that are most widely accepted by audiences, and to determine recurring staging practices that have stood the test of time.

Sponsor(s): James Bell

HENRY HALL ATRIUM 80

Using Adult and Peer Video Models to Teach Play to Children with Autism Spectrum Disorder

Presenter(s): Justin Persoon, Jessika LaPres, Chelsea Callow

Video Modeling (VM) is an empirically supported intervention that can be used to teach skills to children with Autism Spectrum Disorder (ASD). Little is known, however, about the video models themselves; specifically, what factors maximize success. This study evaluated the effectiveness of adult versus peer models in the development of social play skills. Videos were made of child models playing with age appropriate toys, then identical videos were created with adult models. Following baseline observations, four participants diagnosed with ASD were shown a video of either the adult or child model. The type of model shown was alternated by day. Immediately after watching the video, the participants were observed in a free play session with the same toys. Sessions were videotaped for later coding. Preliminary findings support previous literature on the effectiveness of VM in teaching play skills. No consistent differences in the effectiveness of adult versus peer models were noted.

Sponsor(s): Jamie Owen-DeSchryver

HENRY HALL ATRIUM 81

Obesity

Presenter(s): Mark Brengel

Obesity is one of the largest growing problems in the United States taking claim to 1/3 of all adults. Amidst the most obese states, Michigan is in the top 5 for the second year in a row. Sedentary lifestyles coupled with poor nutrition and lack of proper physical activity have caused an exponential weight gain among Americans every year for more than a decade. The purpose of the study is to explore the widely researched epidemic of obesity. Finding key components that can reverse this trend is crucial. Exploring the probable causes of obesity may lead to finding cures and identifying strategies for prevention

Sponsor(s): Kay Reick

HENRY HALL ATRIUM 82

Grain Size Analysis of Sands in Dunes, Rivers, and Beaches: Ottawa County, Michigan

Presenter(s): Kevin Kane, Austin Westhuis, Kyle Siemer

Ottawa County in western Michigan plays host to sediments in a variety of depositional environments. This study aims to compare and correlate sediment characteristics such as grain size, shape, and mineralogy of sands from three of these environments, the crest of a dune at Holland State Park, the swash zone at Grand Haven State Park, and point bars within Sand Creek. Nine samples were collected from each environment and then analyzed using a binocular microscope and sieving. Select samples were split and sieved separately to calculate error in the sieving process. From the grain size data, mean, median, mode, sorting, skewness, and kurtosis were calculated. These statistical data, along with the grain shape observations and mineralogy, allow samples to be compared to one another. Expected observations include the ability to compare samples from each environment to one another creating a "sediment signature" for each depositional environment.

Sponsor(s): Patricia Videtich

HENRY HALL ATRIUM 83

Post-Stroke Adjustment of Caregivers

Presenter(s): Krista Tarrant

The occurrence of a stroke can result in physical, mental, social and psychological impairments. These outcomes can be seen not only in the patient, but in primary caregivers as well. These effects are especially notable in spouses, due to the close relationship shared prior to the stroke, and the changes in the relationship that occur after the stroke. Because of the unpredictable nature of a stroke, spouses find themselves in a caregiving position sud denly and without warning, resulting in frustration, depression and stress. The possible immobility or personality changes of the patient can make these adjustments even more difficult for the caregiver. The rehabilitation of the patient and the adjustment of the caregiver are interrelated in complex ways. This poster presents a hypothetical pathway of the relationship between patient and caregiver outcomes, based upon a review of the research.

Sponsor(s): Mary Russa

HENRY HALL ATRIUM 84

Development of an Intensive Weight Management Program

Presenter(s): Julie Eriksson

Obesity is an epidemic health problem and is associated with an increased risk of developing chronic health conditions such as cardiovascular disease, type-2 diabetes, and cancer. The CDC estimates that approximately 32% of Americans are obese (BMI >30), and in Michigan alone the prevalence rate of obesity is 27%. This presentation will cover the process of creating an intensive weight loss management program for a community based organization providing health care coverage. The poster will describe two semesters of the process beginning with a thorough literature review and culminating with the completion of focus groups.

Sponsor(s): Maureen Ryan

HENRY HALL ATRIUM 85

Investigation of the Silaallyl Anion

Presenter(s): Randall Breckon

As the simplest resonance delocalized anion the allyl anion has been thuroughly studied. The silaallyl system, in which a silicon atom replaces one of the carbon atoms of the allyl anion, has received much less attention. We are investigating the properties of this system, in particular the rotational barrier about the bonds. Diphenylvinylsilyllithium, and 1-chloro-1-vinylsilafluorene have been made, but have yielded inconclusive results. More systems, along with these will be investigated with both experimental and computational methods. The simple silaallyllithium system has been computationally analyzed with the bridging system giving the lowest energy at -376.253 Hartrees, followed by the lithium in plane on the silicon at -376.249 Hartrees, then the lithium on the silicon anti to the double bond at -376.245 Hartrees, and the lithium on the carbon at -376.196 Hartrees.

Sponsor(s): Randy Winchester, John Bender

HENRY HALL ATRIUM 86

Sport and Personality: Exploring the Relationship Between Extraversion and Neuroticism in Relation to Team, Individual, and Non-Sport Preference

Presenter(s): Rebecca Nixon, Dawn Heerspink

The effects of personality on sport choice has been examined using many various methods, resulting in an ongoing debate regarding the relationship between personality type and sport choice. Previous studies have examined the relationship between sport choice and personality according to gender as well as achievement level in sport in relation to personality characterisitcs. This study hopes to contribute to this focus of sport psychology, by exploring a possible relationship between aspects of personality, as tested by Eysenck's Personality Inventory, and the selection of individual or team sport. In addition, we will also examine the personalities of nonparticipants for a relationship. The participants of this study are college students above the age of 18. They will complete the Personality Inventory, a test of extraversion and neuroticism, and a brief survey related to sport participation.

Sponsor(s): Bradley Ambrose, Edward Baum, Jim Scott

HENRY HALL ATRIUM 87

Effects of Competition on Sport Performance

Presenter(s): Austin Averill

This study is designed to determine the effect of competition on subjects' athletic performance. Each participant will be asked to take a pretest, a survey, a tournament, and a post-test during the study. The pretest, tournament, and post test will involve each subject bouncing a ping pong ball across a table into a normal size coffee can. The number of balls bounced in out of each group of 10 will be recorded. Next, a survey will be given asking each subject to answer various questions regarding their history in sport related activities. The subjects will then compete against fellow subjects in a round robin tournament. The subjects will then perform a post test to insure that any improvement in natural ability will be noticed. The records of each subjects performance will then be taken and compared to look for differences in the tournament rounds and between the pretest and post test in order to see the effects of competition on sport performance.

Sponsor(s): Bradley Ambrose, Jim Scott, Edward Baum

HENRY HALL ATRIUM 88

Textural Analysis of Sands from a Modern Beach and Fossil Terraces at Guyamara Bay, Trinidad and Tobago

Presenter(s): Adam Wrubel, Christopher Denison, Curtis Barclay

Uplift of shorelines may have resulted in the formation of raised beach terraces along the coast of Guayamara Bay, Trinidad and Tobago. Through examination of sediment samples from modern beaches and fossil terraces, depositional environment, transportation history, and source materials can be inferred. With this goal in mind, statistical analysis of grain size was performed on samples from a modern beach and two fossil terraces along this coastline. Various size fractions from these samples were studied using binocular, petrographic, and scanning electron microscopes and x-ray diffraction in order to determine mineralogy and surface textures of grains. With this data, interpretations of the development of these terraces can be made. We hypothesize that sediment textures from the fossil terrace should look like those of the modern beach, with an additional fine-grained, soil-related component, because they formed by similar processes.

Sponsor(s): Patricia Videtich, John Weber

HENRY HALL ATRIUM 89

Training for Your Peak Soccer Performance: Female High School Soccer Team

Presenter(s): Danica Rodriguez, Sarah Knipper

Soccer, one of the most popular sports world wide, is currently the fastest growing sport in the United States. With this increased popularity, comes an increased need for a proper training program. The purpose of this presentation is to provide a periodization program that specifically meets the needs of a female high school soccer team. This year long program will encompass nutritional needs and physical preparation in and out of the competitive season. One important aspect that will be addressed is injury prevention training. Taking action before the injury occurs will not only decrease the risk of injury but also enhance performance goals of the team. The theoretical basis of this presentation poses limitations to the validity and projection of this program to all female high school soccer teams. This program could become a valuable resource for future coaches and/or female high school soccer athletes in optimizing performance while simultaneously decreasing the risk of injury.

Sponsor(s): Amy Crawley

HENRY HALL ATRIUM 90

Cyclohexene Derivatives in Transfer Hydrogenation

Presenter(s): Nathan Craft

2-cyclohexen-1-ol (1) and 3-methyl-2-cyclohexen-1-one (2) are investigated as potential hydrogen donors in transfer hydrogenation under heterogeneous conditions with Ru or Pd deposited on C as catalysts. Conversion of 1 into cyclohexanone, phenol, cyclohexanol, and 3-cyclohexen-1-ol and conversion of 2 into 3-methylphenol, 3-methylcyclohexanone, 3-methyl-3-cyclohexen-1-one, and 3-methylcylohexanol, in the absence of any source of hydrogen. The results indicate the potential of both compounds to act as hydrogen donors and hydrogen acceptors. Pd/C (5%) proves to be a more efficient catalyst at promoting dehydrogenation and rehydrogenation of the cyclohexene ring of 1 and 2, with conversions over 97% compared to conversions between 0-60% for Ru/C (5%). The potential of *myo*-inositol (3) as a chiral additive was probed in the conversion of 2 into 3-methylcyclohexanone and 3-methylcylohexanol.

Sponsor(s): Dalila Kovacs

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 91

St. Joseph and Benton Harbor, MI: A Comparison Using GIS

Presenter(s): Kendell Joseph, Laurel Walker

Divided physically by the St. Joseph River, Benton Harbor and St. Joseph, MI are close in proximity, but drastically different in terms of income, and therefore, resources. To analyze this difference we focused on comparing their respective school districts using ArcGIS software as a platform to display census data from the U.S. Census Bureau from 2000 with the geographic data layers for these communities. The mean value of single-family homes in St. Joseph is $61,300 more than that of Benton Harbor, meaning that the property taxes that contribute to St. Joseph school funding are also higher. Therefore, though Benton Harbor draws funding from a larger area, St. Joseph still has much more funding to distribute to its five schools than Benton Harbor has for its fourteen. We found doing this project provided a concrete notion of the drastic divide between high and low income neighborhoods and the resources available to each population in terms of education and other opportunities.

Sponsor(s): Wanxiao Sun

HENRY HALL ATRIUM 92

Best Clinical Practice for Treatment of Deep Vein Thrombosis

Presenter(s): Michelle Douglas, Katie Kooiker, Sandra VanDyke, Bryan Veenstra, Jamie Resler, Heidi Lafranboise

Statement of Problem: Recent research suggests that clinical treatment for deep venous thrombosis (DVT), including ambulation and leg compression, may reduce pain, edema and risk of pulmonary embolism (PE) in comparison with the traditional treatment of immobilization. Significance of Problem: Clinical investigation has not determined which treatment method most benefits patients with DVT. It is imperative to promote the best treatment methods available in consideration of the patients' quality of life and comfort in recovery. Statement of Purpose: The authors seek to establish an approach for the treatment of DVT that optimizes healing and quality of life while minimizing pain, edema and risk of PE. Methods: Current research studies were found using key words (DVT, ambulation) via CINAHL, PubMed and Cochrane Library. To be Determined: Conceptual Underpinning; Summary of Research; Implications.

Sponsor(s): Amy Hoffman, PhD, RN

HENRY HALL ATRIUM 93

Who Cares About Success?

Presenter(s): Lindsy Matteoni, Erika VanDyke

Data indicate that people who score high on measures of materialism "care less about 'warm relationships with others', friendship, and love," (Kasser, 2005, p 65). This study explores the relationship between individuals' level of materialism and the emphasis placed on qualities related to the self and romantic partners. Participants completed a survey that included a materialism scale. They also rated the importance of several qualities for themselves and for an ideal romantic partner. Preliminary findings indicate a positive relationship between individual levels of materialism and the importance of personal success and partner success. Additional findings regarding sex-related differences in expectations for the self and partner will be presented.

Sponsor(s): Donna Henderson-King

HENRY HALL ATRIUM 94

Seed Dispersal Success of Transplanted Species in a Longleaf Pine Savannah Restoration Experiment at the Savannah River Site, South Carolina

Presenter(s): Corey Kapolka

Identifying the underlying mechanisms that limit a species membership during community assembly is an integral part of developing successful approaches to ecological restoration. The inability of species to disperse and successfully colonize areas adjacent to restored areas is a limiting factor in landscape-scale restoration efforts. As part of a long-term restoration of longleaf pine savannah understory communities at the 80,125 ha Savannah River Site (SRS) in South Carolina, we are examining the potential effectiveness of restored 'founder communities' in inoculating the broader landscape via seed dispersal. Here we report the dispersal success of 30 transplanted native understory species from three sites at SRS from June 2008.

Sponsor(s): Todd Aschenbach

HENRY HALL ATRIUM 95

Cultural, Biomedical and Economic Barriers to Malaria Interventions

Presenter(s): John Troost

Malaria remains a leading cause of death from infectious disease, despite decades of global eradication efforts. This poster summarizes features of global intervention programs and suggests improvements based on successful aspects of lesser-utilized strategies. Culture directly affects treatment-seeking behavior because local explanations for malaria symptoms overlap with those of other conditions. As such, individuals are often misdiagnosed and delay intervention. Given current policies, anti-malarial vaccine research and urban-center hospitals are disproportionately funded to the detriment of rural communities. Our interpretation of current data suggest that successful anti-malarial efforts should: a) subsidize rural health clinics and basic, village-level health workers; b) improve the availability of insecticide treated bed nets (ITNs); c) providing basic education on ITN use and home treatments; and d) integrate cultural perceptions of malaria into future education programs.

Sponsor(s): Justin Adams

HENRY HALL ATRIUM 96

Graphics Processor-Based Implementation of Bioinformatics Codes

Presenter(s): Andrew Bellenir

We created a desktop supercomputer based on video cards with the goal of accelerating the performance of bioinformatics codes. Modern graphics processing units (GPUs), to satisfy the demands of the video gaming industry, have become very advanced computational devices, using a large set of stream processors to render multiple pixels in parallel. Recently, computer scientists have taken interest in a GPU's ability to execute a single instruction on multiple data (SIMD computation) for general applications, as opposed to graphics processing only. This is known as general purpose computation on a graphics processing unit, or GPGPU. Our system contains two GPUs, capable of working in parallel, for a total of 256 processors. We used this computational power to improve the performance of bioinformatics codes, specifically targeting the Smith-Waterman algorithm for finding DNA and protein local sequence alignment.

Sponsor(s): Christian Trefftz

Poster Presentations Abstracts

HENRY HALL ATRIUM BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 97

When Vision Fails; Proprioception, and Motor Coordination Completing a Motor Skill

Presenter(s): Kate-Alice Martin

The purpose of this study is to see if practice with vision can help complete a motor task even when vision is taken away. This task is a bean bag toss, and the subjects will be tested with or without having the ability to see. The method is an experiment, first to have the subject complete the toss with a blind fold on as a control baseline, then to allow the subject to practice with all their senses, and again perform the toss with a blindfold on again. The results will be subject to seeing any gender differences, differences in previous physical activities, and age.

Sponsor(s): Bradley Ambrose, Edward Baum, Jim Scott

HENRY HALL ATRIUM 98

Coprolites in the Mississippian Michigan Formation, Western Michigan

Presenter(s): James Bennett II, Ashley Taylor, Chad Williams

Coprolites are fossilized excrement from vertebrates. Nodules interpreted to be coprolites were collected from sandstone lenses within a shale layer in an inactive gypsum mine that exposes the Mississippian Michigan Formation in Wyoming, Michigan. The formation in western Michigan consists of alternating units of shale, dolomite, and gypsum. The coprolites range from 4 to 20 mm in length, vary in shape and color, and are found in association with various fish and shark fossils. We will use a scanning electron microscope (SEM) to determine if color varies with surface texture or elemental composition. X-ray diffraction will be used to determine the mineral composition of the variously colored coprolites. Variations in color, elemental and mineral composition, and surface texture may give clues to the origin of the coprolites and the environmental conditions under which they were deposited, as well as post-depositional processes such as chemical changes.

Sponsor(s): Patricia Videtich

HENRY HALL ATRIUM 99

Neurobehavioral Effects of Exposure to Methylmercury in Adult Zebrafish (Danio rerio)

Presenter(s): Crystal Lamb, Lillian Schaefer

The present study used avoidance conditioning on zebrafish exposed to methylmercury to determine its neurobehavioral effects. Adult zebrafish were separated in to groups and were either exposed to no methylmercury or varying concentrations of methylmercury. Zebrafish were placed in a shuttle-box consisting of two equal compartments. Here they were taught to associate light with an electrical shock. The zebrafish was able to avoid the electrical shock if it swam to the other compartment within 12 seconds of the initial presentation of the light; this behavior was defined as an avoidance response. The groups were then trained and tested for these responses. Zebrafish exposed to either no methylmercury or low concentrations of methylmercury learned and retained avoidance responses, and these groups showed no significant differences from each other. However, the groups exposed to the higher concentrations of methylmercury showed impairment in the learning of avoidance responses

Sponsor(s): Xandra Xulol

HENRY HALL ATRIUM 100

Acyl-Enzyme Complex of the Class D B-Lactamase OXA-1 and Doripenem

Presenter(s): Kyle Schneider

The class D B-lactamase OXA-1 belongs to the oxacillinase family of lactamase enzymes, OXA-1 efficiently hydrolyzes penicillin beta-lactams, yet is relatively ineffective at turning over carbapenems. Alternatively, other class D B-lactamases, such as OXA-24, are proficient carbapenemase enzymes, but at the expense of their penicillinase activity. To explore this difference in substrate specificity, the structure of OXA-1 in complex with the clinical carbapenem, doripenem, was determined to 1.4 Ã… resolution. Initial difference electron density maps contoured at 3 Ã… suggest the presence of the carbapenem in an acyl-enzyme complex with the catalytic serine (Ser70). Refined data and further studies are expected to yield valuable insight into the cause of the substrate specificity of the oxacillinases in comparison to the carbapenemases.

Sponsor(s): Dave Leonard

HENRY HALL ATRIUM 101

Densitometric Analysis of Rodent Brain Protein Extract

Presenter(s): Ron Kress, Brian Britz

The currently accepted theory for learning and memory is that learning is associated with an increase in neuronal activity at existing synapses in the brain. We seek to corroborate this currently accepted theory, which states that the synapses have already been formed prior to the learning process, and that when the learning process takes place, the phosphorylation of the growth associated protein 43 (GAP-43) occurs. We propose that the level of GAP-43 phosphorylation increases proportionally to the amount of increased synaptic activity during learning, which may account for the creation of a memory. This project seeks to continue the specific identification of the various isoforms of the presynaptic protein GAP-43 isoform through employing the use of densitometric analysis. We anticipate that our results will provide data to help accurately elucidate the molecular underpinnings of learning and memory.

Sponsor(s): John Capodilupo

HENRY HALL ATRIUM 102

Cloning and Sequencing of Sonic Hedgehog in the Southern Flying Squirrel

Presenter(s): Beth Lubeck

The sonic hedgehog (Shh) gene is well studied when it comes to its role in early mammalian development. Among other processes, it is known that Shh is involved in limb development. We hypothesize that Shh may also be involved in the development of the patagium in mammals such as the Southern Flying Squirrel (*Glaucomys volans*). In order to clone and sequence the squirrel form of Shh for later use, DNA primers were designed. This poster presents our work on designing and testing four such primers through BLAST searches and primer design analysis. Squirrel and mouse (*Mus musculus*) Shh gene fragments were cloned by amplification through PCR, ligation of the fragment into a plasmid and transformation of bacteria. DNA sequencing results bring up new questions concerning the *G. volans* Shh gene sequence and the role of Shh in patagium development.

Sponsor(s): Bruce Ostrow

Poster Presentations Abstracts

KIRKHOF CENTER BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC1

A GIS-Based Approach to Study Fossil Plate Motions in the South American-Caribbean Plate Boundary, Southern Basin, Trinidad

Presenter(s): Stephen Zdan

Situated in the boundary between the South American and Caribbean plates, the island of Trinidad contains a variety of structures that potentially record a rich history of changing plate motions. Our study focuses on the structures in the Southern Basin, where folds are overprinted by strike-slip faults. Using the geometries and ages of these structures, plus some assumptions, we will try to reconstruct relative plate motions back into the early Cenozoic. Early Cenozoic oblique plate convergence has been proposed; GPS shows that the relative present-day plate motion is east-west sliding. The Southern Basin structures will be spatially analyzed using a Geographic Information System (GIS). We will lay a Digital Elevation Model (DEM) over a digital geologic map, perform three-point problems, derive strike and dip data, and using stereonets, solve for shortening directions and relate these to paleo-plate motions

Sponsor(s): Peter Wampler

KIRKHOF CENTER KC2

Antibacterial Properties of a Telomerase Inhibitor

Presenter(s): Kyle Kilpatrick

Increasing resistance to antibiotics by certain bacterial species has made it imperative that novel compounds be tested and used to help alleviate this threat to human health. Improper use of antibacterial compounds has led to the rise of resistant species of bacteria such as methicillin resistant Staphylococcus aureus (MRSA) and vancomycin resistant enterococci (VRE). The main focus of our research is to test the known telomerase inhibitor, BIBR1532 {(E)-2-(3-(naphthalene-2-yl)but-2-enamido)benzoic acid, for potential antibacterial properties. BIBR1532 is currently undergoing clinical trials in cancer patients, and is being tested as a non-competitive inhibitor of telomerase. Presently, no known testing of BIBR1532 against microorganisms has been performed or published. Disk diffusion tests, along with tests for the minimum inhibitory concentration (MIC) when appropriate, were preformed on 15 bacterial species and five fungal species. BIBR1532 produced a zone of inhibition against 8 Gram positive bacteria but no zones of inhibition were produced against any Gram negative bacteria or fungi. The MIC range for all inhibited organisms is 0.078-0.63 mg/ml. As S. aureus was inhibited by the compound, a MRSA strain was then tested. Test results show an MIC for MRSA of 0.078-0.156 mg/ml. These results demonstrate that BIBR1532 is a novel antibiotic that could be used to treat MRSA and other Gram positive infections.

Sponsor(s): Robert Smart, Rod Morgan

KIRKHOF CENTER KC3

Anterior Cruciate Ligament Reconstruction: Autograft or Allograft

Presenter(s): Erin Caverly

A common knee injury experienced by athletes and non-athletes alike is the tearing of the anterior cruciate ligament (ACL). This is one of the four main ligaments found in the knee that provides stabilization. Surgical solutions for this injury have a long history with over 100 years devoted to developing the optimum technique to allow people to return to their previous level of physical activity. The earliest methods focused on repairing the torn ligament, but this was ineffective. The accepted method today is to replace the torn ligament with a graft of connective tissue. Synthetic

grafts were unsuccessful, leaving autografts and allografts as the two forms used in surgery today. Autografts are taken from the patient, while allografts come from cadavers. There is disagreement among doctors today about whether allografts or autografts are of better quality. The aim of this study is to determine which graft provides the most success in anterior cruciate ligament reconstruction.

Sponsor(s): Francis Sylvester

KIRKHOF CENTER KC4

Fatigue, Inter-Shift Recovery and Clinical Decision Making Regret Among Critical Care Nurses

Presenter(s): Kim Michels

Critical care nurses administer nursing care to seriously ill patients on a daily basis. This intense monitoring requires mental focus which can be affected by fatigue and exhaustion. Uninterrupted sleep can be difficult for critical care nurses to obtain due to varying shift schedules, night shift work and the responsibilities of family. A majority of critical care nurses work 12-hour shifts; and their days off are frequently filled with non-work commitments that do not allow them to rest and recover from their work days. Sleep deprivation, coupled with physically and mentally exhausting work can eventually lead to occupational fatigue. This study will evaluate the level of acute fatigue, chronic fatigue and inter-shift recovery of shift critical care nurses by their workshift pattern. A second aim of the study is to determine if a fatigued nurse is more likely to make a clinical decision that he or she regrets.

Sponsor(s): Linda Scott

KIRKHOF CENTER KC5

Effects of a Biological Pesticide, Bti, on Frog Larval Develpoment in Aquatic Communities

Presenter(s): Kristina Powers

Bacillus thuringiensis israelensis (Bti) is a toxin-producing bacterium that is selectively lethal to mosquito and black fly larvae. Because of its specificity Bti application is widely accepted as a safer alternative to traditional neurotoxin pesticides. However, studies have not carefully investigated its impact on sensitive amphibian species and the balance of their aquatic communities. We established outdoor mesocosm communities, large cattle watering tanks containing pond water, leaf litter, algae, mosquito larvae and frog tadpoles. Mesocosms were treated with or without Bti. Preliminary results show that the presence of Bti does selectively kill mosquito larvae. Bti does not significantly influence the mass of frog larvae at metamorphosis. However, Bti treated tanks showed an increase in algae concentration and a decrease in the rate of frog metamorphosis. In Bti treated natural communities these factors may impact the reproductive success of frog species.

Sponsor(s): Janet Vigna

KIRKHOF CENTER KC6

Mural, Painting and Art Education Project with African Refugees and the African Community Center of West Michigan

Presenter(s): Carrie Schoenborn

Our project at the African Community Center of Grand Rapids was to transform the center from a sterile, white-walled office-like atmosphere into a warm, inviting environment that would be used by the center s clients, recent African refugees. Our charge was to create a space that felt familiar, welcoming and homelike to them. The methodology we

employed was to consider the needs of the refugees and engage them in the processes of transforming the space at every step, teaching English and basic living skills as we went along. We taught art and ESL classes to individuals young and old, drawing on the connections and interactions we had with the families as inspiration for the final realization of the project.

Sponsor(s): Jill Eggers

KIRKHOF CENTER KC7

Screening of Potential Anti-telomerase Drugs an Anti-proliferative Study on Prostate Cancer Cell Lines (PC3)

Presenter(s): Viralkumar Patel

Unlimited cellular proliferation of cancer cells is associated with the maintenance of telomeres in DNA. Telomeres are double stranded repeats of TTAGGG sequence that cap the ends of chromosomes and provide genetic stability and immortality to cancer cells. Telomerase (the enzyme that adds telomeres) and its inhibition has become an attractive target for new cancer therapeutics. Synthetic telomerase inhibitor, BIBR1532 (2-[(E)-3-naphtalen-2-yl-but-2-enoylamino- benzoic acid), has shown growth arrest in tumor cells. In our study BIBR 1532 (positive control) and its eight synthetic analogues were tested for anti- proliferative activity on metastatic prostate cancer cells. Preliminary screening studies in our lab have identified some of the synthetic analogues with anti-proliferative activity. Anti-telomerase activity will be tested in these compounds. If these compounds are effective in reducing or blocking telomerase, their activity will also be tested on other metastatic cell lines.

Sponsor(s): Suganthi Sridhar

KIRKHOF CENTER KC8

Examination of Leukocyte Alkaline Phosphatase Stain Results Using Sodium Heparin and EDTA Tube Anticoagulants

Presenter(s): Sonya Heerema, Keri Jastifer, Candice Workman

The Leukocyte Alkaline Phosphatase (LAP) stain procedure is used to differentiate leukemoid reaction (LR) from Chronic Myeloid Leukemia (CML). A high LAP score indicates LR; a low score indicates CML. LAPs are ordered based on patients' Complete Blood Count (CBC) results and other diagnostic criteria. Currently two tubes of blood are drawn, an EDTA tube for the CBC and a sodium heparin for the LAP. Our hypothesis: EDTA tubes provide the same staining result as the sodium heparin tubes. This study is a side-by-side comparison of 100 de-identified blood samples to determine if there is a difference in results between the tubes. An ANOVA statistical model will be used to compare our results. If our hypothesis is correct, the hospital will have evidence to substantiate a change in protocol. If this change in protocol occurs, both the patient and the hospital laboratory will benefit. This change will be more cost effective for the lab and less pain and cost for the patient.

Sponsor(s): Linda Goossen

KIRKHOF CENTER KC9

Using Change Theory to Implement an Evidence-based Bladder Protocol

Presenter(s): Debra Brown Bayus

The Centers for Disease Control and Prevention estimates that 1 of every 10-20 patients hospitalized in the U.S. develops a healthcare-associated infections. The Society for Healthcare Epidemiology of America and the Infectious Diseases Society of America have developed joint guidelines for the prevention of catheter-associated urinary tract infection (CAUTI). To carry out these recommendations, each facility should have written guidelines on the use, insertion, and maintenance of urinary catheters. This project focuses on the efforts of a Clinical Nurse Specialist (CNS) and the Bladder Protocol that was developed using existing evidence-based guidelines to reduce the use and duration of indwelling urinary catheters. The CNS as a change agent explores the current readiness for change in clinical practice, and develops the plan for implementation of the Bladder Protocol using Lewin s change theory to unfreeze, move and refreeze clinical practice in an acute-care hospital.

Sponsor(s): Ruthann Brintnall

KIRKHOF CENTER KC10

Gender Specific Categorization by Parents

Presenter(s): Nikki Turnbull

This study looks at the tendency of parents to sort toys for their children based on object category and infant sex. Wood, Desmarais and Gugula found that parents are more likely to sort toys based on gender stereotyping, especially for young boys (2002). The hypotheses are that the gender of the child will influence the order of objects sorted by the parent and that parents are likely to sort by object category. The study used 42 parent-child dyads with children from 3-12 months. Dyads were given three different baskets, each with eight objects, four from each of two categories. Categories included animals, people, vehicles and boats. The order the parents manipulated toys was coded. Initial analysis of the data indicates that there is a tendency for parents to sort objects by category. Results looking at the influence of gender are still pending.

Sponsor(s): Gwenden Dueker

KIRKHOF CENTER KC11

Wii Fit and Wii Sport: Examing Physical Activity and Psychological Responses in College Students

Presenter(s): Kendall Cook , Alicia Beste

The primary objective in this study is to examine the aerobic demands and responses to Wii Fit and Wii Sport in college students. A secondary aim is to better understand psychological factors influencing exercise behaviors in college students by examining the association between exercise motives and exercise identity. Subjects consisted of 40 Grand Valley State University students, ages 18 to 30. Testing included two sessions. Session one consisted of questionnaires, physical assessments, and Wii familiarization. During session two subjects were asked to participate in 40 minutes of continuous exercise with Wii Fit and Wii Sport, followed by the Physical Activity Enjoyment Scale. Testing is currently still in progress.

Sponsor(s): Christina Beaudoin

KIRKHOF CENTER KC12

Determination of Energy Expenditure during Pregnancy and Comparison to the Compendium of Physical Activity Values

Presenter(s): Laura Dahmer

Current exercises recommended during pregnancy are prescribed at the same intensity as the general adult population. The purpose was to determine energy expenditure of pregnant women while participating in 3 exercises and to identify any differences in energy expenditure between the 2nd and 3rd trimesters. Participants were 3 women, ages 23-32 in their 2nd trimester at the start of the study. They came to the lab once during each trimester. Metabolic rate was recorded in METs. Heart rate and RPE were also taken. The means of each activity during the 2nd and 3rd trimesters were compared to the Compendium values. The correlation coefficients for the exercises were: stationary biking .931, walking .539, and aerobics .647. The p-values did not show a significant difference in any exercise between trimesters. The means for walking during both trimesters (2nd 4.52METs, 3rd 4.53METs) were above the Compendium value of 3.8METs. The mean METs for aerobics declined from 2nd to 3rd trimester.

Sponsor(s): Brian Hatzel

KIRKHOF CENTER KC13

Design and Synthesis of Peptide Substrates for Focal Adhesion Kinase (FAK) Using Solid Phase Peptide Synthesis Strategies

Presenter(s): Katherine Stahrr

Focal Adhesion Kinase (FAK) is a protein tyrosine kinase that has been implicated in various types of cancer, specifically prostate and breast cancer. By continuous characterization, It has been found that this enzyme enacts the signaling events of the cell; this determines regulation of cell shape, proliferation, survival, and gene expression. Due to these affects on the cell, FAK is considered a prospective target for anticancer drug development studies. It is our goal to develop a peptide sequence that can be used as an efficient substrate for FAK and therefore aid in the development of inhibitory cancer therapeutic drugs. A previously synthesized library of peptides revealed some favored amino acids present in the peptide substrates that enhance binding to FAK. Using these library peptides as leads, four new sequences have been designed and tested as FAK substrates. By improving peptide binding to FAK we can continue to characterize the active site of this enzyme.

Sponsor(s): Laurie Witucki

KIRKHOF CENTER KC14

A Method Correlation Between A Siemens Bayer Rapidpoint 400 and Corning pH meter 430

Presenter(s): Kevin Cole, Jeffrey Hatfield

The purpose of this study is to compare the two different methodologies that Spectrum Health uses to test pH of serous body fluids. One method that is used to test serous body fluid pH is with a Siemens Bayer Rapidpoint 400 series and the other is a Corning pH meter 430. Currently, Spectrum Health performs serous body fluid pH on the Rapidpoint. However, the Rapidpoint has a narrow pH range and is expensive to use. The Corning pH meter 430 uses the full spectrum of pH (0-14) and is inexpensive to operate. If there is a correlation between results found on the Rapidpoint and the Corning pH meter, then Spectrum Health will be informed and will have evidence needed to

substantiate a change from the Rapidpoint to the pH meter. 100 deidentified patient samples will be run simultaneously on both machines and the results will be analyzed statistically by ANOVA to determine whether there is a correlation between the two testing platforms.

Sponsor(s): Linda Goossen

KIRKHOF CENTER KC15

The Constitutionality of Intelligent Design

Presenter(s): Patrick Anderson

In 2005, Federal Judge John E. Jones ruled in Kitzmiller v. Dover Board of Education that teaching Intelligent Design theory in public schools is unconstitutional. The decision was a major setback for proponents of ID, who claim that design can be induced in biological organisms based on a principle of "irreducible complexity. " The controversy over whether it is science or religion and the debate over its implications were the aspects of focus in Judge Jones' decision; however, it is not the place for a court of law to answer such questions, for the answers tell us very little about what we need to know about ID in relation to constitutional law. The true ambiguity of ID lies in its presuppositions - namely, its positing of a transcendent entity - and it is specifically this tenant of the theory that makes its teaching in public schools unconstitutional.

Sponsor(s): Kevin den Dulk

KIRKHOF CENTER KC16

The Acute Effects of Histamine, Histidine, and Vitamin C on the Vascular Reactivity of Coronary Arteries

Presenter(s): Zach Heathman, Andy Bosch, Devon Banda, Omkar Hirekhan

The purpose of this experiment is to test the effect of the generation of free radicals resulting from the reaction between histamine or histidine and vitamin C on blood flow regulation in coronary arteries. Impairments in coronary blood flow regulation may be seen as alterations in the ability of coronary arteries to increase or decrease tension in response to pharmacological stimuli. Anterior interventricular arteries will be dissected from porcine hearts, cut into five millimeter sections, attached to a force transducer, and placed in an organ bath. Following equilibration, the rings of coronary artery will be incubated in histamine, histidine, vitamin C, histamine and vitamin C, or histidine and vitamin C for three hours. Changes in tension will subsequently be recorded in response to potassium chloride (a known vasoconstrictor) and nitroprusside (a known vasodilator).

Sponsor(s): Francis Sylvester

KIRKHOF CENTER KC17

The Role of Physical Activity in Children with Autism Spectrum Disorders: A Review of the Benefits and Barriers

Presenter(s): Renae Burke

While diagnostic criteria for Autism Spectrum Disorders is clear, many misconceptions of Autism Spectrum Disorders create barriers and challenges for children with Autism Spectrum Disorders and their interaction with the environment around them. The social model of disability states people with disabilities are more limited by social constraints than actual impairment (Llewellyn & Hogan, 2000). Additionally, research has showed there were no defined guidelines on how to treat children with Autism Spectrum Disorders and left the teachers to use their own methods (Hess, Morrier, Heflin & Ivey, 2007). Social and behavioral impairments leave little opportunity for children

with Autism Spectrum Disorders to be successful in participating in physical activity resulting in a possible higher risk of being inactive (Pan, 2007). Exercise options such as martial arts, swimming and treadmill walking programs have proven successful for children with Autism Spectrum Disorders.

Sponsor(s): Frank Pleban

KIRKHOF CENTER KC18

Transition to Adulthood: A Cross-National Study

Presenter(s): Meghan Gallaway

The main goals of this presentation are to test: (1) how many adult criteria students in Austria, Slovenia, and USA have accomplished, (2) how many criteria students have accomplished of those criteria that they deemed important, (3) whether cross-national differences regarding adult status are related to living conditions and/or a personal outlook of future perspective. N = 636 students completed the Conception of the Transition to Adulthood.They evaluated necessary criteria of adulthood, as well as individually achieved criteria. Slovenian students regarded more criteria critical to achieving adulthood as compared to American and Austrian students. Austrians felt more adult than the Americans. Both groups felt more adult than the Slovenian students. Lastly, the interindividual variations of the students' perceived adult status could be partly explained by the current living conditions, e.g. living outside of family. These effects were similar in all three countries.

Sponsor(s): Wolfgang Friedlmeier

KIRKHOF CENTER KC19

Sustainable Grand Rapids

Presenter(s): Matthew Donahue

The city of Grand Rapids, Michigan is an active player in the sustainability movement. Cortland Overmyer, the Director of Sustainability for the city and the city's champion, Mayor George Heartwell continue to press the importance improving the Triple Bottom Line. This concept, which includes economic prosperity, environmental stewardship and social equity drives the city's sustainability initiative and pushes it to embrace the benefits that are available. This presentation will provide an analysis of the Grand Rapids sustainability initiative as well as the lessons learned.

Sponsor(s): Asli Akbulut

KIRKHOF CENTER KC20

Assessing Surface Runoff at Grand Valley State University Using Arc Hydro, Storm Water Management Software 5.0, and Data Collected From Four Gage Stations Located in the Ravines

Presenter(s): James Barr

Increased erosion of the ravines adjacent to campus began just after the construction of the university as the landscape changed from an agricultural to an urbanized area. Land cover that was once capable of absorbing water is now covered with impervious surfaces. Altered drainage patterns through the construction of storm drains has led to significant impacts on the receiving ravines system. A Storm Water Management Plan (SWMP) was created to address and implement the most effective strategies to reduce runoff and erosion in the ravines. A runoff model that was created using Storm Water Management Software (SWMM). The accuracy of this model was assessed using data collected from gage stations in the ravines and compared to a Geographic Information System (GIS)-based model called Arc Hydro.

Sponsor(s): Peter Wampler

KIRKHOF CENTER KC21

Determination of Notch Signaling is Sufficient to Induce Astrocyte Differentiation Gene Expression by Neural Progenitors in the Developing Central Nervous System

Presenter(s): Sarala Sarah, Tiffany VanderKlay

Notch signaling pathway is known to direct neural stem cell differentiation into astrocytes. Nf1a and Sox9 are two genes known to regulate astrogliogenesis. Regions near the Nf1a and Sox9 genes suggest Notch is sufficient to regulate their expression and thus promote astrogliogenesis. To test sufficiency we used in ovo electroporation assay to overexpress the constitutively active Notch receptor (CAN) in the developing spinal cord of the chicken embryo. Next, we sectioned the embryo and stain for Nf1a and Sox 9 to determine if expression of the gene has changed. Immunofluorescence was performed to visualize the expression of Nf1a. Preliminary data suggests that overexpresion of CAN promotes Nf1a expression, thus suggesting that our hypothesis is correct for Nf1a. Current data do not support that Sox9 expression is increased when CAN is overexpressed. We are currently repeating investigating if CAN overexpression promotes Nf1a and Sox9 expression at different points in development.

Sponsor(s): Merritt Taylor

KIRKHOF CENTER KC22

The Effects of Shift Work on Sleep Deprivation Among Nurses Working in Critical Care

Presenter(s): Michelle Heriford

The common shift length for a critical care nurse is 12.5 hours during the day and night. Yet, studies have demonstrated that shifts of 12 hours or more can lead to sleep deprivation. Further studies have demonstrated that sleep deprivation contributes to errors due to slower response times, reduced cognitive performance and decreased functionality. The purpose of this study is to examine the effects of shift work on sleep deprivation among critical care nurses who work various shift lengths and time of day. Data collected from a survey will be used determine if differences in sleep deprivation exist based on shift length and shift type.

Sponsor(s): Linda Scott

KIRKHOF CENTER KC23

Analyzing Mars Impact Craters using GIS

Presenter(s): Philip Kenroy

The impact craters on Mars tell us a great deal about the history of both Mars and the solar system. Using Mars GIS data and ArcMap Geographic Information System (GIS) as a tool for spatial analysis and presentation of results, I will attempt to answer the following questions: 1.) During what time did Mars undergo most of its asteroid activity? 2.) What are the spatial patterns of impact structures on Mars? 3.) When and where did the largest impacts occur? 4.) Is there a relationship between impact crater size and location?

Sponsor(s): Peter Wampler

Poster Presentations Abstracts

KIRKHOF CENTER BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC24

Emerging Adulthood: Cultural and Personal Perspectives

Presenter(s): Sean Townshend

This poster aims to investigate how university students from three nations (Slovenia, Austria, and the United States) view criteria for adulthood from both a societal and personal perspective. One central question was asked: Does the importance of these criteria vary across the three countries and/or between societal and personal perspectives? N = 636 students completed the Conception of the Transition to Adulthood (Arnett, 1998). In this instrument they rated 38 specific criteria (belonging to six larger categories) as personally important to becoming an adult or not, and also how important these same criteria were to the society that each participant lived in. Nationality was found to be a significant factor for personal image of adulthood in four out of the six categories and for societal image of adulthood in three out of the six categories. In addition, the means of societal importance of criteria are higher than personal views, except in the case of the Independence category.

Sponsor(s): Wolfgang Friedlmeier

KIRKHOF CENTER KC25

Chambira and Palm Densities in the Peruvian Amazon

Presenter(s): Anel Guel

This project is an illustrated analysis of an area of the Peruvian Amazon visited on a study abroad trip led by geography professor Jim Penn in the summer of 2008. Research was conducted on plots along the Tahuayo and Blanco Rivers near the city of Iquitos, Peru. The main focus of this research was an investigation into the abundance and harvest of various palm species. Each palm was tagged and specific data on age and productivity was recorded. The data was then compiled and made accessible to the local villagers. This project was created using Landsat satellite imagery to provide the spatial view of the location. Additionally, ArcGIS was used to map out the distribution of plots and their respective patterns. This project presents us with a glimpse of the comprehensive work conducted by Project Aguaje over the last decade. Our analyses are crucial in understanding the full scope of this conservation effort.

Sponsor(s): Wanxiao Sun, Jim Penn

KIRKHOF CENTER KC26

The Puzzling Mathematics of Sudoku

Presenter(s): April Russell

Sudoku is the latest craze in puzzles, and is played by entering digits from 1 to 9 to complete a partially filled 9x9 grid so that each digit appears exactly once in each row, column, and 3x3 subgrid. There are numerous variations with additional restrictions, for example, Sudoku X, where the entries on each of the main diagonals are also distinct. I will present the results of my research of Sudoku variations, using permutations, rook polynomials, and equivalence relations.

Sponsor(s): Shelly Smith

KIRKHOF CENTER KC27

How a Periodization Strength and Condidtioning Progam can Benefit a Bodybuiler

Presenter(s): Jennifer Dentler

Too often, hospitals are led to believe that marketing and outreach efforts critical to their success are too expensive and cannot produce tangible results. In 2007, a survey performed by Allegan General Hospital reported that the hospital did not enjoy a strong, well defined image in the mind of its consumers and a majority of consumers did not know exactly know what services for which the hospital is known. Additionally, at the time, the hospital offered limited outreach and health promotion programs and was losing patients to outlying hospitals. It became part of the hospital's mission to engage its community in a cost effective manner while meeting the needs of the community in a personal, compassionate and holistic style. This poster will describe the success of a process utilizing a social marketing approach by Allegan General Hospital to promote health with fresh strategies inspiring women to take measurable actions for their health and the health of their families.

Sponsor(s): Gretchen Schumacher

KIRKHOF CENTER KC28

Motivating Rural Women Toward Health Promotion: One Community's Story

Presenter(s): Sean Townshend

This poster aims to investigate how university students from three nations (Slovenia, Austria, and the United States) view criteria for adulthood from both a societal and personal perspective. One central question was asked: Does the importance of these criteria vary across the three countries and/or between societal and personal perspectives? N = 636 students completed the Conception of the Transition to Adulthood (Arnett, 1998). In this instrument they rated 38 specific criteria (belonging to six larger categories) as personally important to becoming an adult or not, and also how important these same criteria were to the society that each participant lived in. Nationality was found to be a significant factor for personal image of adulthood in four out of the six categories and for societal image of adulthood in three out of the six categories. In addition, the means of societal importance of criteria are higher than personal views, except in the case of the Independence category.

Sponsor(s): Wolfgang Friedlmeier

KIRKHOF CENTER KC29

Infant Deliveries in the Emergency Department: Provider Preparedness

Presenter(s): Carole Donazzolo

Emergency Department Abstract Carole Donazzolo Infant Deliveries in the Emergency Department: Provider Preparedness A precipitous delivery is considered a rapid progression of labor, lasting less than 3 hours from onset to delivery. Due to its unpredictable nature, many of these births will occur prior to arriving at the Labor and Delivery Room, and instead occur in an emergency room. Statistics for out of hospital deliveries are difficult to obtain secondary to numbers that include midwife attended home deliveries, unattended home deliveries, and unrecorded out of hospital deliveries. A collaborative team convened to develop department policies and procedures addressing precipitous deliveries. The aim of this project was to develop evidence based practice guidelines for staff education along with the creation of a precipitous delivery kit required for a safe and competent emergency birth.

Sponsor(s): Maureen Ryan

Poster Presentations Abstracts

KIRKHOF CENTER KC30

A Study of the Effects of pH and Common Water Contaminants on the Accustain® Wright Stain

Presenter(s): Kirsten Postma

The Accustain® Wright Stain from Sigma-Aldrich is a one-step Wright Stain that is used to rapidly stain peripheral blood smears either manually or in an automatic slide stainer. The stain is designed to provide consistent results; however, the consistency is dependent upon the water used in the rinsing step and how long the slides are allowed to be in the water. If clean deionized water is not available for use, the reactions are unpredictable. The slides become difficult to read, negatively affecting the patient's treatment. This study explores the effects of various pHs and some common water contaminants on the stain. Slides prepared from EDTA anticoagulated blood and stained according to the Accustain® Wright Stain package insert will be evaluated with regard to the standard Wright's stain reactions. The results of this study will provide insight as to what factors may be causing inaccurate staining reactions. This knowledge will help ensure better outcomes for the patient.

Sponsor(s): Linda Goossen

KIRKHOF CENTER KC31

The Effect of Music on the Rate of Perceived Exertion While Performing Graded Exercise

Presenter(s): Jaimie Biermann, Elizabeth Klesmith

Participants will be asked to complete a survey that describes their use of music during exercise. Participants will be asked to exercise in two conditions. One condition would be performing the graded exercise test with no music. The second condition would be performing the graded exercise test with music. We will determine whether or not there is a difference in the rate of perceived exertion between the two tests.

Sponsor(s): Bradley Ambrose, Jim Scott, Edward Baum

KIRKHOF CENTER KC32

Facial Width Predicts Violent Crime

Presenter(s): Stefan Goetz

Although expressions such as never judge a book by its cover suggest that facial features are uncorrelated with behavior, empirical research indicates otherwise. Of particular interest is Carre & McCormick's (2008) finding that the ratio of a face's width to its height predicted aggression in a lab task and penalties by hockey players. We sought to replicate this finding, focusing on violent crime. We studied individuals whose pictures and criminal records were available from the Michigan Department of Corrections website, focusing on those who had been convicted of at least one unambiguously violent crime (e.g. aggravated assault) and those who only had been convicted of unambiguously non-violent crimes (e.g. receiving stolen property). As predicted, those convicted of violent crimes had significantly wider faces. Differences remained significant when controlling for age and body size. These results support the claim that facial features predict ecologically important behavior.

Sponsor(s): Robert Deaner

KIRKHOF CENTER KC33

Microbial Fuel Cell as a Demonstration of Bacterial Physiology

Presenter(s): Michael Millican

A microbial fuel cell is defined as a closed system in which a microbe oxidizes a substrate, such as glucose, and the electrons are shuttled to an electrode. This flow of electrons generates an electrical current. In our microbial fuel cell glucose is oxidized and the electrons are transferred to a carbon fiber electrode via methylene blue. The purpose for our fuel cell is to demonstrate bacterial physiology and to develop the procedure into a laboratory exercise that will be utilized in the BMS 323 (Bacterial Physiology Laboratory) course. In the development of this exercise, we analyzed the effects of various pH levels, temperatures and microorganisms, including *Escherichia coli, Bacillus subtilis,* and *Clostridium acetobutylicum*. The goal of this exercise is to allow students to generate data from their fuel cells under the various conditions and then explain how the physiology of these microorganisms is changed in response to the environmental pressures.

Sponsor(s): M. Aaron Baxter

KIRKHOF CENTER KC34

Dynamic Student Study Groups - - CANCELLED

Presenter(s): Kurt O'Hearn

Not all students thrive in identical learning environments. Many students acquire more knowledge through communication with their peers than through classroom learning. One of the obstacles this peer method of learning faces is the forming and meeting of student groups to study and learn. This problem is the focus of the research project. In an attempt to bridge the communication gap, a database with complex matching algorithms will be constructed to match ideal groups of students together. Students will be able to create, log into, and personalize an account on the web. Accounts will be accessed through Internet web pages. After matches have been found, e-mails will be sent out to students to announce that groups are forming and meeting. The results of our research will be to evaluate our system, using criteria such as the number of groups formed, the number of times a group met, student satisfaction, and the number of new users the system gains.

Sponsor(s): Roger Ferguson

KIRKHOF CENTER KC35

Combination Training in the Advanced Long Distance Runner

Presenter(s): Crystal White, Mayumi Garcia

In the running world, there are often disagreements on whether a marathon runner can benefit from use of combination training (training aerobically and anaerobically). Current researchers believe that including anaerobic training will enhance the runner s performance. The purpose of this study is to provide a periodization model using combination training for the advanced long distance runner. Because literature regarding combination training is lacking, this research is timely and valuable. There are some generalizability limitations in this research since it has yet to be empirically validated. This study is intended to better enhance the practices of training for the long distance running, athletes and their coaches.

Sponsor(s): Amy Crawley

Poster Presentations Abstracts

KIRKHOF CENTER BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC36

Exploring the Use of Dendrochronology as a Local Climate Indicator: Grand Valley State University Campus.

Presenter(s): Nathan Noll

Dendrochronological studies assume yearly tree-ring widths are affected by temperature, precipitation, and pathogenic infestations. Early wood forms in a spring growth surge, following winter dormancy. Late wood (late summer growth) is less porous, providing an abrupt yearly boundary. This study investigates oak ring-widths as a proxy for summer precipitation and temperature. Pending strong correlations, climate could be reconstructed beyond historic records. Standard tree core preparation methods were performed. Finished cores were digitally measured to the nearest 0.001mm in Adobe Photoshop, and plotted against climate data. Preliminary results of two cores each from two trees suggest correlations require a larger sample. The initial sample does not appear to accommodate biological variations. Previous research suggests two cores each from no less than fourteen trees in a single grove should be used. Furthermore, the trends suggest growth responses are affected by a tree's age.

Sponsor(s): Patrick Colgan

KIRKHOF CENTER KC37

The Design of Focal Adhesion Kinase Substrates and Specificity Determination Using ELISA Assays

Presenter(s): Evan Lund

Protein tyrosine kinases (PTK) are a class of enzymes that phosphorylate proteins on their tyrosine residues. The significance of protein tyrosine kinases today is that their activity is linked to cancer, inflammatory diseases, and diabetes. Focal Adhesion Kinase (FAK) is a protein kinase activated by the Src non-receptor tyrosine kinase which is recruited at a binding site of FAK generated by autophosphorylation. Using solid phase peptide synthesis, a small peptide substrate was generated to aid in the study of FAK activation. The new peptide, EL-3, contained a double phenylalanine site where in previous peptides created had contained either double tyrosine sites or a single tyrosine at either position. Through the characterization study of the new peptide substrate, more knowledge can be attained on the phosphorylation activity of each position on the peptide substrate which will provide more evidence for the construction of new peptide substrates.

Sponsor(s): Laurie Witucki

KIRKHOF CENTER KC38

Current Status and Trends of PCB Congeners in Fish from Muskegon Lake and White Lake

Presenter(s): Autumn Trombka

Samples of fish were collected in 2006 from Muskegon Lake and White Lake (Muskegon County, MI) to determine if PCB congener concentrations had changed from historic levels. Muskegon Lake and White Lake are listed as Areas of Concern (AOCs) by the International Joint Commission because of environmental degradation and contamination and fish consumption advisories for PCBs are in effect. During the last 5 years, the AOCs have conducted waste minimization and remediation programs to remove contaminant sources from the lakes. This project evaluated current PCB congeners in game fish and compared these concentrations to historical levels. Approximately 40 fish (northern pike, carp, largemouth bass, and walleye) were analyzed for PCB congeners using Negative Chemical Ionization gas chromatography/mass spectrometry. The data were compared to historic concentrations reported in 2002 and 1986. Decreasing trends were observed for PCBs in all species analyzed when compared to historic data.

Sponsor(s): Richard Rediske

KIRKHOF CENTER KC39

Enhancing Performance and Preventing Osteoporosis in Master-Level Female Cyclists

Presenter(s): Kathleen Johnson, Christine Russcher

The silent disease that is osteoporosis can creep upon even the most elite female master-level cyclist. The purpose of this study is to utilize proven strength and conditioning techniques for preventing osteoporosis in Master-Level female road cyclists, to allow the athletes to perform at their athletic level for longer. Currently there is little research or specific knowledge on female Master-Level cyclists, nor on the effects of aging to this particular athletic group. To support the developed periodization program current research on osteoporosis in females, and strength and conditioning for cyclists will be utilized. The research in this study is broad and should be empirically validated. This study will illustrate the importance of a well-rounded strength and conditioning program to not only enhance performance, but to prevent the effects of osteoporosis in this non-weight bearing sport.

Sponsor(s): Amy Crawley

KIRKHOF CENTER KC40

Toward the Synthesis of a Series of Phenyl Vinyl Ether Complexes of Iron. Establishing the Correlation Between Metal-Olefin Bond Asymmetry and Reactivity

Presenter(s): Daniel Wood, David Duran

The asymmetric binding of olefins to transition metals has long been observed. Recently, researchers suspect that such binding may enhance the rate of nucleophilic attack during key transition metal catalyzed reactions. Our lab seeks to definitively demonstrate the link between bonding asymmetry and the rate of attack. The current work is directed toward the synthesis of a series of para-substituted phenyl vinyl ether complexes of iron that will allow systematic control of the extent of metal olefin bond asymmetry. Synthetic progress toward this series of complexes will be described.

Sponsor(s): Stephen Matchett

KIRKHOF CENTER KC41

Future Art Educators Learning About Special Needs Students' Art Making Through Service Based Collaboration

Presenter(s): Stephanie McGinnis, Rebecca Bloem, Becky Bartlett, Lisa Maleski, Laura Stoklosa, Kayla Bragg, Mary Powell, Kelsey McCarty

This service-based research records and reflects the teaching of art to students with special needs. GVSU art education students collected data by action-based qualitative research methods. Fourteen students with special need from the Community Based Instruction (CBI) program participated within the course Art 333: Curriculum and Practice. Two art projects were designed and taught, 1) I'm a Superhero: recognizes an artistic expression of one's inner self, positive qualities and strength and 2) Amusement Park: creating an amusement park from recycled materials scaffolds the senses and higher thinking through design and play. The research findings emphasize: a) the role of play in the creative process, b) the need of collaborative teaching practice, c) advocacy of service-based art education, d) the reflective teaching practice for future educators, and e) various individual artistic, cognitive and empirical behavior of students with special needs in the art class.

Sponsor(s): Katalin Zaszlavik

KIRKHOF CENTER KC42

The Rush to Restoration: Stressing the Need for Initial and On-going Assessment of Oak Savanna and Prairie Ecosystem Restoration Projects

Presenter(s): William Counterman

The most neglected aspect of ecosystem restoration is a quantifiable means to gauge the progress of a project. This is especially true in oak savanna and prairie environments. There may be many excuses for this neglect, but the rarity of these ecosystems warrants close monitoring to ensure that the most efficient practices can be identified and promoted throughout the field. Working with Grand Valley State University and The Nature Conservancy of West Michigan, I have developed a monitoring protocol that is based on flexibility and ease of use. Incorporating GPS and GIS technology with a systematic sampling design and using a presence or absence indication of targeted plant and tree species, this protocol has been used to perform an initial floristic assessment and on-going documentation of management activities at a TNC-managed site located in Van Buren County, Michigan.

Sponsor(s): James Dunn

KIRKHOF CENTER KC43

Finding the Rank of an Elliptic Curve

Presenter(s): Clifford Taylor

Can you find two right triangles with rational sides whose area is 6? The famous Pythagorean triangle with sides 3-4-5 is one, but is there another? If so, are there infinitely many? Difficult questions like these motivated the study of elliptic curves. These curves are simply cubic equations in two variables without sharp points or self-intersections. One can define an addition operation on an elliptic curve. With this definition the sum of two points with rational coordinates, called rational points, is also a rational point. In this presentation we discuss a method for finding the rank of a particular elliptic curve. The rank of an elliptic curve is a measure of the set of rational points. The rank of the particular elliptic curve we consider was conjectured to be 2 or 3. Our method attempted to use a 4-covering map from the given elliptic curve to another elliptic curve and the relationship between the rational points of these elliptic curves to settle the rank to be 3.

Sponsor(s): Feryal Alayont

KIRKHOF CENTER KC44

Effects of Fatigue on Free Throw Biomechanics.

Presenter(s): Kevin Wolf

Free throw (FT) shooting is one of the most integral components of basketball. A player may need to make game deciding FTs, even if he or she has been physically exhausted after extensive game play. Although, the role fatigue may play in the overall accuracy and biomechanics of FT shooting is unknown. Thirteen players from the Grand Valley State University Women's basketball team (19.2 ± 1.09 yrs., 177 ± 7.03 cm, 74.5 ± 10.9 kg) participated in the study. The participants performed a standardized fatiguing protocol between pre and post FT shooting trials. The FT trials were video recorded and analyzed using Dartfish software. A rating of perceived exertion (RPE) scale was used to measure fatigue levels. The average RPE was 14.8 and pre and post-fatigue FT percentages were 76.2 and 75.4, respectively. Further results and conclusions TBD.

Sponsor(s): Heather Gulgin

KIRKHOF CENTER KC45

A Periodization Strength and Conditioning Program for Competitive Powerlifting Athletes

Presenter(s): Tanya Schlink

Ever wonder how competitive powerlifters train? Although powerlifting is not a commercialized sport there are many people who compete. Power, confidence, and incredible muscle mass are a few attributes these athletes strive for. The goal of this study was to develop a strength and conditioning periodization program for a competitive powerlifting athlete. This knowledge was significant due to the varied and often misrepresented information in regards to training for this sport. Additionally, this topic is one few people know much about, so developing a common knowledge of powerlifting can be beneficial to other athletes as well. The program included specific training, nutrition, and other physical adaptations. Limitations were in regards to generalization and validation because the information provided was specific to this population of athletes and it has not been proven effective for all athletes. These findings are significant for the preparation of a powerlifting competition.

Sponsor(s): Amy Crawley

KIRKHOF CENTER KC46

Lifespan Osteoporosis Prevention: Evaluation of Modified Osteoporosis Knowledge Test

Presenter(s): Brooke Borgeson-Gray

Osteoporosis is well established as a major public health concern. It is a disease characterized by low bone mass and structural deterioration of bone tissue. The risk of osteoporosis can be reduced when preventative measures are implemented. If appropriate preventative interventions are to be employed, it is important to evaluate osteoporosis knowledge. The Osteoporosis Knowledge Test (OKT) was developed in the late 1980s based on the osteoporosis research at the time. It has been used extensively for osteoporosis research around the world. Research and knowledge have expanded significantly leading to the need to update the OKT. The purpose of this study is to evaluate the reliability and validity of the modified OKT. Modifications to the OKT reflect current research about osteoporosis and calcium requirements, vitamin D, exercise, osteoporosis risk factors, and screening recommendations.

Sponsor(s): Jean Martin

KIRKHOF CENTER KC47

Characterizing the Population Genetic Structure of Polistes metricus: Microsatellite Loci Linked to RNA Encoding Genes Provide a way of Detecting the Effects of Selection.

Presenter(s): Tiffany Young

The paper wasp *Polistes metricus* is broadly distributed throughout the eastern U.S., and ecologically-relevant population structure is likely to occur. We have developed non-coding microsatellite markers which are linked to coding genes to characterize this genetic structure. These new loci, while not directly under selection, can reveal the action of selection more clearly than unlinked microsatellites. To isolate them, we performed a BLAST search of a *P. metricus* EST library for 5 or more tandem repeats of the microsatellite motifs CAT, AAT, AAG, AAC, GAC, ACC, AGG, or CCG. PCR primers were then designed from the contig sequences to amplify regions containing the microsatellite motifs, and the loci were screened to determine their level of polymorphism. We have found that heterozygosity is reduced at these coding-linked loci when compared to loci in non-coding regions, suggesting that they are in fact influenced by selection as predicted.

KIRKHOF CENTER KC48

Evaluation of Obstetrical Patients in the Emergency Department: Policy Revision

Presenter(s): Natasha DeHaan

Pregnant women arriving in the emergency department (ED) present challenges based on their weeks of gestation. To ensure proper screening, services must be coordinated between the ED and obstetrical (OB) floors. The national norm is for women 20 weeks and less gestation to be seen in the ED only, with OB services seeing all women over 20 weeks who present with an obstetrical complaint. Women who fall into a gray area are those over 20 weeks gestation that present to the ED with a non-obstetrical complaint. These patients still require evaluation of pregnancy including assessment of fetal heart tones. This was a joint project between the ED and OB floors at a local hospital, with intent to evaluate the feasibility of having an OB nurse consult on all women over 20 weeks gestation who were being seen in the ED for non-obstetrical complaints. Points of interest included ability of the OB floor to manage patient volume, impact on length of stay, and proper documentation of the OB consult.

Sponsor(s): Karen Delrue

KIRKHOF CENTER KC49

Bilateral Transfer In Relation To Kicking Accuracy

Presenter(s): Katelyn Wood, Andrew Templeton

Previous research has shown there exists a transfer of skill to the non-dominant limb after practice with the dominant limb. Almost all of these previous studies strongly suggest further investigating bilateral transfer, because it is still not well understood. The purpose of our study is to observe the bilateral transfer of kicking accuracy between groups of experienced and non-experienced kickers. Subjects will be put in two groups depending on previous experience with the activity, and another two groups based on their dominant limb. In the experiment, each subject will perform a pre-test/practice session/post-test in which they kick a soccer ball at a scored target ten times. Each tenth trial will be recorded on video for later analysis. The data should allow us to make a conclusion about the relationship between bilateral transfer and previous experience with the activity used to test it.

Sponsor(s): Bradley Ambrose, Jim Scott, Edward Baum

KIRKHOF CENTER KC50

Familiarity as an Aid in Wayfinding for Older Adults

Presenter(s): Amanda Himes

The overall purpose of this study was to determine the impact of familiar cues and working memory on wayfinding in older adults. Wayfinding is defined as the ability to navigate from one location to the next through the use of cognitive and behavioral processess. Working memory plays a vital role in a person's ability to learn an environment. This study examined the impact of familiarity in wayfinding of 94 community dwelling adults aged 55 and older with normal cognition. Place learning was tested using the CG arena in which participants navigated virual environments (familiar versus abstract cues) and working memory was tested using the Trails B Test. In the initial pilot study study familiar cues did not significantly affect wayfinding performance. In addition, preliminary analysis indicates that working memory was related to learning when cues were familiar and abstract.

Sponsor(s): Rebecca Davis

KIRKHOF CENTER KC51

Adopting Best Practices Guidelines for Hyperlipidemia

Presenter(s): Amy Klein

Due to a move toward evidence-based practice in nursing and the presence of multiple guidelines for specific health conditions, it is important to recognize factors that providers need to consider when selecting approaches to meet clients' healthcare needs. A comparative analysis of hyperlipidemia guidelines was performed to determine the similarities and differences among the guidelines and provide recommendations to the providers at the GVSU Family Health Center. A web search found three organizations- The American Heart Association, National Cholesterol Education Program and the Department of Veterans Affairs- that have developed guidelines for the management of clients' cholesterol level. This investigation reviewed the prevention, screening, diagnosis and treatment each organization utilizes and critiqued the evidence base from which the guidelines were developed. An analysis was completed and an integration of new guidelines was initiated at the GVSU Family Health Center.

Sponsor(s): Patricia Schafer

KIRKHOF CENTER KC52

Three Dimensional Laser Scanning of the Ravine Slope Behind Lake Ontario Hall

Presenter(s): Alexander Frye

Three dimensional laser scanning is used in terrestrial surveying to determine changes in the topography of a landscape.It can be applied to such applications in topographic and outcrop mapping, waterfall retreat, detecting erosion, instability, and scanning historical building sites that have been destroyed or damaged so they can be rebuilt to their orginal specifications. By scanning a landscape, the scanner collects digital data sets that represent a dense point cloud of fixed points that hold specific locations in 3D space, which are represented by coordinates. For this research, a portion of the ravines near Lake Ontario Hall will be scanned since the location is known to have slope instability. The data collected will be compared to previous survey data in order to calculate the rate of change of the ravine's slope at this location.

Sponsor(s): Kevin Cole

KIRKHOF CENTER KC53

Target Inquiry: Teacher-Perceived Barriers to Inquiry Instruction

Presenter(s): Christina Billman

Transitioning to inquiry-based instruction in high school chemistry is a difficult task. Any reform designed to aid this transition must address the teacher-perceived barriers and enable teachers to overcome them. Target Inquiry (TI) is a graduate and professional development program at Grand Valley designed to increase the quality and frequency of inquiry-based instruction in high school chemistry. TI's research examines how teachers change as a result of the program. This poster focuses on how teachers' perceived barriers to inquiry instruction changed as a result of the TI program comprising a research experience for teachers (RET) and curriculum development (CD). Interview data from 9 high school teachers in TI's program were collected pre-program, post-RET, and post-CD, and were read, coded, and analyzed to identify barriers. Results from this study showed the teachers' barriers to inquiry decreased and changed. Methods, findings, and implications for future work will be presented.

Sponsor(s): Deborah Herrington, Ellen Yezierski

KIRKHOF CENTER KC54

How to Improve Your Fastball in Softball

Presenter(s): Josh Green, Becca McClearen

In high school softball velocity and accuracy of the pitcher's fastball are becoming more important as the competition level continuously increases. A constant question on a pitcher's mind is: How do I improve my fastball? This research is significant because it provides athletes an opportunity to enhance their pitching skills. Pitchers and their coaches need to know the answer to this question in order to improve the technique of the fastball and stay ahead of the game. We will answer this question by compiling previous and current research that studies the fastball of softball players. Our study will benefit high school pitchers and their coaches by providing a sample strength and conditioning periodization program designed to improve pitching performance. The goal will be to improve the velocity and accuracy of pitchers' fastballs. The researchers hope that high school softball coaches will implement this periodization program into the athletic training routine of their pitchers.

Sponsor(s): Amy Crawley

KIRKHOF CENTER KC55

A Cross-Sectional Study on the Effects of Increased Collection Time on Sweat Volume Retrieval and Chloride Concentration During Sweat Chloride Testing

Presenter(s): Kristin Antkoviak

Diagnostic procedures for cystic fibrosis have been a concern due to collection of insufficient sweat volumes that are unacceptable for analysis in the sweat test. The NCCLS specify that a minimum sweat volume of 15 must be collected during a time period of 30 minutes. Wescor, manufacturer of the Macroduct sweat collection device, suggest if the collection volume is insufficient at 30 min., the device may be worn for a maximum time of 60 min. This study examined whether a sweat collection time of 60 min. would more consistently yield a sufficient volume, while maintaining a chloride concentration that was consistent with that of a collection from 30 min. The t-test was used to determine whether there was a significant difference in the mean chloride concentration between the 2 collection methods. If the results support that a sufficient volume can be collected in 60 min., and the chloride conc. is consistent with the sample collected at 30 min., the procedure for the sweat test can be modified.

Sponsor(s): Linda Goossen

KIRKHOF CENTER KC56

The Effect of Fatigue on Mucsle Activation in Healthy Female Shoulders

Presenter(s): Matthew Sumner

The purpose of this study is to determine the effects of fatigue on muscle activation in females. Previous endeavors attempted to quantify this effect in a primarily male population, however, many of the studies contained methodological flaws that affected the results. This experiment was designed specifically to provide a pure demonstration of the neuromuscular stability mechanism in females. In this study, a manipulandum will test muscle activity in thirty females with no previous history of possible shoulder injuries. The shoulder will be perturbed at 90 degrees of abduction and 90 degrees of elbow flexion in external and internal rotational directions. Participants will then progress through a fatigue protocol, and the manipulandum will collect a second set of muscle response data.

Sponsor(s): Brian Hatzel

KIRKHOF CENTER KC57

Pilgrimage and the Jewish Perspective

Presenter(s): Tiffany Cross

Pilgrimage seems to have its place in most of the world's religions. Of the three Abrahamic religions: Judaism, Christianity, and Islam, Jewish pilgrimage is rarely discussed or as widely recognized as the Hajj (a pilgrimage to Mecca) for Muslims or religious journeys to Vatican City for Catholics. This study is an exploration of the origin of pilgrimage in Judaism as well as an investigation into both traditional and contemporary Jewish pilgrimage practices from an anthropological approach.

Sponsor(s): Sheldon Kopperl

KIRKHOF CENTER KC58

Periodization Program for Professional Beach Volleyball Athletes

Presenter(s): Andrea Shefferly, Ranae Jernagan

Down to the Core! Professional Beach Volleyball athletes have to have the stamina and grace to be effective players of the game. The purpose of this study is to provide a periodization program utilized by female athletes seeking to train for a professional volleyball position. The focus of this program is to develop the athlete s core and balance to maneuver quickly and react immediately during play. This presentation demonstrates a year round training program that will assist the athlete in achieving their goal of becoming a professional beach volleyball player. This is a theoretical program; therefore, the outcomes are projected and are susceptible to change depending on the individual athlete. It is the hope of the researchers that this periodization program will shed some light on athleticism and grace of the beach volleyball athlete.

Sponsor(s): Amy Crawley

KIRKHOF CENTER KC59

What You Didn't Know About the Position of Labor in the United States

Presenter(s): Lindsay Bolles, Megan McCarthy, Jessica Saigh, Stacy Thomas, Jesse Bazan, Nicole Goulet

Statement of the Problem: The lithotomy position is the most frequently used labor position in the United States. However, evidence to support this position is limited and may lead to an increase in complications for the mother and child. Significance of the Problem: This problem is significant because of the number of women in the United States that use this position during labor. If there is convincing evidence suggesting that this is not the best practice, it could have positive implications on the labor and birthing process. Statement of Purpose: The purpose of this research is to locate evidence to support or refute this practice. The goal is to determine the state-of-the-science best labor position that benefits the mother and child most during the labor process. Methods: Using key words, a literature review was conducted through the databases of ProQuest, CINAHL, and MEDLINE. To be determined: Conceptual Underpinning; Summary of Research; Implications

Sponsor(s): Amy Hoffman, PhD, RN

Poster Presentations Abstracts

KIRKHOF CENTER BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC60

The Effects of Sports on Motor Ability

Presenter(s): Molly Cohn, Ashley Trieu

In this study we examined the relationship between childhood sport and physical activity participation and adult motor skills. We did this by administering a series of tests measuring reaction timing, anticipation timing, and hand-eyecoordination. We collected data about the subject's childhood sport and physical activity participation through the use of a survey. The results were used to investigate the relationship between adult motor ability and childhood participation.

Sponsor(s): Jim Scott, Bradley Ambrose, Edward Baum

KIRKHOF CENTER KC61

How Dependent Is the United States on Middle East Oil?

Presenter(s): Samer Umran

The dependence of the United States on foreign oil has drawn a considerable amount of attention to the nation. But just how dependent is the United States on foreign oil? From which countries does the United States import the majority of foreign oil? This research attempts to analyze the geographic source of the foreign oil imported to the United States. Data on petroleum reserves, production, and trade will be obtained from a variety of sources. Geographic Information System (GIS) techniques and statistical methods will be used to display and analyze the patterns of global oil production and trade. Particular emphasis will be placed on the Middle East region.

Sponsor(s): Gang Xu

KIRKHOF CENTER KC62

The iPhone and World of Warcraft

Presenter(s): Matt Elzinga, Michael Preuss, Dean Davis, Ryan Putans, Ben Tjapkes, Aaron Carbaugh

The Apple iPhone and the online multi-player game World of Warcraft are becoming very popular among college students nowadays. Part of the fun of World of Warcraft is comparing your game accomplishments with those of other players. We have created an application for the iPhone called iWoW that allows the user to track his achievements, inventory, and calendar of events. Players can wirelessly sync the device with their World of Warcraft PC to automatically download their latest statistics. In addition, WoW players can connect to another iPhone over Wi-Fi to compare each others' accomplishments.

Sponsor(s): Jamal Alsabbagh

KIRKHOF CENTER KC63

Effects of Asn152 Mutation on Substrate Selectivity of P99 Cephalosporinase

Presenter(s): James Ruble, Jenna Tomlinson

For over 50 years, bacterial infection has been fought with B-lactam antibiotics. Bacteria, however, have evolved resistance to these compounds through B-lactamase enzymes, which hydrolyze their B-lactam rings and render them inactive. Of major concern are bacteria that have become resistant through mutations in their beta-lactamase genes, altering the selectivity of enzyme substrate and allowing the mutant enzymes to hydrolyze many different B-lactams. For the enzyme P99 cephalosporinase it has been shown that mutation of a conserved asparagine residue at position 152 has a substantial effect on its substrate selectivity. In this study, a kinetic characterization of the N152G mutant was performed with several compounds, including a class D B-lactamase inhibitor. Attempts to crystallize the mutant are also underway. Further studies will help elicit the structure and function relationship for this enzyme and might allow development of improved antibiotics.

Sponsor(s): Rachel Powers

KIRKHOF CENTER KC64

A Periodized Exercise Training Program for the Amateur Motocross Racer

Presenter(s): Sara Johns, Amanda Shands

What does it take to be prepared to reach the mental and physical high of motocross? In order to be successful in this sport the athlete needs to train the body for extreme physical demands. Using the traditional periodized model, the researchers will incorporate current strength and conditioning techniques into a program for the amateur racer. This periodized regimen should include muscular strength and endurance, balance, and agility in order to prepare the athlete for the level desired. The methodological resources utilized for this program consist of a broad research review, since there is limited scientific information about training for this unique sport. It may be difficult to apply his program to the entire population of amateur racers due to variations in the individuals who participate. The purpose of this research is to provide a specific strength and conditioning program for an amateur motocross athlete, so that they can advance to a higher level of competition.

Sponsor(s): Amy Crawley

KIRKHOF CENTER KC65

Enhancing the Collegiate Basketball Player's Performance through the Improvement of Strength in Motion and Explosive Power

Presenter(s): Erica Evans, Vanessa Simerson

The dependence of the United States on foreign oil has drawn a considerable amount of attention to the nation. But just how dependent is the United States on foreign oil? From which countries does the United States import the majority of foreign oil? This research attempts to analyze the geographic source of the foreign oil imported to the United States. Data on petroleum reserves, production, and trade will be obtained from a variety of sources. Geographic Information System (GIS) techniques and statistical methods will be used to display and analyze the patterns of global oil production and trade. Particular emphasis will be placed on the Middle East region.

Sponsor(s): Gang Xu

Poster Presentations Abstracts

BEGINNING AT 9:00 A.M. **KIRKHOF CENTER**

KIRKHOF CENTER KC66

An Exploratory Study of the Relationship Between Natural Hazards and Poverty Levels

Presenter(s): Andrea Blanchard

Technology has greatly enhanced the capability of human society to adapt to and utilize the land they inhabit. Yet, anecdotes suggest that countries prone to violent natural disasters such as cyclones, floods, tsunamis, volcanoes, and earthquakes are more likely to struggle economically, due to the costs of reconstruction as well as the breakdown of the social fabric in the affected communities. This research attempts to explore the relationships between natural hazards and poverty levels across the globe. Data on the types and frequency of natural hazards and poverty levels will be obtained from a variety of sources. Statistical methods and Geographic Information System (GIS) techniques will be used to display and analyze the patterns of natural hazards and poverty levels.

Sponsor(s): Gang Xu

KIRKHOF CENTER KC67

What World Do You Live In?

Presenter(s): Dana Kern

It is a common conception the northern hemisphere is at the top of a map. Why is that? The normal maps found in classrooms across the nation depict a specific picture. An "upside-down" map conveys the same truths, sizes, shapes of continents and countries; however it is viewed as incorrect or abnormal. If the United States is not in the top left corner of a map, it too is viewed as atypical. The countries are still in the same order; everything is the same, but people's perception about the world changes. There is no difference, it is strictly political. It is enlightening to think that something as basic as a world map, something most people possess within their lifetime, is strongly influenced by politics. Considering an American views a map with the Southern Hemisphere at the top as "upside-down," the large impact of politics on maps in the United States is unmistakable. I plan to illustrate this concept through a poster presentation, supplemented by Styrofoam globes.

Sponsor(s): Gang Xu

Oral Presentations Abstracts

NOTES 8:00 A.M.—3:20 P.M.

Oral Presentations Abstracts

BEGINNING AT 8:00 A.M.

KIRKHOF CENTER 2250AB

A Compariosn of Labs: Pre-Determined vs. Open-Ended Outcomes

Presenter(s): Kyle McDonald

Most physics educators believe the main purposes of instructional laboratory research are to develop science skill, connect classroom knowledge to real world scenarios, and to understand physics. There are many approaches to laboratory exercises; two of the main techniques used in conducting a lab for an undergraduate course are traditional cookbook labs and Inquiry-Oriented Labs. In a cookbook lab, an instructor gives specific directions that are to be followed then the final measurements are compared to predetermined results. In an inquiry-oriented lab students are given a lab question with an open-ended outcome and they are expected to use their own approach to design, perform, experiment, and analyze data and to construct meaning to answer that question. Therefore, the outcome of this experiment showed the type of lab which yielded a better understanding and better science skills for Newton's 2nd law.

Sponsor(s): Keith Oliver

KIRKHOF CENTER 2250C

Socioeconomic Status and Outcome After Mild Traumatic Brain Injury Rehabilitation

Presenter(s): Patrick Smith, Chris Ulrich, Matt Larsen

Traumatic brain injury (TBI) is a major debilitating disease with an estimated 1.4 million people affected yearly, adding to the 5.3 million currently in need of long-term care. Mild traumatic brain injury (mTBI) is estimated to compose 75% of all TBI. The Mary Free Bed Mild Traumatic Brain Injury Program incorporates multiple therapies including PT, OT, speech pathology, social work, psychology, vocational training, and driver rehabilitation. The purpose of this study is to determine if a correlation between socioeconomic status and outcome variables, seen within the program, exists. It may be possible that an enhanced combination of rehabilitation modalities can be arranged for, which could potentiality lead to improved patient outcomes. This study is a secondary evaluation of a descriptive retrospective chart review that was conducted previously at Mary Free Bed Mild Traumatic Brain Injury Rehabilitation Program.

Sponsor(s): Charles DuBose

KIRKHOF CENTER 2250D

Exploration of a Qualitative and Quantitative Approach to Assessment of a Community Based Mentorship Program

Presenter(s): Kathleen Godinez, Holly Ferris

This study investigates similarities and dissimilarities of a quantitative and qualitative analysis previously conducted at a local mentoring center. The study identified unique findings specific to each study. Both qualitative and quantitative assessments identified positive effects of mentoring on educational performance and self efficacy. The qualitative study identified the positive value of program specific activities like community service among these urban youth.

Sponsor(s): Theresa Bacon-Baguley

**All presentation abstracts have been approved by the mentor.*

KIRKHOF CENTER 2250EF

Readmission of Patients with Heart Failure: A Retrospective Analysis of the Up-Titration of Cardiac Medications and Readmission Rates

Presenter(s): Katherine Bussone, DeeAnna Holbrook, Sara Sundell-Norlin

Heart failure is the leading cause of hospital admissions in adults and has been steadily increasing over the years. The purpose of this study is to compare the readmission rates of patients who had up-titration of cardiac medications during a hospitalization versus those that did not. It is hypothesized that those patients who had up-titration ofmedications will have less readmissions than those who did not. A retrospective cohort design was used in this study. Patients, >18 years, identified from the ICD-9 diagnosis code of heart failure, and admitted between July 1, 2006 and June 30, 2007. A total of 116 patients were identified as having heart failure and as having been readmitted at least once. Most subjects were on a beta blocker at the time of their first readmission, while only 47% were on an ACEI and 10% an ARB. Based on the trends seen in this study, it does not appear that the subjects had up-titration of medications indicated in the treatment of CHF.

Sponsor(s): Theresa Bacon-Baguley

KIRKHOF CENTER 2266

Risk Assessment for Osteoporosis in Adults Treated for a Distal Radius Fracture

Presenter(s): Katie Wright, Amber Somerset, Chad Smith

Patients with a history of any type of prior low impact fracture have a two- to four fold increased risk of subsequent fractures compared with those without a previous fracture (Klotzbuecher, Ross, Landsman, Abbott, & Berger, 2000). Determining the risk factors for fracture and providing appropriate treatment of the low impact fracture is paramount since a previous fracture is among the strongest risk factors for new fractures. The purpose of this study was to determine the risk factors for osteoporosis in adults who have sustained a distal radius fracture as a result of a low trauma fracture.

Sponsor(s): Theresa Bacon-Baguley

KIRKHOF CENTER 2270

A Statistical Consulting Experience: Service Learning in Education Courses

Presenter(s): Tara Fast

Dr. Claudia Wojciakowski is the director of the Community Outreach Center and an Associate Professor in the College of Education at Grand Valley State University. She wants to determine if behavior can be influenced in one semester of a course that integrates components of teaching service learning to student teachers and future teachers. As a statistical consultant for Professor Wojciakowski, I compared answers given by the students on a survey they had taken at the beginning and end of a semester during the 2003-2004 school year. Come find out more about this study on service learning and my experiences as a statistical consultant.

Sponsor(s): Claudia Sowa Wojciakowski, Phyllis Curtiss

Oral Presentations Abstracts

BEGINNING AT 8:20 A.M.

KIRKHOF CENTER 2201

Investigation of Fundamentals of Wind Power Generation for Small-Scale Applications

Presenter(s): Christine Vander Laan

As discussions about the sustainability of the Earth's resources have gained prominence in recent years, ideas for renewable sources of energy have come to the forefront in the scientific community. One initiative for renewable energy is expanding and improving the current wind power technology. This project is designed to explore the fundamentals of wind power generation through the construction and testing of a small-scale horizontal axis wind turbine. A small wind turbine will be created and tested in a wind tunnel which simulates ideal working conditions. Calibration of the turbine will take place at ideal conditions, producing a relationship between specific wind speeds and power output. Average power output and wind speeds will be measured with this turbine. The specifications, data and analysis of the small turbine will be used as a prototype example for construction of a larger model.

Sponsor(s): Ross Reynolds

KIRKHOF CENTER 2250EF

The Cavendish Balance

Presenter(s): Lisa Genovese

This experiment used a TEL-Atomic Computerized Cavendish Balance to collect data for the calculation of the gravitational constant (G). The accepted value for this constant is 6.67x10-11 $m^3/kg*s^2$.

Sponsor(s): Ross Reynolds

KIRKHOF CENTER 2263

Role of Retained Structures for Bird Communities in Managed Forests in Snoqualmie, Washington

Presenter(s): Nicholas VanDyken

Retaining structures in clear-cuts is a planned forestry practice that has been required by legislation to ensure biological diversity. Retained structures (RSs) are green patches, green trees, and snags. Avian communities were used to compare species composition and species abundance in clear-cut stands in relationship to their RSs. We measured RS attributes and performed avian observations. We used linear regression models to measure the significance of species distribution and composition in relation to RSs. We found that the presence of bird species distribution and composition was linked to the number and quality of RSs in a clear-cut stands.

Sponsor(s): Erik Nordman

KIRKHOF CENTER 2266

Investigating Academic Service Learning: A Statistical Consulting Experience

Presenter(s): Ryan Corcoran

Academic Service Learning (ASL) is believed to be an important educational experience for students becoming teachers in the GVSU education program. Dr. Claudia Wojciakowski, Director of GVSU Community Outreach, wants to know how ASL affects GVSU education students. A survey was given to 200, 400, and 600 level courses at the end of the semester. My goal is to compare the survey results for these three levels of education students. This presentation is about my statistical consulting experience, and the results from the study.

Sponsor(s): Claudia Sowa Wojciakowski, Phyllis Curtiss

KIRKHOF CENTER 2270

A New Method to Infer Trail Dimensions Based on Ecosystem Types
Presenter(s): Martha Haglund

Landowners such as the federal government have recommended recreational trail dimensions. However, different ecosystems need diverse trail widths based on soil characteristics. An upland trail system was used to demonstrate a method to assess sensitive areas and optimum trail width based on ecosystem type. Bulk density of soil samples were measured at 30.5 cm, 1 meter and 2 meters away from the center of the trail every 5 meters for 15 meters on both sides of the trail. This method may now be applied to other ecosystems and construct a less destructive trail.
Sponsor(s): Erik Nordman

8:40 A.M.

KIRKHOF CENTER 2250EF

Presence of Positive Selection Pressure Among Fresh Water VHSV Isolates as Compared to Marine Isolates
Presenter(s): Viralkumar Patel

Varity of host fishes are suffering from viral haemorrhagic septicemia (VHS) which is caused by the rhabdovirus VHSV. VHSV-induced death of marine and freshwater fishes from eastern and western Europe, Japan, and the Pacific coast (from California to Alaska) and Atlantic coast of North America significantly impacts the fishing industries in these regions. The nucleotide and codon substitution rate among the freshwater VHSV isolates is 2-5 times faster than among marine isolates. Using the glycoprotein gene sequence from 62 VHSV isolates, we tried to determine if positive selection pressure on viral isolates from freshwater fish differed from those of marine species. Our results suggest increased positive selection pressure among freshwater isolates of VHSV as compared to those among isolates from marine species. The significance of these results vis-à-vis aquaculture is discussed.
Sponsor(s): Doug Graham

KIRKHOF CENTER 2266

Investigating the Enrollment in Theme and Culture Classes: A Statistical Consulting Experience
Presenter(s): Sheldon Robinette

Dr. Carol Griffin, Director of the General Education Program, wants to determine if the enrollment per section is changing in Theme and Culture classes at GVSU. She also wants to investigate if enrollments for these courses are changing at a different rate than other Non-General Education courses of the same level. If the per section enrollments are increasing, it must then be decided if the changes warrant adjustments in teaching pedagogy. This presentation will focus on my experience as a statistical consultant, along with results from this study.
Sponsor(s): Carol Griffin, Phyllis Curtiss

Oral Presentations Abstracts

BEGINNING AT 9:00 A.M.

9:00 A.M.

KIRKHOF CENTER 2201

Statistical Analysis of Kent County Breastfeeding Rates

Presenter(s): Nicole Arradaza

Students in Introduction to Survey Sampling developed a plan to sample mothers in Kent County who had a child born during the first nine months of 2007. The Michigan Department of Community Health provided access to the Kent County Health Department a listing of all newborns in Kent County. From this list mothers were randomly selected to be sent a questionnaire about their current breastfeeding practices. This talk highlights results of the analysis of breastfeeding initiation rates and practices in Kent County.

Sponsor(s): John Gabrosek

KIRKHOF CENTER 2250C

A GIS Model of Gas Energy Infrastructure at Grand Valley State University, Allendale

Presenter(s): Drew Smith, Mary Lyons, Carrie Hause, Chelsey Carlson, Anthony Petersen

Grand Valley State University has an extensive natural gas infrastructure. In the past, it has been difficult to locate some meters on campus during emergencies because of inconsistent placement and incomplete information. We developed an interactive map and visual database of gas meters for better management. This involved cataloging, photographing, and geocoding the location of gas meters using Global Positioning Technology. Our project will allow the Department of Public Safety and EMS services to easily manage gas meters in the future since they now have absolute locations that were converted to shapefiles (digital maps), and integrated into KML (Keyhole Markup Language) documents. KML documents allowed us to integrate our data with Microsoft oblique pictometry data via an internet web page for easy on-line access. This project allows for many applications, namely record-keeping, emergency response, and public safety.

Sponsor(s): Edwin Joseph

KIRKHOF CENTER 2263

A Comparison of the Knowledge of Hormone Replacement Therapy between Caucasian and African American Women

Presenter(s): Aleksandra Lieckfield, Karen Ozinga

The goal of the study was to see if there was a difference in knowledge of Hormone Replacement Therapy (HRT) between African American and Caucasian females. The study additionally looked to compare the knowledge between the racial groups, in relation to menopausal status, ever-use of HRT, and HRT information source. The study was a secondary analysis which had a convenience sample of 33 Caucasian females and 5 African American females between the ages of 40 and 60. There was not a difference in the knowledge of HRT for all areas of knowledge studied. Additionally, the study did not find a difference in the source of information between the two groups. The results did not support the hypotheses that there would be a difference in the knowledge base or source of information between African American and Caucasian women, further research was indicated so that health care providers are aware of the discrepancies in knowledge base and where women are receiving information regarding HRT.

Sponsor(s): Theresa Bacon-Baguley

KIRKHOF CENTER 2266

Hit the Books Running Campaign

Presenter(s): Charlotte Sasinowski

The Bateman Competition is a national competition through Public Relations Student Society of America, which consists of research, planning, and executing a campaign. The 2009 client is the Consumer Banker Association (CBA), a national trade organization among federally insured member institutions. Our campaign focuses on their new program called, Hit the Books Running (HTBR).The main goal of the HTBR campaign is to focus on good grades and ways to pay for college, which was determine through primary and secondary research. The objectives are to create awareness, change or create attitudes and to have the target audiences take action. To support those objectives the strategies are to involve students in college-oriented activities, engage students in the direct discussion and application of pertinent college information and to create incentives for students to seek college information. Results of the campaign will be determined in March.

Sponsor(s): Tim Penning

KIRKHOF CENTER 2270

An Internship Experience at The Statistical Consulting Center

Presenter(s): Allison Wehr

The Statistical Consulting Center (SCC) at Grand Valley State University (GVSU) is a place where GVSU students, faculty, and non-profit organizations can turn for statistical advice. Along with the statistical assistance offered, the SCC also employs undergraduate and graduate statistics students. I have been working in the SCC as an undergraduate intern for the winter semester of 2009. My responsibilities include meeting with clients, data cleaning, data management, and conducting statistical analyses. This experience has given me new perspectives on statistics. In this presentation I will discuss the SCC, what I have learned and how this internship experience will help me further my future career in statistics.

Sponsor(s): Phyllis Curtiss

9:20 A.M.

KIRKHOF CENTER 2250C

A Statistical Consulting Experience: Analysis of Differences in Class Size of GVSU's General Education Foundation Courses

Presenter(s): Katie Green

In order to fulfill GVSU's graduation requirements, students must complete eight courses from seven categories within the foundation section of the General Education Program. Dr. Carol Griffin, Director of the General Education Program, asked me to investigate if the class size of courses within the foundations has changed over the past five years. Dr. Griffin is also interested in whether the average class size of general education foundation courses differs from the average class size for other courses of the same level. My role as a statistical consultant entailed several explanatory data analyses. This presentation will explain my role as a statistical consultant and share some of the results.

Sponsor(s): Carol Griffin, Phyllis Curtiss

Oral Presentations Abstracts

BEGINNING AT 9:20 A.M.

KIRKHOF CENTER 2250D

"I don't never know what ails him" - Problems of Articulation in Flannery O'Connor's Wise Blood

Presenter(s): Tshering Bhutia

I shall argue in this paper that Hazel Motes (the central character) does not achieve redemption or a resolution of any kind because he fails to recognize the logocentrism inherent in the world that Flannery O'Connor creates. This failure is brought about by his refusal to employ language. By rejecting the ability of language to articulate his concerns or even responding to significant questions (questions that operate as starting points for his journey back to Christ) asked by various characters he rejects the word which in effect signifies the beginning of the whole, an essential feature of O'Connor's fiction

Sponsor(s): Mark Schaub, Avis Hewitt

KIRKHOF CENTER 2263

Modeling Habitat Suitability for Cougar in the Upper Peninsula of Michigan

Presenter(s): Joseph Severson

Habitat models provide valuable tools for natural resource managers. The goal of my research is to apply a GIS-based habitat suitability model for Midwestern states west of the Mississippi River to the Upper Peninsula of Michigan. The model will predict where the expanding western cougar population would likely re-colonize by combining such habitat variables as land cover, slope and proximity to humans, roads and water. I hypothesize that distance to water is not a major factor in determining suitable habitat for cougars in the U.P. because of the abundance of surface water, and can be excluded from the habitat model.

Sponsor(s): Erik Nordman

KIRKHOF CENTER 2266

Evaluation of Spring Flow, Bacterial Contamination, and Distribution of Fresh Water Resources in the Vicinity of Verrettes, Haiti

Presenter(s): Andrew Sisson

The purpose of this study was to gain a better understanding of fresh water springs used as the primary source of potable water in rural Haiti. Field data was collected during the summer of 2008 near Verrettes, Haiti, approximately 120 km north of Port au Prince. GPS locations of 29 springs were recorded within the 87 sq km study area. Two water samples at each spring were taken for bacterial analysis: one sample was submitted to a local hospital and a duplicate sample was cultured using Coliscan Easygel Kits. Both capped and uncapped springs were sampled to determine whether capping improves water quality. Field water quality parameters and flow volume estimates were recorded at each spring to determine possible correlations with the presence of *E-coli* and total coliform.

Sponsor(s): Peter Wampler

KIRKHOF CENTER 2270

Do Ambulance-Based 12-Lead ECGs Decrease the Door-to-Intervention Time in ST Segment-Elevated Myocardial Infarction (STEMI) Patients?

Presenter(s): Jennifer Partenio, Amy Hicks, Erin Murphy, Gregory Niedzwiecki, Vinh Ho

Heart disease is the leading killer in the United States. The time from onset of symptoms to intervention has been associated with reductions in mortality rates. The use of 12-Lead field electrocardiograms (ECGs) in detection of ST-elevation myocardial infarction (STEMI) has been shown to reduce door-to-balloon time in many cases. This retrospective study, using data from Metro Health Hospital, compares door-to-balloon times for patients that received pre-hospital ECGs and those who did not. The results suggest that door-to-balloon time was lower in cases where a 12-lead field ECGs was utilized.

9:40 A.M.

KIRKHOF CENTER 2250AB

Identification of Developmental Genes in the Southern Flying Squirrel (Glaucomys volans)

Presenter(s): Mitchell Sydloski

The southern flying squirrel (*Glaucomys volans*) is a unique creature with little being known about how its plagiopatagium develops. The plagiopatagium is the wing like structure southern flying squirrels use to glide through the air. After analyzing gene expression patterns in related species, Fgf8 and dHAND were identified as potential genes responsible for the development of this structure. Primers were designed based on the common mouse (*Mus musculus*) whose DNA sequences we analyzed, which are highly homologous to the southern flying squirrel. Using the Fgf8 primers, successful PCR amplification was performed only using mouse DNA. Using the dHAND primers, successful PCR amplification was performed using both mouse and squirrel DNA as templates. The PCR product using the dHAND primers was cloned and sequenced and the segment was shown to be 86% homologous to the mouse version of the dHAND gene. Thus, the novel sequence of the dHAND gene for the southern flying squirrel was found.

Sponsor(s): Bruce Ostrow

KIRKHOF CENTER 2263

Distinguishing Forest Types within Van Zoeren Woods

Presenter(s): Anthony Holm

Van Zoeren Woods is a forested property owned by Michigan's Zeeland Charter Township. Since the property is open to the public, they would like some information about the forest's characteristics to use to inform visitors. Therefore, in this study I examined forest characteristics and I divided the forested area into distinctive forest types. I measured individual tree size, age, and species along with stand density. Statistical differences in these characteristics were then used to delineate the different forest types.

Sponsor(s): Erik Nordman

Oral Presentations Abstracts

BEGINNING AT 10:00 A.M.

KIRKHOF CENTER 2201

Transgender and Transsexual Tendencies: The Cultural Impact of Loki's Gender Exploration and Transgression

Presenter(s): Benjamin Knight

In Norse mythology, Loki, the god of lies and deception, is a trickster figure, often subverting established norms and rules. He does this in many ways, but, specifically for the purpose of this paper, he uses his shapeshifting abilities to change sex and gender, becoming both female and womanly. This stands in contrast to the masculine appearance and form that seems to be his default. For the Norse then, he exists within the space just beyond proper masculinity and works within the subsequent anxieties that come with being womanly. Also, because mythology is a way to understand the world, his gender transgression is not merely the trickster figure's mischief, but he is actually representative of the Norse culture exploring the limits and boundaries of what is masculine and what is feminine within the relatively safe space of mythology. Therefore, understanding Loki's gender and comparing it to the Norse gender model gives a more complete picture of the Norse gender psyche.

Sponsor(s): Rachel Anderson

KIRKHOF CENTER 2250AB

Sandra Day O'Connor and her Influence on the Supreme Court

Presenter(s): Patrick Miller

Sandra Day O Connor was not only the first female member of the Supreme Court, but was also the most influential justice during her tenure. Rarely has a justice so clearly followed what the majority of the American people wanted rather than the will of the Republican President who appointed her to the court. Once in awhile, however, she did allow her own beliefs to enter into play. Specifically, three landmark cases demonstrate her willingness to follow her own values: Planned Parenthood v. Casey, Bush v. Gore and Grutter v. Bollinger. So influential was Sandra Day O Connor that, by studying both her years on the court and these three specific cases, one begins to understand how her position helped shape American culture in the late twentieth and early twenty-first century. The paper presentation at the Student Scholarship Day will provide greater detail about the life of former Justice O Conner, her judicial influence and the three important cases previously mentioned.

Sponsor(s): Maris Stella Swift

KIRKHOF CENTER 2250C

Gender Differences in Job Satisfaction Among Physician Assistant Faculty

Presenter(s): Molly Downing, Megan Smith, Rachelle Franks

The physician assistant (PA) career is one that is growing as well as increasing in demand. Many PAs in academic medicine are leaving their jobs to enter clinical practice, leaving a shortage of PA educators, especially females. This study examines the differences in job satisfaction between male and female faculty members in order to determine what aspects of their jobs may account for these differences. Survey data was collected from PA faculty members regarding their job as a PA educator which included the work itself, level of compensation, supervisor involvement, coworker relationships, advancement opportunities and overall job satisfaction. Our data showed both male and female PA faculty were most satisfied with coworker relations and least satisfied with their salary. Both genders were more dissatisfied with overall job satisfaction when compared to the other five factors. The only statistically significant factor was supervisory support.

Sponsor(s): Andrew Booth, Wallace Boeve, Neal Rogness

KIRKHOF CENTER 2250D

A Comparison of Tests given when English is a Second Language: A Statistical Consulting Experience
Presenter(s): Lindsey Quaderer

The Chinese Government designs and administers the TEM4 and TEM8 tests to all students majoring in English throughout the universities in China. These tests evaluate students' proficiency in English as a second-language and whether they will be allowed to continue on with their education. My roll as a statistical consultant is to compare the average score of sections of these two tests to the more widely known TOEFL (Test of of English as a Foreign Language), which is used in the U.S. In my presentation I'll reveal how the Chinese tests compare to the U.S. standard as well as a comparison of the sections of the Chinese tests

Sponsor(s): Shinian Wu, Phyllis Curtiss

KIRKHOF CENTER 2250EF

Second Generation Succession in a Family-Owned Business: Exploring Age and Gender Issues
Presenter(s): Alaina Ebenhoeh

Exploring how age and gender affect the succession process in a family-owned financial planning business. Two main focuses of the succession are the transfer from male to female and the skip generation. Primary data was collected by personal interviews with the business predecessor and other employees to identify potential internal conflict. Client surveys were conducted to analyze the external view of the successor. Discussion about the perception of age and gender within the work place give light to the challenges a successor faces during the succession process. The importance of this presentation is to educate young females about the challenges and expectations during the process of succession as well as identifying the perceptions of a young, female financial planner in a male dominated industry.

Sponsor(s): Sonia Dalmia

KIRKHOF CENTER 2259

Accreditation and Standardization in Therapeutic Recreation Curricula
Presenter(s): Elizabeth Hungerford, Michelle Viane, Stephanie Kurcab, Alisha Betcher , Renae Sauter

Using qualitative research methods this presentation explores the issues of accreditation and standardization in the field of thereapeutic recreation. More specifically the presentation will address the issues of therapeutic recreation specific course work, support course work and student internships.

Sponsor(s): Kari Kensinger

KIRKHOF CENTER 2263

Changing Climate and the Response of Birds
Presenter(s): Nicholas Berghuis

This study tests the hypothesis that Michigan bird populations are responding to climate change. The investigation will depict a changing climate via predicted shifts in the range margins of birds. Three locations were chosen of varying latitude to compare a southern site (Kalamazoo), mid-latitude site (Muskegon), and northern site (Traverse City) using 40 years of data (1968-2008). The National Audubon Society s annual Christmas Bird Count was used

to analyze historical information. Climate change is expected to shift bird ranges northward as they respond to new competition and warmer average temperatures reaching higher latitudes.

Sponsor(s): Erik Nordman

KIRKHOF CENTER 2270

Expansion of Southerly Distributed Species in the Arctic in Response to Warming

Presenter(s): Jennifer Liebig, Jeremy May

High latitude regions have experience and are expected to experience the most profound climate change. Here we examine the response of plant species to experimental warming at four sites in northernmost Alaska. The experiment was established between 1994 and 1996, and this study presents data collected in 2007 and 2008. Plant cover was sampled using a point frame method. Previous studies have found that when compared to the control plots, the warmed plots show an increase in the cover of vascular plants. This study examines the differences between plants species classified into four different regional zones published by Steven Young (1971). We found that species in Zone 4, the zone with the southernmost northern limit, always showed an increased cover in warmed plots, while the relative cover of species from the other zones varied among sites. The trend is that warmed plots show an increased in cover of more southerly species, which supports the prevailing wisdom.

Sponsor(s): Robert Hollister

10:20 A.M.

KIRKHOF CENTER 2201

Exploring Mexico City with Spatial Information Technology: A GIS Approach

Presenter(s): Eduardo Diaz

GIS and GPS technology are indispensible for understanding the world. New trends in Information Technologies have opened up opportunities for exploring culturally significant places, and have encouraged community partnerships and global awareness. Multimedia mapping is a combination of GIS and GPS technology with digital imagery, video, and texts to enhance spatial representation. Linking geographic features and geocoded images to html, kml, and xml documents will enable the creation of Mashups (a Web application that combines geographic and other data into a single integrated interface). My collaborative research integrates dynamic maps of Mexico City that are accessible via the internet (Google Earth, and Microsoft Maps). They are bilingual, and appropriate for geographic education in K-12.

Sponsor(s): Edwin Joseph

KIRKHOF CENTER 2250AB

Bacterial Analysis of Michigan Cherry Wines

Presenter(s): Emily Henk

The process of winemaking utilizes a number of microorganisms to enhance the quality and final flavor of wine. Some of the major microorganisms are lactic acid bacteria (LAB) and acetic acid bacteria (AAB). Since most wines are made with grapes, the typical flora of grape wine is well established, but the flora of cherry wine is unknown. The goal of this study is to identify the species of bacteria in cherry wine. Bacteria from cherry wine were grown on media

plates. We used PCR to isolate a specific variable region of the 16S ribosomal RNA gene, a region that differentiates between different bacteria. These PCR products were purified, quantified and sent to be sequenced. The sequences will be entered into an online database where the genera of the bacteria can be determined. Some preliminary results show that Acetobacter, a genus of AAB, are present in the flora of cherry wines. Additional identification tests will include catalase testing, Gram staining and colony shape analysis.

Sponsor(s): Margaret Dietrich

KIRKHOF CENTER 2250C

Community and Institutional Partnerships in Art Education

Presenter(s): Kelly Junis, Jessica Schultz, Autumn Paulson, Megan Oswalt, Gabriel Conlon

In conjunction with a show of Jonathan Borofsky at the Fredrick Meijer Gardens, GVSU art education students, currently enrolled in ART 333 Curriculum and Practice, offered workshops for museum visitors of all ages. Art projects were designed with Jonathan Borofsky's art practices in mind. Their objectives included 1) connections between subject and setting, 2) exploring the self through dreams and imagination, 3) experiencing collaborative art practice, 4) encouraging dialogue and critical thinking, 5) providing holistic learning experience beyond the school setting. Art Education students kept a reflective journal and took visual documentation for all four sessions. They held discussions on how to improve the projects while referencing their own experiences along with a survey the participants completed. Findings advocate for institutional partnerships to serve community through art, inclusive and process centered creative practice, and the role of art education for all ages.

Sponsor(s): Katalin Zaszlavik

KIRKHOF CENTER 2250D

Analyzing Recurrent Events Data more efficiently

Presenter(s): Dung Pham

Our research project involves updating and improving the efficiency of computer programs originally written by Dr. Dan Frobish, Department of Statistics in the statistical software package called R. In order to be able to work on the programs, I had to learn about Dr. Frobish's area of specialty, Recurrent Events, which is an area within the broader area of Survival Analysis. Survival Analysis is an area of Biostatistics concerned with studying how long an event takes to happen, e.g. death, disease, remission, etc. I took a graduate course taught by Dr. Frobish in Survival Analysis as part of my preparation, and also taught myself how to use R. Then we had many conversations in which he explained the area of Recurrent Events, and how the computer programs fit into the project. In this presentation, I will briefly explain Recurrent Events, and how these computer programs could be used to analyze real data

Sponsor(s): Dan Frobish

KIRKHOF CENTER 2250EF

Tests of English as a Foreign Language: A Statistical Consulting Experience

Presenter(s): Dave Vanthof

Two of the most popular statistical software programs are R and SAS. I have used these two programs to do various Statistical analysis involving biostatistical data. This presentation will examine the advantages and disadvantages of the two programs that I encountered in my analysis.

Sponsor(s): Sango Otieno

Oral Presentations Abstracts

BEGINNING AT 10:20 A.M.

KIRKHOF CENTER 2263

Exploring the TR Process Across Settings

Presenter(s): Lindsay Dalach, Melanie Schafer, Sarah Engel, Amanda Loomis, Emily McCormick

Using qualitative research methods this session will explore the conceptual idea that Therapeutic Recreation is a process not a place. Special attention will be given to understanding the role of Special Olympics, wheelchair basketball, and therapeutic horseback riding in the Therapeutic Recreation profession.

Sponsor(s): Kari Kensinger

KIRKHOF CENTER 2269

Liberal Education Among Prisoners

Presenter(s): Ben Tolman

This work is grounded on the teaching of critical thought at a local correctional facility and the reflections/implications that arose out of that experience. This work focuses on the implications of teaching critical thought and consciousness to students and wrestles with ideas found in liberalism (e.g., Earl Shorris), thoughts on teaching and education of a more aristocratic nature (e.g., Leo Strauss, Allan Bloom), and with the democratic pedagogy inspired by Paulo Freire. The efforts of Shorris and Strauss, while valuable in many respects, harbor pedagogies of paternalism/authoritativeness that often fail to elicit the full creativity and understanding of both student and teacher. These aspects can only be brought to full fruition with a more democratic approach (e.g., Freire) in which the teacher/student relationship is not static but fluid, meaning that the best approach is one where, not only can the students learn from the teacher, but the teacher can learn from the students.

Sponsor(s): Josef Gregory Mahoney

KIRKHOF CENTER 2270

Illuminating the Night Sky: Exploring Light Intensity and Security on GVSUs Allendale Campus

Presenter(s): Dung Pham

Lighting is an essential part of campus safety. Our goal was to catalog the location of outdoor lighting facilities on GVSU Allendale campus using GIS, GPS, and light meters to assess lighting distribution. We collected lighting data at predetermined locations and recorded height and intensity of each lighting source. We then used desktop GIS (spatial analyst) to interpolate a light intensity map. The resulting map identified different light intensities. We then delineated the dark areas not meeting the Occupational Safety and Health Administration (OSHA) standards and analyzed the environment (ground truthing and 3-D modeling) to determine inefficiencies. Our results will help the Facilities and Maintenance staff to assess lighting demands; the Department of Public Safety (DPS) will be able to organize more efficient patrols to deficient areas; and maintenance staff will be able to update poorly lit areas. In short, our efforts will make the campus community safer.

Sponsor(s): Edwin Joseph

10:40 A.M.

KIRKHOF CENTER 2201

Russian Settlement of Siberia

Presenter(s): Stephanie Moravec

In the one hundred and eight years after 1581, from the conquests of Yermak to the Treaty of Nerchinsk, the Russian tsars acquired some ten million square miles of territory reaching from the Ural Mountains to the shores of the Pacific Ocean. Some European Russians considered this vast territory a foreign Asiatic colony in the manner of the European overseas empires, but in reality it was a continuation of the sphere of Russian culture and society. A better comparison to Siberia would be the Wild West of America s frontier, and the myths and perceptions it represents. Owing to the valuable furs, rich fertile soil, and free, untamed land, Russian expansion across Siberia and the Far East from the Urals to the Pacific was relatively swift, and forever changed the look and scale of the Russian Empire.

Sponsor(s): Edward Cole

KIRKHOF CENTER 2250AB

Logging Off Reality

Presenter(s): Katherine Seif

Drawing on online gaming research by Nick Yee, Mark Griffiths, Edward Castronova and Peter Wiemer-Hastings, this project employs rhetorical, bibliographic, and ethnographic research methodologies in order to explore the web of corporeal relationships in World of Warcraft. While current literature (Cole, Jakobsson, Duchene & Moore) states that online gaming is a socially interactive activity, this project suggests that while the gamers may be more socially active in the game, the gamers corporeal relationships suffer making them socially inactive. More research is needed to determine support internet/online gaming addictions, with emphasis on what these addictions do to corporeal relationships. Keywords: Online gaming, internet addictions, gaming addiction, corporeal relationships

Sponsor(s): Samantha Andrus-Henry

KIRKHOF CENTER 2250C

Cadmium Telluride Thin Film Photovoltaic Cells

Presenter(s): Paige Lampen

Recent research in the field of solar energy has been directed towards cheaper and more efficient alternatives to traditional silicon solar cells. During this project, a photovoltaic cell based on one such alternative material, cadmium telluride (CdTe), was constructed and tested. A close space sublimation technique was used to deposit successive thin layers of cadmium sulfide (CdS) and CdTe on a tin oxide-coated glass substrate to form the active region of the cell. Finally, a layer of antimony telluride (Sb2Te3) was added to form an ohmic electrical contact to the CdTe region. The efficiency and fill factor of the cell were measured over a range of incident power using a four-probe method.

Sponsor(s): harold schnyders

Oral Presentations Abstracts

BEGINNING AT 10:40 A.M.

KIRKHOF CENTER 2259

Reimbursement of Therapeutic Recreation Services

Presenter(s): Jamie Clark, Niki Reams, Sara Langlois, Hillary Fisher, Ashley Quist

Using qualitative reserach methods, this project will explore the role of reimbursement in therapeutic recreation. This will more specifically focus on the roles of Medicare, third-party payers, and professional organizations.

Sponsor(s): Kari Kensinger

KIRKHOF CENTER 2263

Agricultural vs. Native Prairie Areas Usage by White Tail Deer

Presenter(s): Paul Rogers

Will a prairie restoration in a specific area increase that area's usage over a standard agricultural field by large terrestrial animals? Prairies are important habitat areas, not just for small mammals and birds but also for large terrestrial animals such as the white tail deer. While not totally dependent on these prairie areas, they provide important benefits such as grazing, bedding and birthing areas. I am proposing to install a two acre native prairie next to a currently active agricultural row crop area. Using a monitoring device I will record each area's deer traffic over two week time periods per sampling site.

Sponsor(s): Erik Nordman

KIRKHOF CENTER 2269

Reproductive Technology in Western Society: Ambiguity over biological parenthood and the patriarchal control of women

Presenter(s): Linsey Cory

Recent developments in medical reproductive technology have strongly impacted the lives of women in Western society. Ambiguity regarding kinship and biological parenthood has been caused in part by these current medical advances and the separation of sex and procreation. This paper argues that the treatment of fertility using medical reproductive technologies and the ambiguity they generate serves to maintain patriarchal control over women. The terminology used to refer to women and their reproductive systems will be examined through the work of feminist sociologist Barbara Katz Rothman. The efforts of bioethicist Leon Kass will provide a critique of the norms surrounding biological parenthood, including its history and significance for women in Western culture.

Sponsor(s): Voichita Nachescu

KIRKHOF CENTER 2270

A Statistical Consulting Experience: Studying the Theme Completed by the Different Majors

Presenter(s): Bradford Dykes

Grand Valley State University's General Education graduation requirements necessitate that all students complete a series of three additional upper level courses, in a related topic known as a theme. These themes are composed of courses from multiple disciplines that enable a student to create links between related topics. Dr. C. Griff Griffin, Director of the General Education Program, was interested in knowing if students with a certain major completed one theme over others. My statistical consulting experience included generating a large amount of descriptive statistics in order to compare majors within a completed theme.

Sponsor(s): Carol Griffin, Phyllis Curtiss

11:00 A.M.

KIRKHOF CENTER 2201

Wavelets and the NFL

Presenter(s): Geoff Patterson

The National Football League was founded in 1920 and extensive statistics are available for every team from every year since then. With numerous types of statistics collected every year for every team, it is obvious that there is a very large amount of data available. Wavelets are a mathematical tool which have several uses; one of which is analyzing large amounts of data. My research this semester involves applying diffusion wavelets to NFL data in order to simplify and classify NFL teams in different groups based on their statistics over the years. Using the results of these classifications, I identify patterns which are potentially useful for predicting the outcome of NFL games.

Sponsor(s): Edward Aboufadel

KIRKHOF CENTER 2250AB

A Basic Primer on Industrial Security Firms

A Basic Primer on Industrial Security Firms

What Every Business Person Should Know About Industrial Security Firms . Each year, companies lose billions of dollars due to the theft of valuable physical and intellectual property. Industrial security firms can provide the technology and consulting services needed to stop such theft from ever occurring. Throughout the summer of 2008 students Travis Cornwell and Joe Woods worked along side Professor Star Swift to create a 38 page paper and 15 minute film to serve as a basic primer on the surveillance techniques used by industrial security firms and the legal guidelines that employers must follow when monitoring their employees. The paper and film were accepted to the 30th Annual McMaster World Congress which focused on the topic of economic crime prevention. Cornwell and Woods were the only students accepted to present at the conference and the project was well-received by industry practitioners and academic professionals alike.

Sponsor(s): Maris Stella Swift

KIRKHOF CENTER 2250C

The Substance of Death: The Effect of Mortality Salience on Substance Use

Presenter(s): Timothy Ecklesdafer, Derek Doughty

The current research examines how attachment style and mortality salience affect participant's desire to use caffeine, nicotine, and alcohol. According to Terror Management Theory, reminders of death arouse anxiety which in turn increases reliance on one's epistemic structure. It has also been found that attachment style affects the manner with which individuals deal with existential concerns and also their propensity to use substances. To date, no one has tested the combined effects of these two variables in relation to substance use. The current study hypothesized that mortality salience would increase substance use among insecurely attached individuals. Initial results did not support the original hypothesis, however follow-up analyses revealed a significant interaction of gender x mortality salience, such that male (vs. female) participants exposed to the death (vs. control) reported the highest intentions to use substances . Implications of these findings are discussed.

Sponsor(s): Todd Williams

Oral Presentations Abstracts

BEGINNING AT 11:00 A.M.

KIRKHOF CENTER 2250D

An Analysis of Historic Ceramics at Indian Landing (20BA02) in Hastings, MI

Presenter(s): Casey Huegel

This report is an analysis of the ceramic assemblage excavated from Indian Landing site (20BA02) in Hastings, MI. The artifacts collected are associated with a mid nineteenth century log cabin which transferred ownership on multiple occasions throughout its existence. The primary goals of this research are to determine the socioeconomic status of the occupants and give further insight into the cabins primary occupation dates. This will be done by examination of ware type, decoration, and form to determine a general distribution of the ceramic assemblage. Further analysis will classify the earthen wares into four levels of economic significance as recommended by George Miller in his article Classification and Economic Scaling of Mid-Nineteenth Century Ceramics.

Sponsor(s): Dale Borders

KIRKHOF CENTER 2250EF

Civil Society in Russia: Unhealthy Symptoms that Lead to a Dreary Diagnosis

Presenter(s): Charla Waeiss

Recent research has shown that Russia s weakened civil society has contributed to Russia s lack of democratization in the past ten years. This presentation expands upon recent research of Russia's weak civil society by examining why Russia has such a weak civil society. The importance of this presentation rests in the importance of civil society and its ability to foster democratization by acting as an institution calling for accountability from the state. This presentation will address the reasons Russia s civil society is weak and how its weakness has hindered Russia s democratization, by focusing on disillusionment and confusion within the society, increasing state control within the economy and oligarchs challenging Putin, and the expansion of power that Putin has enjoyed within the political system. It will also offer projections for the future of Russia's civil society based on current analyses.

Sponsor(s): Heather Tafel

KIRKHOF CENTER 2259

Spin Wave Theory for Ferromagnets

Presenter(s): Stephen Gardner

Quantum magnetism is an area of active interest in condensed matter physics. Ferromagnetism is a common form of this phenomenon in magnetic materials. Based on the exchange interaction between neighboring spins (the Heisenberg model), Bloch developed a spin-wave theory for magnets, where there are no interactions between spin-waves (magnons). Later Holstein and Primakoff mapped the spin-spin interaction Hamiltonian into a theory of interacting bosons, known as the Holstein-Primakoff transformation. Using linear approximations they were able to calculate the energy spectrum and magnetization for ferromagnets. In this project we consider the interactions between the magnons and calculate the excitation energy spectrum and magnetization for ferromagnets. We also plot the magnetization as a function of temperature and show that beyond a certain temperature (the Curie temperature) magnetization becomes zero, showing a transition from the ferro- to the paramagnetic state.

Sponsor(s): Kingshuk Majumdar

KIRKHOF CENTER 2263

Specialized Modalities in the TR Curriculum: Increasing Competency of Entry-Level Practitioners

Presenter(s): Christine Hart, Laura Edwards, Ben Hroncich, Andrea DeBolt

Using qualitative research methods, this presentation explores the role of therapeutic recreation curriculum in addressing the competencies necessary to implement therapeutic recreation modalities. Specific modalities to be addressed include: adventure therapy, aquatic therapy, and art therapy.

Sponsor(s): Kari Kensinger

KIRKHOF CENTER 2269

Overcoming the Barriers of Geoscience Education at the Elementary Level

Presenter(s): Michelle Frasco

The main purpose of this study was to answer the following research questions: (a) what barriers do elementary teachers face when teaching geoscience topics and (b) what are possible strategies to overcome these barriers? Results showed that teachers perceive the curriculum, inquiry, resources, geoscience knowledge, and time as significant barriers. Teacher-proposed solutions included changing the curriculum and their teaching approaches, funding, improving teacher preparation, and expanding their geoscience content knowledge. Teachers' geoscience pedagogical and concept knowledge, including their understanding of the nature of geoscience and the nature of inquiry, seemed to play a critical role in their perceptions of barriers. Conclusions made from the teachers' perceptions, as well as other research studies, dictate the need to emphasize pedagogical content/concept knowledge in teacher preparation and professional development programs.

Sponsor(s): Pablo Llerandi-RomÃin

KIRKHOF CENTER 2270

Post-Operative TKA Complications in Diabetic Versus Non-Diabetic Patients

Presenter(s): Megan Goff, Lauren Shaw

This research project is a secondary analysis of a retrospective study performed to assess patients before and after knee arthroplasty. Data was analyzed from a previous study to determine if there is a relationship between post-operative wound infection and other surgical complications in diabetic versus non-diabetic patients undergoing TKA. The sample consisted of 304 subjects. The sample included 38.5% males and 61.5% females as well as 74.7% non-diabetics and 23.7% diabetics. After statistical analysis, there were no significant changes in post-operative complications such as infection, DVT, arthrofibrosis or revision in diabetic versus non-diabetic patients. There was significance, (p=0.001) when comparing complications in the other category. When comparing subjects based on gender, one out of four post-operative complications was found to be significant. Males were found to have a higher rate of revision (Fisher's=0.066), but not infection, DVT, arthrofibrosis or other.

Sponsor(s): Diann Reischman, Theresa Bacon-Baguley

Oral Presentations Abstracts

BEGINNING AT 11:20 A.M.

11:20 A.M.

KIRKHOF CENTER 2201

An Exploratory Study of the Relationship Between Traffic Tickets and Traffic Accidents in Michigan

Presenter(s): Joshua Cudney

An Exploratory Study of the Relationship between Traffic Tickets and Traffic Accidents in Michigan Joshua Cudney Geographic Information System (GIS) technology is a powerful tool for displaying and analyzing a wide variety of crime data at various geographic scales. The purpose of this research is to explore the relationships between traffic accidents and traffic tickets and the effects of various variables such as weather, location, and time on the severity of traffic accidents and traffic tickets. Data on traffic tickets and traffic accidents will be obtained from a variety of sources. GIS techniques are then used to display and analyze the relationship between the key variables. The results from this research may be used by law enforcement to lower accident rates in high accident areas.

Sponsor(s): Gang Xu

KIRKHOF CENTER 2250AB

The Effects of Stretching on Agility Performance

Presenter(s): Leonard Van Gelder

Despite the plethora of literature regarding the effects of stretching on strength, power, and force production, there is very limited research available on the effects of stretching on agility performance. The purpose of this study was to determine the effect of static stretching (SS) and dynamic stretching (DS) on running agility performance. METHODS: Sixty male collegiate and recreational basketball athletes volunteered for the study. Subjects were randomly assigned to SS, DS, or no stretching (NS) groups. All groups completed a 10 minute warm-up jog. The SS and DS groups then completed a stretching intervention. Finally, all subjects completed the 505 agility test. RESULTS: For all athletes, the DS group produced significantly faster times on the agility test in comparison to both the SS and NS group. No difference was revealed between the SS and NS groups. These results indicate that in comparison to SS or NS, DS significantly improves performance on running agility skills.

Sponsor(s): Shari Bartz

KIRKHOF CENTER 2250C

Analyzing Angular Momentum in Figure Skating Jumps

Presenter(s): Jessica Stark

Physics has been used to analyze sports for a variety of reasons ranging from injury prevention to resolving curiosities. This research looks into the effects of a figure skater's take-off angle and angular momentum in relation to the quality of jump execution and completion. Video data is analyzed using motion analysis software. From the video analysis, a range of angles is determined that results in successful completion of the jump.

Sponsor(s): Geoff Lenters

KIRKHOF CENTER 2250D

Child's Play - Colonialism and Childhood in R. K. Narayan's Swami and Friends

Presenter(s): Tshering Bhutia

R. K. Narayan's Swami and Friends recreates childhood and a world that is as informed by the British colonial rule as their parents'. Hierarchies in this world are largely influenced by the characters' proximity and relationship to the colonial rule.

Sponsor(s): Mark Schaub

KIRKHOF CENTER 2250EF

Sports Economics: Evaluating the Left Tackle

Presenter(s): Andrew Cylkowski

To date, there is no objective criterion to measure the marginal revenue product (MRP) of offensive linemen. Since an offensive lineman's job is to impede progress from an opposing team's defensive line rush, or to stop the quarterback from being sacked, statistics concerning offensive lineman are virtually nonexistent. Because of the lack of statistics, it is hard to measure and evaluate the effectiveness of a particular member of an offensive line. By looking at statistics and history, one can objectively evaluate the position of the left-tackle, through various means of research and economic theory.

Sponsor(s): Amber Brown

KIRKHOF CENTER 2259

Palestinian and Iraqi Women Refugees: An Examination of the Past Sixty Years

Presenter(s): Kimberly Anthony

This project is a comparative analysis that examines research conducted on Palestinian women refugees to determine how well that body of work can apply to Iraqi refugee women internally displaced following the American-led invasion in 2003. This paper seeks to answer the following questions: From which social and economic background do these women originate? How did this affect their displacement? Where did they go and what was their social situation? How do Palestinian and Iraqi refugees differ on these points? Palestinian and Iraqi women refugees cope with issues such as poverty, deprived living conditions, violence, and sexual abuse, while access to medical and educational facilities remains limited; they depend on assistance provided by the UN, the U.S., and host nations. Urgent action is needed to ensure basic supplies, health care, and adequate education reach families sheltered in occupied areas.

Sponsor(s): Danielle DeMuth

KIRKHOF CENTER 2263

Wildlife Rehabilitation and Charismatic Megafauna

Presenter(s): Megan Mutchler

Wildlife rehabilitation is regulated by federal and state wildlife policy. Though many policy regulations are not directed to a single wildlife species, my hypothesis is that the species most treated are those of charismatic value to the general public, such as the gray wolf and manatee. Rehabilitation cases from areas surrounding Everglades

National Park and Yellowstone National Park were compiled to statistically illustrate a difference in the types of species receiving medical treatment. I used these results to recommend alternatives to current policy in order to best protect wildlife.

Sponsor(s): Erik Nordma

KIRKHOF CENTER 2266

(e)Racing Cervical Cancer: Analyzing Visual Representations of Gardasils

Presenter(s): Jessica Bacon

It is now a given that race plays a role in the healthcare education and marketing (Mark Dignan, et al; Ann O Malley, et al; Cline Welch, et al). Recent advertisements and political cartons about Gardasil, the new cervical cancer vaccine, is just another example of how much race matters when it comes to healthcare education and marketing. A rhetorical and design analysis of advertisements for Gardasil and political cartoons from opponents of the vaccine reveals that minorities are primarily marketed to by Merck, but ignored by the political cartoons of Gardasil opponents. Caucasian women are conversely unrepresented in Merck s Gardasil advertisements, though they figure prominently into Gardasil opponent's political cartoons and into other Gardasil advocate advertisements. Unbalanced and underrepresentations like these (e)race the importance of cervical cancer education for everyone.

Sponsor(s): Samantha Andrus-Henry

KIRKHOF CENTER 2270

Turtle Community Structure in Great Lakes Coastal Wetlands

Presenter(s): Alex Wieten

Coastal wetlands are important habitats within the Great Lakes for turtle, but few studies have examined turtle community structure in these systems. We used an eight-year fish monitoring dataset in which turtles were also documented to examine differences in turtle communities between wetland types and vegetation. Overall,1370 turtles were captured in 734 net-nights. Turtles were most common in coastal riverine wetlands and 57% of these nets contained at least one turtle. Overall, painted (*Chrysemys picta*) was the most common species (68.5%, relative abundance), followed by snapping (*Chelydra serpentine,* 14.6 %), map (*Graptemys geographica,* 7.2%), musk (*Sternotherus odoratus,* 5.6%), blandings (*Emys blandingii,* 3.3%), spiny soft-shell (*Apalone spinifera,* 0.4%), and red eared slider (Trachemys scripta, 0.4%). Our results show that coastal wetlands are important habitats for a number of turtle species and coastal riverine wetlands may be particularly valuable for conservation.

Sponsor(s): Mark Luttenton

11:40 A.M.

KIRKHOF CENTER 2201

Making Connections

Presenter(s): Brian Farlow

It is common for students in general physics courses to struggle with conceptual understanding of electrical circuits. Some students confuse the concepts of voltage and current; others believe current is "used up" as it traverses a circuit, and many more. Recently, GVSU changed the structure and instruction of its algebra based general physics lab

courses with the intent of improving students qualitative understanding of physics. It was necessary to determine whether or not these changes were having the desired effect in regards to electrical circuits. Quizzes/tests were developed so students' qualitative understanding of circuits could be measured. Identical pre-lab quizzes were given to students in the trig-based PHY221 course and the calculus-based PHY231 course before lab activities. After the lab activities, identical quizzes that were different from the first were given to both groups. Highlights of the results will be discussed..

Sponsor(s): Bradley Ambrose

KIRKHOF CENTER 2250AB

International Information Flows, Patenting and Outsourcing

Presenter(s): Daniel Sanchez-Garcia

This paper analyses previous literature on the subject or foreign outsourcing, informational flows and foreign patent citations from the US. Previous literature on the topic of foreign outsourcing are consulted, concerning the characteristics of firms who outsource employment loss and productivity primarily focusing on productivity gains due to information flows and increased R&D spending. Using the previous literature as a reference, this paper gathered US patent citations in the automobile industry for four countries, Japan, Canada, China, and Mexico. Innovation is measured as patent citation, and a patent function was created to estimate future patent citations. This function shows patent citations as a function of R&D spending, domestic patent production and outsourcing. A regression was estimated and it found that foreign patent citations are positively affected by outsourcing, and that the most important component of foreign patent citations is R&D spending.

Sponsor(s): Paul Isely

KIRKHOF CENTER 2250C

Space Dynamics

Presenter(s): Kyle Golenbiewski

Late in the 16th century, astronomer Tycho Brahe observed planetary positions with unparalleled accuracy. However, he lacked the tools and ingenuity to compile the data in any comprehensive manner. Rather, this task was left to Johannes Kepler who used his data to find three empirical laws of planetary motion. By the end of the 17th century, Newton had provided the necessary mathematical foundation along with his law of gravitation to describe what Kepler could only model. About 100 years later, the mathematical approach of Newton was replaced by the analytic approach of Lagrange, which led to the study of Lagrangian mechanics. By the 19th century, the explanation of the heavens sought by Tycho had come full circle. Equipped with these tools today, navigation in space has become a reality. The way in which we navigate in space is investigated along with a study of gyroscopic motion.

Sponsor(s): Javier estrada

Oral Presentations Abstracts

BEGINNING AT 11:40 A.M.

KIRKHOF CENTER 2259

The Aravind Eye Care System: Is it Replicable in the US Health Care Model?

Presenter(s): Philip Hellman

Aravind Eye Hospital in India began as an eleven bed facility and now includes five major hospitals with capacity for 3537 patients. Aravind has a dedicated staff that work for lower pay than government health care workers, enabling it to operate at cost while providing free care. Further Aravind's own manufacturing facility brought down costs significantly as they no longer were forced to buy expensive imported intra-ocular lenses for use in cataract surgeries, and an extremely efficient system of records and waiting rooms were devised to make their processes run efficiently. Additionally, paramedic staff do most everything from tests, diagnosis, to care; enabling ophthalmologists to treat patients quickly. These unique practices set Aravind apart as the largest and most productive eye hospital in the world. I intend to show how Aravind's model is needed in health care systems such as our own and how principles utilized by Aravind enable top quality health care at low or no cost.

Sponsor(s): Mary Craig

KIRKHOF CENTER 2263

Van Zoren Woods Relative Health Evaluation

Presenter(s): Lisa Farr

Van Zoren Woods Relative Health Evaluation Van Zoren Woods is newly acquired piece of land by Zeeland Charter Township. I will be determining the relative health of these woods by use of an indicator species. The indicator species I will use is the barred owl. I will also be comparing Van Zoren Woods to three local parks with similar forest cover. After evaluating habitat for Barred owls in these forests, and comparing the results to Van Zoren Woods I will determine the relative health of Van Zoren Woods.

Sponsor(s): Erik Nordman

KIRKHOF CENTER 2266

Predicting GVSU Physician Assistant Student Success

Presenter(s): Sara Smith

As the Physician Assistant profession continues to grow and expand, the number of applicants to Physician Assistant Studies programs has also increased in recent years. It is imperative that Physician Assistant programs select applicants who possess the necessary characteristics that will prepare them for success in a vigorous program. Level of student success will be measured using graduate grade point average and performance on the Physician Assistant National Certification Examination (PANCE). Admission and graduate data from the GVSU PAS program from the past ten years will be collected and analyzed. Admissions data will include individual undergraduate grade point averages (GPA) scores, hours of previous clinical experience, age and interview scores. The purpose of the study is to identify predictors that correlate with success within the Grand Valley State University Physician Assistant Program.

Sponsor(s): Charles DuBose

KIRKHOF CENTER 2270

Betweenness of Sets

Presenter(s): Geoff Patterson

We can define a geometry in which the points are sets which is a generalization of the familiar geometry we study in high school. We can then make sense of what it means for a set to be between two other sets, similar to the idea of betweenness in the familiar geometry. Previous research has shown that for two sets A and B it is possible to have multiple distinct sets at the same location between A and B. It has also been shown that we can create sets A and B with k sets at any location between A and B for k between 1 and 18, however, it has been proven that is impossible to create A and B with 19 sets at any location between them. This result is surprising and motivates further investigation into the calculation of the number of sets at any location between two sets A and B. A natural question to ask is what other numbers may be unobtainable, like 19. My senior thesis project was to develop a computer program which can search for such numbers.

Sponsor(s): Steven Schlicker Schlicker

12:00 P.M.

KIRKHOF CENTER 2250AB

Maternal Images and Lovers' Qualms as Depicted by Hugo Wolf in his Spanisches Liederbuch

Presenter(s): Theresa Zapata

This presentation is a brief overview of a research project on songs 16-18 of the forty-four songs in Hugo Wolf's Spanisches Liederbuch. A short discussion will examine the poetry and its journey from 16th- and 17th- century Spain to the desk of the notoriously selective Wolf. An in-depth musical analysis of song 18, the third of the set, will follow the discussion of its poetry. Song 18 focuses on the dichotomy of love, giving various analogies that perfect this theme, and includes some biblical references whose origins will be discussed. Attention to chromaticism, which pervades each song of the set, harmonic function along with its implications, and the poetry's effect on musical choices will be the main topics of interest.

Sponsor(s): Lisa Feurzeig

KIRKHOF CENTER 2250D

Determination of the Function of the Gene N-twist on Neural Progenitor Differentiation in the Developing Spinal Cord

Presenter(s): William Johnson

The gene for N-twist encodes a class II bHLH protein. It is expressed during neural development, however its function is unknown, and its structure suggests that it binds to an E protein. To explore the function of N-twist, I am over-expressing N-twist in the embryonic spinal cord of chicken embryos using in ovo electroporation. To perform in ovo electroporation, a plasmid containing the gene of interest (N-twist) is injected into the lumen of the embryonic spinal cord and the plasmid is forced into cells on one side of the spinal cord by the application of an electrical current. The embryos are allowed to develop and then prepared to inspect tissue sections for specific markers for different types

of neurons or glia. Preliminary data suggests that N-twist can induce neuronal differentiation into interneurons early in development. We are characterizing this expression further and examining the effect of N-twist during later stages of development.
Sponsor(s): Merritt Taylor

KIRKHOF CENTER 2250EF

Temperature Dependence of Positronium Decay Rates in Gases
Presenter(s): Jonathan Reinhard

The decay rate of the short-lived spin-1 state hydrogen-like compound, orthopositronium (o-Ps) is observed and measured for Argon, Neon, Xenon and/or Krypton gas. The normalized quenching rate of o-Ps is observed to increase linearly with temperature, T, for all gases. Methods used to determine the decay rate for (o-Ps) are based on work of Dr. Richard Vallery, et al at the University of Michigan. The o-Ps is thermalized and allowed to annihilate over a range of temperature (300 < T < 600 K). Data is recorded to produce a precision logarithmic time spectrum of the temperature dependent quenching rate. The spectrum is temperature normalized (T=295 K) to yield a density normalized decay rate for the observed gases. The linear trend with temperature of the normalized decay rate data is compared to previous experimental results showing strong agreement with earlier study.
Sponsor(s): Richard Vallery

KIRKHOF CENTER 2263

The Paradox of Prompts: A Reading and Discussion
Presenter(s): Alexandra Fluegel

The aim of this presentation is to illustrate how prompts aid writers in producing fresh work by freeing them from the constraints of their own imagination. I will read a short collection of poetry composed over the past year through the use of various prompts. Each prompt will be displayed during the appropriate poem to allow the audience to compare the prompt with the finished product. After each piece, I will briefly discuss the process of discovery the prompt led to, and what I believe the prompt helped achieve in the poem. Following the reading, the audience will be invited to participate in an open discussion about the limits and freedoms of prompts in creative writing.
Sponsor(s): Patricia Clark

KIRKHOF CENTER 2266

Comparing Two Scales of Perfectionism from a Developmental Perspective: A Statistical Consulting Experience
Presenter(s): Christopher Karsten

Dr. Lawrence Burns has devoted his academic research to the topic of perfectionism. This semester I have been working with Dr. Burns on a study that evaluates two widely used scales in the field of perfectionism: The Positive and Negative Perfectionism Scale (PNP) and The Multidimensional Perfectionism Scale (MPS). The main goal of the study is to compare and contrast the two scales as possibly being related to the putative relationship between college students' level of perfectionism and one's parents' parenting style (e.g., authorative or authoritarian). A secondary goal includes evaluating six other traits and differential relations with the two perfectionism scales, and, parental style. My role in the study was to analyze the students' self-report scores on different scales that measure the traits of interest, and then to model the relationships in a statistically meaningful manner.
Sponsor(s): Lawrence Burns, Phyllis Curtiss

12:20 P.M.

KIRKHOF CENTER 2201

Studying Potential Drug Interactions in the Regulation of the Diaphanous-related Formins

Presenter(s): Brittany Benson

The Diaphanous-related formins (DRFs) are proteins involved in the regulation of cellular shape, motility and cell division by regulating the structure of the cellular skeleton (cytoskeleton); proper cytoskeletal regulation is essential to cell survival. Normally, the formins exist in an inactive state by binding to themselves (autoregulation) but can be activated by signaling proteins that bind to formins and alleviate this autoregulation. With this knowledge, can we use synthetic compounds as artificial signals to induce formin activation, thereby killing cancer cells? In collaboration with Van Andel Institute, we have discovered two compounds that bind to formin proteins and result in cancer cell death. Our current work is characterizing the binding dynamics and structure of the DRF protein-drug compound complex, which will hopefully allow for the design of new compounds that could bind more tightly to DRFs, resulting in a drug that could more efficiently kill cancer cells.

Sponsor(s): Brad Wallar

KIRKHOF CENTER 2250AB

Grapes and Groundstone: Reconstructing the Economy of a Middle Bronze Age Site in Southeastern Turkey

Presenter(s): Diana Klein

The Middle Bronze Age was a critical period in Near Eastern history. This paper will analyze agricultural features, such as groundstone and paleobotanical remains, of Hirbemerdon Tepe, a Middle Bronze Age site in Southeastern Turkey in an attempt to reconstruct its economy. The site's location along the Tigris River made it ideal for agriculture and trade. For these reasons, it can be used to study the development of other complex societies in the Near East. Due to the lack of written record, archaeological analysis is critical to understanding the functioning of the site. Particular attention is given to an analysis of groundstone artifacts and their spatial, typological, ethnographic, and chemical aspects. The paper will then discuss the possibility of wine production industry at the site, using cross-cultural textual evidence and artifact analysis.

Sponsor(s): Mark Schwartz

KIRKHOF CENTER 2250C

The Metamorphosis of Orpheus

Presenter(s): Michelle LeMieux

The ancient Romans often wrote poetry and plays by reworking familiar stories into new creations. The Roman poet Ovid followed this tradition in his book Metamorphoses, in which he reworks many ancient myths and legends by combining them with the common theme of transformation. In the poem, "The Metamorphosis of Orpheus ," I continued this literary tradition by merging two of Ovid's stories, "Apollo and Daphne" and "Orpheus and Eurydice," into a new myth.

Sponsor(s): Diane Rayor

Oral Presentations Abstracts

BEGINNING AT 12:20 P.M.

KIRKHOF CENTER 2250D

Body Work: Limbs, Loves, and Other Extensions

Presenter(s): Michelle Potgeter

Recently, I have begun exploring the human body and bodily functions in my poems. I do not focus on the body, for the most part, but use the body as a way to expand upon other subjects such as love, family, or personal conflict. I have found that readers can relate more easily to poems that employ very specific physical details. I love the idea of incorporating the human body in creative writing pieces, even if in very small doses, as it provides readers with something they can relate to, something tangible. When readers can imagine and relate to the physical details in poems, they are able to feel whatever else the poem expresses. My goal as a writer is to set the stage for readers, so that as they find themselves in the physical environment of my poems, they can more easily access the deeper emotional levels therein. Hence, during my presentation, I will read a collection of poems that have resulted from my exploration of the body as an instrument to flesh out other subjects.

Sponsor(s): Patricia Clark

KIRKHOF CENTER 2250EF

Friendships: A Graph Theory Relationship

Presenter(s): Nam Vo, Jacob Dunklee

What do friendships have to do with math? They can be described by a branch of mathematics known as Graph Theory. A famous mathematical situation called the party problem states that if there are six guests at a party, three of them will mutually know each other or the three of them are mutual strangers. We can use a simple set of six points to describe the situation by connecting the six points together. With a new color, connect just three of these points mutually to each other to form a triangle. These are your mutual friends at the party or the group of mutual strangers, depending on your perspective. Graphs can be used to represent various types of relationships and situations in life. By coloring vertices with different colors; one can make and see links and connections. In this presentation we will expand on the aforementioned party problem and its connections to the Ramsey number, and how it relates to graph theory relationships of cliques and independent sets.

Sponsor(s): Feryal Alayont, Lynne Mannard

KIRKHOF CENTER 2259

Consulting with a Purpose: Expanding Michigan's Wilderness with Sleeping Bear Dunes

Presenter(s): Kathryn Schurr

Sleeping Bear Dunes (SBD) is well known throughout Michigan. The National Park Service currently has land re-classification plans for SBD. They would like to re-classify the land as "Wilderness" which would restrict its use so as to avoid any impact from humans. A Grand Valley graduate student, Greg Wood and his adviser Dr. Carol Griffin, surveyed the surrounding residents in 2007 to determine their degree of support for possible changes in the park. This presentation will cover my role as a statistical consultant on this project, as well as information on the findings of the survey.

Sponsor(s): Phyllis Curtiss, Carol Griffin

KIRKHOF CENTER 2263

The True Character of Afranius, A Devil Incarnate

Presenter(s): Lisa Crandall

At first the role of Afranius in Bulgakov's novel, The Master and Margarita, seems trivial; however further exploration shows how Afranius's role provides the reader with a greater understanding of the novel and connects each storyline more fully. Although Afranius appears in only four chapters, the ambiguity of his actions and character allows the reader to ponder: did Bulgakov place more importance on Afranius and consider him a central figure in the novel's overall structure instead of just an afterthought who appears only to explain events more thoroughly. The fact that the Master's novel acts as a microcosm for Bulgakov's novel lends credibility to the possibility that Bulgakov constructed Afranius as a parallel extension of the devil. The similarities between Afranius and Woland--be it in their appearances, retinues, and storylines--grant an air of believability to the notion that upon the completion of Afranius's story, the devil chooses to reincarnate himself in Woland.

Sponsor(s): Christine Rydel

KIRKHOF CENTER 2269

Beyond Eroticism: Women, Webcams, and the Public / Private Divide

Presenter(s): Amy Kerns

While historically the gendered public/private divide seems to exile Western women in the private space, women have always struggled to find a place in the public arena and to define the terms under which their access to the public sphere occurred. In the era of the internet, where women are able to produce and create messages with greater ease than ever before, webcams have acted as an agent in bringing the private lives of women into the public eye. However, the topic of women and webcams is often taboo, carrying with it connotations of eroticism. In this study, I argue that women's use of webcams has given them power to represent themselves in a manner which previous devices have failed to do. I have drawn from live feeds to help aid in my presentation, which will give the viewer a chance to experience the medium. Examining the redefinition of the private/public divide using webcams can help women make better decisions regarding how we use and interpret future technologies.

Sponsor(s): Voichita Nachescu

KIRKHOF CENTER 2270

Great Lakes Extreme Ecosystems: A Look into Groundwater Vent Communities in Lake Huron

Presenter(s): T. Garrison Sanders, Jr.

Researchers have documented the presence of several groundwater vents in Lake Huron. They are characterized by venting groundwater that is physically and chemically different from surrounding lakewater, which makes them analogous to deep-sea hydrothermal vents. Our objectives were threefold: (1) determine the presence and extent environmental gradients, (2) study the communities of upper-level organisms, and (3) link these communities to the venting groundwater. Groundwater sites were characterized by steep gradients of nutrients, dissolved oxygen, and temperature, distinct community compositions and decreased densities of upper-level benthic organisms. Isotope tracers showed the benthic communities surrounding the vents were reliant on the groundwater as a source of carbon and sulfur, suggesting that gradients created by the groundwater affect the local ecosystems, and that these ecosystems ultimately rely on energy from bacterial production that is fueled by venting groundwater.

Sponsor(s): Bopi Biddanda

Oral Presentations Abstracts

BEGINNING AT 12:40 P.M.

12:40 P.M.

KIRKHOF CENTER 2201

Laws of Heaven: A Mythopoetic Project

Presenter(s): Jennifer Folkerth

I am presenting an excerpt from my short story which experiments with the myths of Persephone, Icarus and Athena. It concerns the dynamics of power and gender, and the interactions between mortals and deities. I was inspired by myths such as the Homeric Hymn to Demeter, the myth of Metis from Hesiod's Theogony, and the stories of Proserpine, Daedalus and Icarus from Ovid's Metamorphoses.

Sponsor(s): Diane Rayor

KIRKHOF CENTER 2250AB

Redox Enzyme Activity Under Simulated Extreme Martian Conditions

Presenter(s): Renee Bouley

Directed evolution to create a Martian environment functional enzyme platform would provide space expeditions with a way of creating necessary materials on site and thus reducing transport loads and fuel costs. To study the possibility of using bioelectrochemical catalysis in a Martian environment, a model redox protein, horse heart cytochrome c, was studied in a solvent-free matrix composed of a conductive form of the polymer polyaniline. In this study, Electrochemical Impedance Spectroscopy was used to study the system under simulated Martian conditions of -70° C, pressures of 800 microns, and a 95% carbon dioxide atmosphere, the most likely of the unavoidable Martian conditions deleterious to continued protein functioning. Further studies will focus on the development of directed mutagenesis enzyme targets capable of performing CO_2 to O_2 catalysis within the same extreme environmental conditions.

Sponsor(s): Cory DiCarlo

KIRKHOF CENTER 2250C

Performers of Feminism: Liberating Women's Voices During the 2nd and 3rd Waves

Presenter(s): Kait LaPorte

This presentation, derived from my senior thesis, will examine the musical manifestations of the concepts developed by 2nd and 3rd wave feminists, as well as the feminist artists who embody those concepts. I hope to shed light on the personae of contemporary rock performers, both feminist and non-feminist, and their influence on the public image of women. Careful study shows that some artists, though seemingly feminist, actually had an overall negative influence on society's perception of women, and on the self-understanding of some women as well. Conversely, the performers who embody feminist ideology, and the ways in which they use their voices and instruments, have an equally profound effect on female listeners. The artists examined will include Grace Slick of Jefferson Airplane, Janis Joplin, Bikini Kill, and Alanis Morissette.

Sponsor(s): Lisa Feurzeig

KIRKHOF CENTER 2250D

White Slavery in Early 20th Century Chicago: Progressive Reformers and their Subjects

Presenter(s): Stefanie Manee

White slavery was the forced abduction of young white girls into prostitution. The white slavery movement was established by progressive reformers to stop the forced abduction and enslavement of white girls. This study sheds light on the little in-depth research currently being done on the cultural values progressive reformers brought to Chicago's white slavery movement. My research shows that middle-class reformers feared that young girls who entered the city were too free and lacked moral guidance to make proper decisions regarding morality and sexuality. I also show that reformers disagreed on the best way to prevent girls from falling to enslavers. Dissecting the language used by reformers to describe white slaves and their abductors in magazine, newspaper articles, pamphlets, and their exposes allows an understanding in how they perceived the problem of white slavery and how they hoped to remedy it.

Sponsor(s): Steve Tripp

KIRKHOF CENTER 2250EF

Baseball at the Turn of the Century: Guiding American Men down the Right (Base) Path

Presenter(s): Megan Shannahan

Baseball at the Turn of the Century: Guiding American Men down the Right (Base) Path The transition from the Victorian age to the modern age saw shifts from self-denial to self-indulgence, from agrarian and artisan livelihoods to factory and office jobs, and from success defined by independence to success defined by income. These new values created a crisis of masculinity for turn-of-the-century white middle-class American men. Men were no longer their own bosses, they lacked the strength and vitality which accompanied with working with their hands and in the fields, and often could not see the fruits of their efforts. Thus, many men saw success and independence as being beyond their reach. Using primary sources such as advertisements, newspaper and magazine articles, as well as the works of historians and sociologists as evidence, I argue that baseball, its heroes and the values it represented served as a source of reassurance and confidence for its middle-class male fans.

Sponsor(s): Steve Tripp

KIRKHOF CENTER 2259

The Marriage of Suzanne: Discourses on Women in Beaumarchais' The Marriage of Figaro

Presenter(s): Rebecca Bolen

The Marriage of Figaro, first performed in 1784 or just five years before the fall of the Bastille, has earned a mythical reputation of being one of the causes of the French Revolution. While research on this play's treatment of issues of social class could fill a library, The Marriage of Figaro is also rife with discussions of gender relations, discussions which have until recently gone unnoticed by scholars. Yet these discourses on gender, as well as the depiction of relations between the sexes, are complex and contradictory; some passages come off as proto-feminist, while others smell strongly of misogyny. In my paper I propose to sort out these various discourses and to elucidate them in their historical and cultural backdrop, demonstrating the ways in which the play, regardless of the author's intention, embodies various concepts and attitudes regarding women which were popular at the time. Ultimately, I shall argue for a new, feminist reading of The Marriage of Figaro.

Sponsor(s): David Eick

Oral Presentations Abstracts

BEGINNING AT 1:00 P.M.

KIRKHOF CENTER 2263

Bulgakov's Lesson

Presenter(s): Zachary Verwey

In my paper entitled Bulgakov s Lesson, I explore Bulgakov s reasoning for portraying Pontius Pilate as the most terrible sinner in a version of the Easter story that deviates slightly from the one found in the Bible. Bulgakov s novel, The Master and Margarita, tells the story of the Master and his lover Margarita. The Master is an author, and the novel contains the Master s writing within the story of the Russian lovers. The Master retells the story of the Easter execution, but portrays Pilate as the most evil character. However, by comparing the Master s story to the Biblical story, this paper discusses the lesson Bulgakov attempted to teach his readers. Although Pilate commits a terrible sin, Bulgakov shows the possibility of divine forgiveness by the grace of Jesus, or Yeshua.

Sponsor(s): Christine Rydel

KIRKHOF CENTER 2269

A Statistical Consulting Encounter: An Analysis of GVSU General Education Theme Enrollments

Presenter(s): Corina Lau

As a Grand Valley State University requirement for graduation, students must complete three courses in a theme of their choosing. Dr. Carol Griffin, Director of the General Education Program, wants to evaluate class-section size for General Education theme courses based on their course levels. As a statistical consultant on this project, I compared non-General Education courses to General Education theme courses based on 200, 300, and 400 levels. I also investigated if enrollment per section has changed in Theme courses over time.

Sponsor(s): Carol Griffin, Phyllis Curtiss

KIRKHOF CENTER 2270

I am Grand Valley: A Comprehensive Public Relations Campaign

Presenter(s): Suzanne Cutway

The "I am Grand Valley" Campaign is a campus-wide leadership recognition program. The program recognizes student leaders who are the essentials elements of the University community. This strategic public relations plan presents a situation analysis of the campaign. The plan also states specific objectives, explains tactics used, and provides an evaluation and recommendations for future years.

Sponsor(s): Michelle Burke

1:00 P.M.

KIRKHOF CENTER 2201

Visualization of Secondary Structure Using Passive Stereoscopy

Presenter(s): Jason Pell

For students, visualizing spatially complex 3-dimensional objects can be difficult. Displaying such images on a computer screen helps, but they are still 2-dimensional representations. To enhance our ability to perceive and understand 3D objects, we constructed a passive stereoscopic projection system. Components of our system include: DLP video projectors, polarizing lenses and glasses, a front projection silver screen, and a dual-core computer with dual-output

video card. Our visualization platform utilizes a customized version of the open source graphics engine OGRE to handle stereoscopic output rendered in OpenGL. We focused on developing a structural biology program that visualizes the formation of secondary structure; alpha helixes and beta sheets. Seeing the 3-dimensional configuration favored by different amino acid residues is crucial to understanding the protein folding process, and ultimately protein function.
Sponsor(s): Greg Wolffe

KIRKHOF CENTER 2250AB

Considering Language Convergence in Ontario: An Examination of Variation in Hearst French
Presenter(s): Ryan Rosso

French speakers are rare in Ontario, Canada; only 2.6 percent of the population speaks French at home. However, several isolated French-speaking areas exist. While linguistic research in the province increases, little focus has been given to northern Ontario. This study will examine variation in the French of Hearst, Ontario, through the lens of previous Ontarian French studies in order to apply new evidence to some previous sociolinguistic theories of language convergence. Analysis of transcripts from a corpus of interviews with 34 local Francophones is expected to further the understanding of the relationship between French and English in Ontario.
Sponsor(s): Daniel Golembeski, Janel Pettes-Guikema

KIRKHOF CENTER 2250C

Stage Directions in Sophocles' Antigone
Presenter(s): April Conant

Unlike moderns scripts, Sophocles' play, Antigone, does not include notation of stage directions or suggestions for properties or set. However, the Greek text itself does offer cues to entrances, exits, and gesture by means of explicit or more subtle phrases. There are twenty-four cues for entrances and exits in Antigone. Thirteen of these are cued by the ever-present Chorus, while seven are cued by other characters. Only four are completely unannounced. From skene to parodoi, these four entrances and exits indicate important, and sudden, bad news for characters and audience. By closely reading Antigone in Greek, I was able to discover the pattern of entrances and exits; this work will be used in the upcoming performance of Antigone in April.
Sponsor(s): Diane Rayor

KIRKHOF CENTER 2250D

Aging in Place in Assisted Living
Presenter(s): Rachel Wilmore

This project explored the availability of public information on senior housing websites about aging in place (AIP) in assisted living facilities (ALFs) in Western Michigan. Older adults face the dilemma of wanting to AIP in ALFs but not having the necessary information to choose an ALF that promotes AIP. The student designed and used a survey tool to analyze information pertaining to AIP options provided by free-standing local ALFs. Nine ALF websites were reviewed for the presence of components identified in the literature that promote AIP. Findings indicated either a lack of information or inconsistent information about AIP. Results indicate the vital need for consumer education and standardized definitions of AIP and ALFs. Since public information is currently lacking, nurses can play a role in

helping older adults and their families identify ALFs with characteristics that support successful aging in place even as the older adults' health care needs change.

Sponsor(s): Cindy Beel-Bates

KIRKHOF CENTER 2250EF

Numerical Simulation of the Dynamics of Many-Body Physical Systems

Presenter(s): Benjamin Keen

Newtonian laws of motion are simple to apply to classical non-relativistic physical systems containing a limited number of objects that have simple interactions. For systems which contain many objects or whose objects have complex interactions (e.g., the motion of interacting gas atoms/molecules) Newton's equations of motion become practically unsolvable. These complicated systems can, however, be studied using a variety of computational methods. Towards this purpose, a molecular-dynamics-based modeling program was constructed. Using the Lennard Jones potential to approximate the interaction between atoms/molecules it was possible to simulate collections of particles under a variety of initial conditions. Using the data (on individual atomic/molecular motion) from these simulations, it was possible to calculate macroscopic characteristics, such as temperature, pressure, molecular speed distribution, and molecular spatial correlation function for the system.

Sponsor(s): Maja Krcmar

KIRKHOF CENTER 2263

Bulgakov's Theory of History in Master and Margarita

Presenter(s): Stephanie Moravec

In Mikhail Bulgakov's novel, The Master and Margarita, both the Master and Woland--also referred to as a scholar and a magician, but more commonly known as the Devil--claim to be historians. The novel tells the tale of the search for authenticity and truth in a world in which it is difficult to find such qualities in official histories. Set in both the Biblical Jerusalem of Jesus and Pontius Pilate and the Soviet Moscow of the 1930s, Bulgakov uses his novel to demonstrate his theory that history does not change because human nature does not change, and that finding and accepting truth and authenticity remain the only way to change human nature, history, and therefore the future.

Sponsor(s): Christine Rydel

KIRKHOF CENTER 2266

School of Choice and Diversity: A Mid-Sized City Case Study

Presenter(s): Megan Taliaferro

In recent decades, public school choice has become increasingly popular. Expanded availability of choice has led to many substantial changes in public education (Plank & Sykes 1999). Accompanying this change, public schools are also undergoing rapid resegregation. (Orfield & Eaton, 1996; Orfield 2001; Clotfelter, 2001). To address any relationship that may exist between the two issues, this case study analyzes the effects of interdistrict choice on levels of diversity within nineteen school districts located in or near a mid-sized city in Michigan. The findings of this study suggest that interdistrict transfers may be further advantaging majority white and middle class families and further stratifying the urban district by race and class. Although this case study is limited in scope, it is important for research to continue in this area to better understand the relationship between school choice and segregation.

Sponsor(s): Lisa Hickman, Jennifer Stewart

KIRKHOF CENTER 2270

Identification of the Met Phosphorylation Site Regulated by the Prostate Tumor Metastasis Suppressor Protein CD82

Presenter(s): Penny Berger

The tetraspanin protein CD82 /KAI1 has been identified as a tumor metastasis suppressor in normal prostate cells. CD82 regulates the activation of a growth factor receptor known as c-Met. C-Met has been shown to be inhibited by CD82. c-Met activation influences cancerous processes such as tumor growth, invasion and metastasis. In prostate tumors, there is increased c-Met expression and activation. One possible mechanism in which CD82 affects c-Met could be by phosphorylation and activation. The binding of c-Met s ligand encourages phosphorylation. Our lab is also observing c-Met distribution on the cell surface of the prostate cell lines (+/- CD82). The physical distribution of c-Met may explain why metastasis occurs in the absence of CD82.

Sponsor(s): Suganthi Sridhar

1:20 P.M.

KIRKHOF CENTER 2201

GPU-accelerated Fluid Dynamics

Presenter(s): Dirk Hekhuis

From simulating the airflow through an airplane turbine to modeling oceanic currents, Computational Fluid Dynamics (CFD) is the method of choice for computing the dynamic movements of fluids. The goal of this independent study is to create a program that uses physical dynamics to simulate fluid flow. To accomplish this, the Navier-Stokes equations for advection, the velocity of a fluid that transports quantities along with the flow; pressure, the force that creates acceleration in a fluid; diffusion, the result of how resistive a fluid is to flow; and external forces, the acceleration of the fluid by other forces, are solved based on the "stable fluids" method of Stam. The fluid calculations of the simulation are implemented using the Compute Unified Device Architecture (CUDA), a platform for developing applications that execute on a Graphical Processing Unit (GPU). The fluid flow simulation is visualized using the OpenGL graphics library.

Sponsor(s): Christian Trefftz

KIRKHOF CENTER 2250AB

Merck's Ad5 Phase IIb HIV-1 Vaccine Clinical Trials: Conjectures on Failure

Presenter(s): Philip Hellman

Merck's failed T cell vaccine means an indefinite extension on the development of a working HIV-1 vaccine. Since Merck released the results of the STEP study, many theories have been put forth as to the mechanism(s) of the failure and also the increase of HIV contraction seen in the recipients of the Ad5 gag/pol/nef vaccine in contrast with the placebo group. Along with direct failure analysis, this paper uses the results of previous related studies in the realm of CTL-based vaccines, the role of CTLs in HIV suppression, and many other contributing factors such as chosen viral proteins, cytokine production, and efficacy. The future of HIV vaccines is discussed at the end.

Sponsor(s): Steven Hecht

Oral Presentations Abstracts

BEGINNING AT 1:20 P.M.

KIRKHOF CENTER 2250C

Urban Redevelopment and Migration into the City

Presenter(s): Elizabeth McMurray

After E.G. Ravenstein's landmark paper, "The Laws of Migration", was published in 1885, many social scientists have attempted to explain and predict migration patterns both globally and locally. Of the reasons that one would migrate, Ravenstein suggested that none was more important than to better oneself economically. The present research used face to face and mail questionnaires to collect data at an urban redevelopment site. The research was focused on understanding migration trends and the demographic characteristics of residents in the Baker Lofts, an urban redevelopment project that was created from the abandoned Baker Furniture Factory in Holland, Michigan. Although the researcher expected the residents of the Baker Lofts to be young professionals from a narrow demographic stratum, the evidence indicates greater demographic variability in the resident population.

Sponsor(s): Roy Cole

KIRKHOF CENTER 2250D

Roman Heavy Cavalry: A Misjudged Maneuver?

Presenter(s): Matthew Ordowski

Throughout the centuries of its existence, the Roman military underwent many reforms and changes. Perhaps one of the more interesting reforms manifested itself in the gradual introduction of heavy cavalry over time. Heavy cavalry, as the name may imply, includes heavily armed and armored cavalry, analogous perhaps to the tanks of modern warfare. While apparently never posing a decisive threat to their infantry-based military, the heavy cavalries of their enemies impressed the Romans enough to prompt the long trial-and-error development of heavy cavalry of their own. We may wonder what kind of advantages this force afforded on the battlefield or what gambles the Roman military commanders took in employing such units. Upon closer inspection of relevant sources, we find through historical hindsight that the costs and intricacies of creating, maintaining, and deploying heavy cavalry seem to have outweighed any usefulness as a shock force.

Sponsor(s): Charles Pazdernik

KIRKHOF CENTER 2250EF

Self-Reported Communication Variables and Dating Violence: Using Gottman's Marital Communication Conceptualization

Presenter(s): Stacy Beebe

Communication behaviors, while extensively studied within the marital field, have received only peripheral attention in violent dating relationships. The purpose of this research was to better establish empirical continuity between the marital and dating literatures by exploring communication variables identified in marital relationships and their self-reported manifestation in violent dating relationships. Using Gottman's (1999) marital communication conceptualization, individuals were assessed on adaptive and maladaptive communication variables and relationship aggression.. The results suggested that negative communication behaviors were associated with and predicted violence in participants' dating relationships. However, repair attempts, generally considered an adaptive communication behavior, predicted victimization. Implications and how these data fit within the context of recent research on positive marital communication behaviors are explored.

Sponsor(s): Tara Cornelius

KIRKHOF CENTER 2259

Histology of Coronary Arteries; Foundations for Engineering Off the Shelf Vessels

Presenter(s): Jamie Davis, Lisa Hyde

Our research involved using histological techniques to analyze right and left porcine coronary arteries. The first phase of research involves comparing left and right coronary arteries. There will be an anatomical difference in diameter and elastic tissue between pulmonary and systemic circulation. This will create a standard for porcine coronary arteries. In a second phase, we compare left anterior descending artery sections that were adjacent to each other. One section has been put through mechanical contraction tests using free radicals, while the other section had no testing. In the future this research can be used to create scaffolds for coronary bypass surgeries.

Sponsor(s): Mary Craig

KIRKHOF CENTER 2263

Applications of Graph Theory to Social Networking on the Internet

Presenter(s): Christopher Morris

We will be using graph theory to analyze the relationships from social networking websites such as Facebook and MySpace. We will gather data and information, model this input as a graph or graphs and use techniques of graph theory to describe properties of the graphs. We will attempt to describe real world applications related to social networking.

Sponsor(s): Charles Crane

KIRKHOF CENTER 2269

Microarray Analysis of CD82 Expression in Prostate Tumor Cell Lines

Presenter(s): Vanitha Bhoopalan

KAI1/CD82 is a tetraspanin protein that functions to suppress prostrate cancer metastasis. There is a direct correlation between the level of CD82 expression and tumor progression i.e., loss of CD82 expression has been correlated to poor prognosis in prostate cancer. We have shown CD82 re-expression in metastatic prostate cancel cells regulate integrin induced or HGF-mediated signaling in c-Met and prevents migration and invasion in prostrate cancer cells. The exact mechanism by which CD82 regulates c-Met is still under investigation. The main objective of this study is to analyze the difference in gene expression between prostate cancer cells with or without CD82 using Agilent micro array technology. Our hypothesis is that there may be difference in gene expression when CD82 is expressed in tumor cells and it maybe comparable to that of normal prostate cells. Preliminary studies in our lab have indicated that CD82 may alter the distribution of c-Met on the surface and it is possible that it may be redistributing other surface proteins as well. Two clones of PC3 cell lines, one transfected with a vector (PC3-5V) and another with CD82 cDNA (PC3-29) were analyzed using micro array agilent technology. The micro array data was analyzed using a Limma-R program to identify the genes regulated by CD82. This analysis gave us an in-depth view about the types of the genes that are up or down-regulated upon CD82 expression. We are currently working on three specific genes CCL2, CXCR4, CXCR7, which play a vital role in prostate cancer metastasis. These genes have been identified to be expressed different in cells that express CD82 than those that do not. CXCR4 and CXCR7 are involved in cell proliferation and adhesion and have been found to be expressed in very low levels in CD82 expressing cell lines. On the other hand, CCL2, a metastatis suppressor gene is up regulated in CD82 expressing cells. Studies indicate that a

cross talk between CXCR4 and CXCR7 leads to CXCL12 mediated stimulation of integrin in cells. We are interested in investigating and in identifying a role for CD82 in these pathways. The micro array results we observed are being further validated by RT-PCR and western blot analysis. In addition more (prostate tumor) clones expressing CD82 are also being analyzed. Alternatively, normal prostate cells with or without CD82 (knocked off by CD82 siRNA) are also being subject to micro array analysis to further reconfirm our results.

Sponsor(s): Suganthi Sridhar

KIRKHOF CENTER 2270

Facet Specific Determinates of Salary Satisfaction Among Physician Assistant Faculty

Presenter(s): Christopher Davis, Joshua Thornhill, Sarah Thomson

Title: Facet Specific Determinates of Salary Satisfaction Among Physician Assistant Faculty Purpose: PA educators are vital in order to satisfy the increasing need for physician assistants in medicine. Unfortunately the growth of the profession is not being met by a growth in PA educators. A study out of Grand Valley State University, A National Study of Job Satisfaction Factors among Faculty in Physician Assistant Education, revealed salary as one of the most dissatisfying aspects for PA educators. The current study further investigates specific facets that may contribute to overall salary dissatisfaction. Methods: In the previous GVSU study,a web-based survey comprised of demographics and scale items was distributed to PA faculty and measured using Likert scale. The purpose of the current study is to correlate salary data and overall salary, based on groups created by median income. Results: Deferred analysis is complete. Conclusion: Deferred until analysis is complete.

Sponsor(s): Andrew Booth, Wallace Boeve

1:40 P.M.

KIRKHOF CENTER 2201

Outsourcing Computation: GPU-Enhanced MATLAB

Presenter(s): Stephen Paslaski

It is often the case that a small portion of computer code contains the bulk of the computation, the so-called 80-20 rule. Recognizing this, parallel execution of these key segments of code is one method that can be used to accelerate a program. Our goal is to identify the bottlenecks in a MATLAB script, the code segments that are the most time consuming, then write Compute Unified Device Architecture (CUDA) files to execute these bottleneck functions. CUDA directs the time consuming segments of code to be run in parallel on a graphics processing unit (GPU). MATLAB scripts augmented with an external function call to a C program will in turn delegate the task to a CUDA program running concurrently on the multi-processor GPU. By transferring, or outsourcing , these segments from the CPU to the GPU, we hope to improve execution time. Our test case is a Time-Cost Trade-off analysis of construction site planning and management using the Ant Colony Optimization (ACO) algorithm.

Sponsor(s): Christian Trefftz

KIRKHOF CENTER 2250AB

Climate Change Effects on Water Resource Availability and Ensuing Social Conflicts in the Near East

Presenter(s): Andrew Sisson

Global climate change has been at the forefront of many scientific debates in the 21st century, primarily focusing on effects it may have on the world; socially, environmentally, and economically. Greenhouse gases (GHG) have been targeted as the most critical anthropogenic cause of the current warming trend by the Intergovernmental Panel on Climate Change. There has also been some research done on the social impacts that water scarcity has had on regions of the world, specifically in Lebanon, Jordan, and Israel (Near East), however fewer studies have looked at what the changing climate may have on social tensions between countries and ethnic groups and their water. This study looks general climate models (GCM) and complies current climate change data related to precipitation and what the future holds for water resources in the Near East. I also analyze the current uses and sources of the water in the Near East and look at what social impacts may ensue if water becomes scarcer.

Sponsor(s): Elena Lioubimtseva

KIRKHOF CENTER 2250C

A Comparison of Treatment Modalities and Survival Rates Among Patients with Adenocarcinoma of the Pancreas and Patients with Other Pathologic Types of Pancreatic Cancer

Presenter(s): Stacey Pniewski, Jennifer Caswell, Dana Pigorsh, Elizabeth Jacobs

Pancreatic cancer remains one of the deadliest cancers, yet there have been no significant improvements in therapy to treat it despite suggested increasing incidence of rare types of pancreatic cancer. Combinations of treatment modalities have been studied with controversial results. This retrospective cohort study compares treatment modalities and survival of patients with rare types of pancreatic tumors to those with the common pancreatic adenocarcinoma, using the SEER Tumor Registry maintained by the National Cancer Institute. Inclusion criteria were defined as patients 20 years of age and older diagnosed with selected types of primary malignant pancreatic cancer. Exclusion criteria were defined as patients for whom there is no information available about treatment. The SEER Tumor Registry maintains a statistical analysis tool that was utilized for this study to analyze incidence, five-year survival, and treatment modalities from 1988 through 2004. Results will be presented.

Sponsor(s): Theresa Bacon-Baguley

KIRK0HOF CENTER 2250D

An Analysis of Student Life Surveys: A Statistical Consulting Experience

Presenter(s): Daniel Zimmerman

Michelle Burke from the Office of Student Life surveyed Grand Valley State University undergraduate students. Her purpose was to gain more knowledge about certain topics of student life at GVSU such as leadership skills, campus events, and community service. One of my responsibilities as a statistical consultant was to compare the involvement of on-campus students to off-campus students. I also compared results from 2006 and 2008. This presentation will explain the experience I had during the course of the semester and highlight the results from the analysis.

Sponsor(s): Michelle Burke, Phyllis Curtiss

Oral Presentations Abstracts

BEGINNING AT 1:40 P.M.

KIRKHOF CENTER 2259

Equal Circle Packing

Presenter(s): Sandi Xhumari

What are optimal packings of equal circles on a torus? In this presentation, we will show you all optimal packings of 6 equal circles on a flat torus, how we went about finding them and how we proved them to be optimal. The proof uses tools from several different mathematical areas including graph theory. Using numerous pictures, we will introduce you to all the basic concepts (including the notion of a flat torus, an optimal packing and the graph of a packing) and guide you through our proof.

Sponsor(s): William Dickinson

KIRKHOF CENTER 2263

The Daughter of the Sun in Indo-European Mythology

Presenter(s): Lauren Janicki

Indo-European comparative mythology has traditionally recognized a relationship involving a Daughter of the Sun and a set of Divine Twins who appear as her brothers or husbands. In a recent study, however, Lowell Edmunds reacted against this idea and argued instead for an original narrative archetype which he called "The Abduction of the Beautiful Wife." This theory is intriguing, but fails to provide a satisfactory connection among extant Indo-European abduction myths or to the greater body of Indo-European mythology as a whole. It may be possible, however, to see both proposed reconstructions as parts of a system of Indo-European mythology which focuses on the Daughter of the Sun and the importance of her femininity.

Sponsor(s): William Levitan

KIRKHOF CENTER 2269

Recreational Impacts on Ecosystem Processes: Potential Effects of Recreational Boat Traffic on Metabolism in the Little Susitna River, Alaska

Presenter(s): Nicholas Ettema

We quantified the potential effects of fishing-boat traffic on community metabolism in the Little Susitna River, south-central Alaska. Dissolved oxygen and turbidity were continuously monitored from late May to early September (2008) at "reference" and "impacted" sites. Gross primary production and net daily metabolism (mean ± S.E.) were higher at reference vs. impacted sites (0.36 (± 0.02) vs. 0.16 (± 0.03) and -0.02 (± 0.04) vs. -0.22 (± 0.03), respectively)(g O_2 m^{-2} day^{-1}; single station, open system). No detectable difference in community respiration was observed across study sites. Turbidity values were higher at impacted sites on days when boats were present surpassing background levels by as much as 17 NTU. Elevated turbidity levels at impacted sites could account for the observed reduction in GPP, although initial analyses suggest at most an indirect correlation.

Sponsor(s): Eric Snyder

KIRKHOF CENTER 2270

Mini-Kingdoms and Ivory Towers: A Critical Analysis of Higher Education in Modern Civil Society
Presenter(s): David Martin

Critical analysis of higher education shows that many professors help to instill a false consciousness within students, which is attributed to the colonization of educational systems by class antagonism, proliferated by the capitalist class means of production that values profit over humanity. Generally, our current method of educating reduces individuality and creates an environment that takes on the characteristics of job training rather than that of true education. The purpose of education has been reduced primarily to a means of replenishing the reserve army of labor, solidifying dominant elite values and ideologies, and streamlining the transition from student to worker in modern civil society. This content analysis analyzes the pertinent contemporary and historical materials that reference and critically address the conditions of higher education and explicitly calls attention to the student-professor dynamic and how it is affected by the overarching political and economic systems. I conclude by presenting means of implementing a dialectical approach that serves to determinately negate the antagonisms in our institutions of higher education.
Sponsor(s): Michael Ott

2:00 P.M.

KIRKHOF CENTER 2201

Changes in Plant Canopy Structure in Response to Warming
Jeremy May

Warming in the arctic has been documented for decades and is expected to continue. This study investigates plant canopy changes in response to experimental warming at four sites in Northern Alaska, as part of an ongoing project established between 1994 and 1996. Each of the sites consists of 24 control and 24 experimentally warmed plots. Sampling was done in 2007 or 2008 using a 75cm X 75cm point frame consisting of a 100 point grid. At each point the species and height above the ground was recorded. In general the response to warming was a more developed canopy structure. Specifically the canopy was taller, with less open space, and a higher abundance of vascular plants. Only one site studied was contrary to this, possibly due to water stress in the community. These results suggest that the regions plant canopy will undergo significant changes in the future due to climate change.
Sponsor(s): Robert Hollister

KIRKHOF CENTER 2250C

From Concept to Publication
Presenter(s): Brianne Goodyear

This presentation will detail how the presenter applied the concepts learned in class to producing articles on a magazine deadline system. The presenter is a junior in the Professional Writing Program and is completing a writing internship with the Do Something Guide through the Office of Student Life. The presenter learned how to interview subjects and compose informational articles. Skills developed included time management and multi-tasking, and also crafting a confident and friendly approach when interviewing. More specifically, these articles included useful information that were centered around helping first year students navigate their way physically and socially around

the GVSU campus. The presenter will explain how the internship contributed to her expertise as a journalist while helping new students through an approachable, informative publication.

Sponsor(s): Michelle Burke

KIRKHOF CENTER 2250D

Investigating Student Organization Involvement of On and Off Campus Students through a Statistical Consulting Experience

Presenter(s): Sara Ramirez

The Office of Student Life (OSL) has a mission to "enhance student development through student involvement in diverse experiences." OSL currently oversees approximately 280 student organizations. In March of 2008, the OSL surveyed GVSU students to determine their level of involvement with campus events and organizations. Michelle Burke, the Associate Director of Student Life, wants to use this survey to establish whether or not students living off campus are involved at a different level than those living on campus. As a statistical consultant, I investigated relationships between student organization involvement and whether the student lives on or off campus. I will discuss the highs and lows of statistical consulting along with any relationships discovered.

Sponsor(s): Michelle Burke, Phyllis Curtiss

KIRKHOF CENTER 2250EF

Genetics and the Indo-European Homeland Problem

Presenter(s): Shannon Scott Schupbach

Locating an Indo-European homeland has been a primary objective of Indo-European studies for over 200 years. Early attempts to do so centered on linguistic and archaeological evidence which proved ultimately inconclusive. In the early 1970s, geneticists began making significant contributions to Indo-European studies by way of the investigation of migration patterns through analysis of genetic variation among modern-day populations. In this paper I examine reports put forth by Robert R. Sokal, Luigi L. Cavalli-Sforza and Alberto Piazza, three of the more prolific geneticists addressing the Indo-European homeland problem. Although there continues to be no definitive evidence to support either of the two homeland theories in preference to the other, the balance currently seems to be slightly in favor of Gimbutas' Kurgan hypothesis.

Sponsor(s): William Levitan

KIRKHOF CENTER 2259

Types of Sacrifice in The Trickster of Seville and Don Juan Tenorio

Presenter(s): Chris Vanderlip

Two of the most important works of Spanish drama in the Don Juan tradition are The Trickster of Seville and the Stone Guest and Don Juan Tenorio. These works present the disposition of the original Don Juan character: seducer and betrayer of women, rogue charlatan and societal misfit. Though both works are influenced by the Spanish society of their times and its deeply ingrained Catholicism, they vary in terms of the protagonist's destiny: one Don Juan is dragged down to hell, the other saved by the intercession of the woman he loved. This study examines the sacrificial acts of characters in these two dramas as revealed in Rene Girard's theories on the social nature of sacrifice, and the meaning of these sacrificial acts in the community of Spain in the seventeenth and nineteenth centuries.

Sponsor(s): Gabriela Pozzi

KIRKHOF CENTER 2263

Residential Adaptive Management Plan Using the Principles of Permaculture

Presenter(s): Kara Daniel

Permaculture is a set of land design principles with the objective of mimicking natural ecosystems and creating low-input human dwellings. I will create an adaptive management plan for a homeowner using these principles. Preparations will consist of identifying existing flora, soil-sampling, monitoring light distribution, and determining the flow of water on the property. The plan will incorporate the installation of rain barrels, a rain garden, and native plants and trees. Goals for the land include reduced storm water runoff from the property and a sustainable green space for the homeowner.

Sponsor(s): Erik Nordman

KIRKHOF CENTER 2266

A Qualitative Analysis of Physician Assistant Faculty Job Satisfaction

Presenter(s): Jenny Hopp, Heather Schaap, Ken Almas

The physician assistant (PA) profession is rapidly growing. In order to keep up with this growth, institutions need to be able to attract and retain qualified and competent faculty members to train the increasing number of PA students. Based on an original study (Phase 1), the current study (Phase 2) utilizes a two-phase mixed methodology and is a qualitative retrospective content analysis focused on comments written in by PA educators at the end of Phase One. Phase One utilized a web-based survey and was sent to PA faculty members using the Physician Assistant Education Association directory. In Phase Two, researchers will individually categorize the responses to the open-ended portion of the survey. Once completed, the researchers as a group will decide which categorization scheme appears to best fit. A frequency table will be made in order to determine which factors hold the most significance in relation to PA faculty job satisfaction. Results: pending Conclusion: pending

Sponsor(s): Wallace Boeve

KIRKHOF CENTER 2270

Failed Men: The Postwar Crisis of Masculinity in France 1918-1930

Presenter(s): Brandon Moblo

With its emphasis on the core values of masculinity such as strength, duty and above all, courage, the First World War was seen in France as the ultimate test of manhood. However, confronted with the horrors of modern industrial warfare, men were put into a situation where they were bound to fail that test. This led to a gender crisis in France during the immediate post-war period. Historians who have studied this crisis have focused on French women's resistance to reverting to their pre-war positions in the home after filling positions made by men fighting at the front and the threat that this posed to men and the traditional gender roles which they desired. However, I will argue that the post-war gender crisis was not solely caused by women resisting the authority of men, but also by the returning soldiers' inability to retake their prewar positions of power

Sponsor(s): Jason Crouthamel

Oral Presentations Abstracts

BEGINNING AT 2:20 P.M.

2:20 P.M.

KRIKHOF CENTER 2201

Strategies to Improve Geographic Literacy in K12 Education Using GIS, GPS, and Multimedia

Presenter(s): Laurel Walker, Kendell Joseph

This paper describes how GIS, GPS, and multimedia technology can be incorporated into current school curricula to help students develop skills that will enable them to better observe patterns, associations, and spatial order. Thus, integrating this technology into K12 education answers the call for including critical thinking, integrated learning, and multiple intelligences in curriculum design. We selected two public schools in Michigan; Riverside Sixth Grade Academy in Grand Rapids, and Ithaca Junior-Senior High, to observe how GIS, GPS and multimedia would accommodate better learning of geographic concepts. Our feedback showed that geocaching is an excellent way to introduce and reinforce the five themes of geography. In addition, students were able to understand concepts such as directions, connections, proximity, adjacency, containment, and intersection as fun exercises embedded in geocaching.

Sponsor(s): Edwin Joseph

KIRKHOF CENTER 2250AB

A Statistical Consulting Experience: Analyzing Student Opinions of the Structured Learning Assistance Program

Presenter(s): Kaitlyn Ratkowiak

Structured Learning Assistance (SLA) is an academic support program provided for students who may anticipate difficulty with a course, or may desire to maintain their high-achieving grades as they anticipate the competition in applying for graduate studies. Academic support is provided through workshops which are connected to the lecture. Karel Swanson is the Program Coordinator for (SLA), and with that position comes the responsibility of assessing the program. At the end of each semester, each participant in the SLA program is asked to complete an evaluation/survey. As a consultant, my job was to analyze the surveys' results for MTH 110 and STA 215, and to determine whether students feel they benefited from taking an (SLA) course.

Sponsor(s): Karel Swanson, Phyllis Curtiss

KIRKHOF CENTER 2250C

Rectangle Visibility Graphs

Presenter(s): Clifford Taylor

A graph is a collection of dots and lines that connect some of the dots. For example, a social network can be represented as a graph where the people are dots and a connection between dots means the two people are acquaintances. The idea of a Rectangle Visibility Graph is to represent dots as rectangles of any desired size and to represent connectedness by using lines of sight between the rectangles. That is, if an unbroken horizontal or vertical line may be drawn between two rectangles, then the two rectangles can see each other and thus are connected. An application of Rectangle Visibility Graphs is the area of circuit design. In this presentation we will describe which of the graph families can be drawn as Rectangle Visibility Graphs and give the necessary and sufficient criteria for a graph to have a corresponding Rectangle Visibility Graph.

Sponsor(s): Feryal Alayont

KIRKHOF CENTER 2250D

Who Was David Weiser?

Presenter(s): Megan Bolthouse

Who Was David Weiser? by Pawel Huelle, focuses on a group of eleven-year-old children in post- WWII Gdansk, Poland. The novel continues Gunter Grass's Cat and Mouse, set in Danzig during the war. Although religious allusions surround the main character, Mahlke, they never reach the symbolism of Huelle's David. After little David (Weiser Dawydek is the Polish title) joins a group of schoolmates, his mysterious powers prompt them to try to figure out who he may be. After David disappears, each boy responds to the disappearance differently; Pawel, the narrator, even makes David his life-long obsession. David takes on various identities in the novel: weak, little, innocent boy, orphaned Jewish refugee, Christ figure, the anti-Christ, or even a demonic power. The quest to solve the mystery of David Weiser ultimately leads to the question of the identity of Gdansk--and even of Poland--in post-WWII Europe; but Huelle's post-modern novel leaves the question open for further investigation.

Sponsor(s): Christine Rydel

KIRKHOF CENTER 2263

The City of God Amid the Fourth Century Christian Revolution

Presenter(s): Timothy Flanders

When the Roman Empire began to identify its fortunes with the Christian Church in the fourth century, it created controversies and elicited responses. After Rome itself was sacked by Alaric, St. Jerome cried, "If Rome can perish, what can be safe?" Other Christians resisted this identification. The Montanists and Donatists founded rival churches and disdained the unforgivable immorality of the Catholic Church. In distinction both to these schismatics and to those identifying the Christian Roman Empire as heaven on earth, St. Augustine in The City of God offered instead a conception of the Church as the place where those of Heaven and those of Earth are gathered together in one place. Here the invisible becomes the visible in the lives of the Saints through the work of the clergy and the Earthly City is able to behold the City of God. And this personal encounter has the power to transform the darkness of the Earth into the light of Heaven. We will see this century with his theology

Sponsor(s): Charles Pazdernik

KIRKHOF CENTER 2270

Assessing the Business Location of Siciliano's Market, Grand Rapids, MI

Presenter(s): Maxwell Dillivan

The location of a business is vital to its success or failure. Siciliano s Market, Grand Rapids, MI specializes in rare and local micro-brewed beers and beer making supplies. The purpose of this research is to examine to what extent Siciliano s Market is optimally located to serve its intended market. Interviews were conducted to identify the key demographic variables of the target market. A range of census data covering race, income, age, sex, and education were collected at the census tract level for Ottawa and Kent counties. GIS techniques were then used to display and analyze the demographic characteristics of the local market for Siciliano s Market.

Sponsor(s): Gang Xu

Oral Presentations Abstracts

BEGINNING AT 2:40 P.M.

2:40 P.M.

KIRKHOF CENTER 2250AB

The Effectiveness of Structured Learning Assistance with Introductory Math Courses at GVSU: A Statistical Consulting Experience

Presenter(s): Kelly Corwin

Structured Learning Assistance (SLA) is an academic support program that provides added support to students enrolled in historically difficult courses, as determined by the University. Karel Swanson has been the Program Coordinator of the SLA program since its creation in the Fall of 2003. At the conclusion of each semester, data are collected from each participant of the SLA program. Data was provided from 2005 through 2007 in MTH 110 and from 2007-2008 in MTH 122. The data set included SLA courses along with comparison data from non-SLA courses. My role as the statistical consultant was to compare the final grades of students who were in SLA sections against those from a comparable non-SLA section. Also, I investigated if other factors serve as predictors for future students will do in MTH 110 and MTH 122.

Sponsor(s): Karel Swanson, Phyllis Curtiss

KIRKHOF CENTER 2250D

Staging Mann's Death in Venicen

Presenter(s): Lily Guerrero

Britten's last opera, Death in Venice (1973), follows Thomas Mann's decadent novella of the same name. Mann's story revolves around Aschenbach, a distinguished writer, who takes a trip to Venice on holiday and finds himself enamored of a young Polish boy, Tadzio. Aschenbach, an introspective and somewhat pessimistic person, struggles between his old Apollonian ways and this new, reckless Dionysian passion. Both Mann and Britten make it clear, however, that the affection Aschenbach feels about Tadzio is not of a sexual nature. Rather, Aschenbach simply suffers from a deep, aesthetic admiration of the boy's beauty. In addition, Mann's refusal to place a date, only a season, on the places and times in his narrative add to the imaginary, timeless feel of the novella. Because of this mythical aura and introspective narrative, one may wonder why Britten chose such a story to place on the stage.

Sponsor(s): Christine Rydel

KIRKHOF CENTER 2250EF

GVSU Ceramics & Michigan K-12 Collaborative Teaching Project

Presenter(s): Meghan Kelly, Stephanie Reahm, Matt LaFleur, Stephanie Voelck, Nora Hipshear

The Ceramics program will invite an art class from a Michigan K-12 school to GV for an educational event. We will provide a hands-on encounter with clay as well as share with students the array of opportunities that are available in the field of Art. The K-12 collaborative project is held at least once a year in Calder. The project which is run by students, involves collaboration between Art Education, Ceramics, GV faculty, & area schools. The intention of the project is to give practice to future educators, & to spark interest for higher education. The project has been a success because of the enthusiasm of the GV students, & support from faculty & local schools. The project is an opportunity for future educators to get their hands wet in the field of teaching by experiencing what it means to fund a project, & create a lesson plan successfully. Our intention is to show our community how we have been representing our university through community involvement within the art department.

Sponsor(s): Hoon Lee

KIRKHOF CENTER 2263

Pitch Pine and Oak Regeneration Success in Prescribed Fire Treatments at Camp Edwards, Bourne, MA.

Presenter(s): David Chambers

Land managers at Camp Edwards seek to improve training environments for the U.S. National Guard and increase local native animal populations by maintaining pristine habitats within the training base. In 2003 and 2004, the Oak-Pitch pine forest woodland community at Camp Edwards, Bourne, MA., was treated using prescribed fire to enhance regeneration of native woody and herbaceous plants. The goal of this project is to measure the success of oak and pitch pine regeneration at Camp Edwards. Results will distinguish between regeneration types, suppression of shade tolerant species (i.e. species diversity), and total regeneration after the prescribed fire treatment.

Sponsor(s): Erik Nordman

3:00 P.M.

KIRKHOF CENTER 2250D

Apollonian and Dionysian Characters in Works of Thomas Mann

Presenter(s): Alison Reddick

Thomas Mann's literary works build on a foundation of parallelism to mythology. In his short narratives, Death in Venice, "The Blood of the Walsungs," and "Tristan," Mann links his characters to the mythological gods Apollo and Dionysus. The ideas of philosopher Friedrich Nietzsche further expand the depth of the content of Mann's literature. Nietzsche states that an Apollonian artist observes art and places it on an unreachable pedestal, but a Dionysian artist participates in artistic expression. Each of Mann's central characters exhibits Apollonian or Dionysian characteristics; sometimes these characters change their artistic orientation as the narrative unfolds. Such metamorphoses provide a subtext to three works of Mann's fiction from his early period.

Sponsor(s): Christine Rydel

KIRKHOF CENTER 2259

A Comparison of the Change in Body Mass Index Between Patients who received a Total Hip Arthroplasty Versus a Total Knee Arthroplasty

Presenter(s): Mercedes Liscomb, Kristina Oosterhouse, Alyssa Aubry

This study compared the change in BMI in patients that received a joint replacement and who had a diagnosis of osteoarthritis prior to their surgery. In addition, statistical analysis was done on patients stratified by gender, BMI class (underweight, optimal weight, obese, and morbidly obese), and age. The data was collected as a retrospective cohort study at the time points of pre-surgical, 1-year post-op and 2-year post-op. A total of 266 charts were reviewed, which included 119 patients who had a TKA and 147 patients who had a THA. There was no significant difference between pre-op BMI and one-year and two-year post-op BMIs ($p>0.05$). The change in BMI in the THA patients compared to the TKA patients was not statistically significant at the one-year ($p=0.26$) or two-year post-op time point ($p=0.99$). Based on this study, the findings suggest that patients do not lose weight after a joint replacement regardless of gender, class of BMI or type of joint replacement.

Sponsor(s): Diann Reischman, Theresa Bacon-Baguley

Oral Presentations Abstracts

BEGINNING AT 3:20 P.M.

KIRKHOF CENTER 2263

Using GIS to Optimize Plant Diversity and Habitat Suitability

Presenter(s): sarah chartier, Kristina Venlet, Martha Haglund, Michael Workman, Michael Haas

Landscapes rich in plant diversity are aesthetically pleasing and minimize risk of loss from disease and insects. GVSU has an ongoing tree project aimed at achieving these goals. Prior work began the process of identifying species and collecting data for height, diameter and global positioning system coordinates for location. The current study builds on this work, collecting information for maple and oriental pear trees. Also, observed limb cracks, breaks or other injuries which affect tree health or present safety hazards were recorded. Unique to this study is the use of digital photography and image processing software to create new tree layouts with different tree species, allowing the campus arborist to visualize how existing landscapes would look with the addition of new tree species. This process will give the ability to conceptualize various tree plantings and their contribution to landscape diversity and habitat suitability plus conserve limited monetary resources.

Sponsor(s): Edwin Joseph

KIRKHOF CENTER 2266

Exploring Permanent Property

Presenter(s): Tiffany Cross

The objective of this study is to focus on the acquisition of tattoos outside of large urban centers like Los Angeles, New York City, Miami, and Chicago. Tattoo acquisition has definitely increased nationwide in the last eighteen years and several researchers in the different social sciences have taken notice. From my research, I have identified four themes in the literature on tattoos: Class, Identity, Commoditification/Consumerism, and Subculture. There are various theories attached to these four themes and the goal of this research is to explore how these theories applied to smaller midwest cities like Grand Rapids and Allendale.

Sponsor(s): Ann Kroll Lerner

3:20 P.M.

KIRKHOF CENTER 2201

What's Better...Court or Arbitration? You Decide.

Presenter(s): Tomeia Floyd

In this day and age, you have to be careful of the things you say and do. You might have meant to do one thing, but your actions cause a different result. If your actions cause harm to some thing or someone, a lawsuit may be initiated. A lawsuit is a popular form of resolving disputes. However, in the employment sector, there is another type of alternative dispute resolution that is frequently used. Similar to a lawsuit, arbitration is used when there is a disagreement between two parties. Like a law suit, the arbitration process allows the parties to present their case to a neutral third party who examines all the evidence and then makes a binding decision. Arbitration, however, is less formal, faster and much cheaper than litigation. Consequently, it is growing in use in other fields besides labor and employment law as an alternative to litigation.

Sponsor(s): Maris Stella Swift

KIRKHOF CENTER 2250AB

Evaluating the Structured Learning Assistance Program: A Statistical Consulting Experience

Presenter(s): Nicole Arradaza

Structured Learning Assistance (SLA) is an academic support program which targets historically difficult courses at GVSU. Students, who voluntarily enroll in SLA classes, attend mandatory workshops led by trained facilitators, which meet from one to three hours each week during the semester. Karel Swanson, who is the SLA Program Coordinator, is responsible for supplying data from the SLA program. As a statistical consultant, I analyzed data collected from STA 215 and BIO 120. The analysis included comparing final grades for SLA versus non-SLA students. I also compared these courses over time from 2005 to 2007, and will be sharing my experience as a statistical consultant as well as findings from the analysis.

Sponsor(s): Karel Swanson, Phyllis Curtiss

KIRKHOF CENTER 2250C

A Comparison of the Outcomes of Laparoscopic Versus Open Nissen Fundoplication

Presenter(s): Tiffany Cross

The objective of this study is to focus on the acquisition of tattoos outside of large urban centers like Los Angeles, New York City, Miami, and Chicago. Tattoo acquisition has definitely increased nationwide in the last eighteen years and several researchers in the different social sciences have taken notice. From my research, I have identified four themes in the literature on tattoos: Class, Identity, Commoditification/Consumerism, and Subculture. There are various theories attached to these four themes and the goal of this research is to explore how these theories applied to smaller midwest cities like Grand Rapids and Allendale.

Sponsor(s): Ann Kroll Lerner

KIRKHOF CENTER 2259

Cyber-Sexual Harassment: The Development of the Cyber-Sexual Experiences Questionnaire

Presenter(s): Samantha Schenk

Little research has examined sexual harassment in an Internet context. Thus far, we know that cyber-sexual harassers use the Internet as a way to connect with acquaintances from off-line social interactions (i.e., work and school), or complete strangers, to perpetrate their victims through gender harassment, the exhibition of unwanted sexual attention, and/or the use of sexual coercion. The purpose of the current study is to add to the developing body of literature on cyber-sexual harassment by creating a measure of cyber-sexual harassment. Twenty-four female undergraduate students participated in focus groups of two to six people. Guided by predetermined questions, these groups discussed their positive and negative experiences on the Internet. Information gathered was used to create the Cyber-Sexual Experiences Questionnaire. Beyond the creation of the measure, common themes related to social networking sites, peer-to-peer communication, and e-mail emerged in the focus groups.

Sponsor(s): Ellen Shupe

Oral Presentations Abstracts

BEGINNING AT 3:20 P.M.

KIRKHOF CENTER 2269

Social Science Texbook Representations of Evolutionary Theory

Presenter(s): Benjamin Winegard

Evolutionary theory has long been attacked by right wing fundamentalists. In recent decades, however, scholars have hypothesized that evolutionary theory, when applied to human cognition and behavior, suffers from similar misrepresentation and derogation by social scientists. We derived predictions from this hypothesis and tested them by coding fifteen widely-used social science textbooks focusing on gender differences. As predicted, (1) the majority of textbooks contained several types of errors in their presentation of evolutionary theory; (2) textbooks with more errors showed more hostility towards evolutionary theory; (3) more popular textbooks made more errors; and (4) sociology textbooks contained more errors than psychology textbooks. These results collectively suggest that the goal of cross-disciplinary integration is being obstructed by hostility toward, and ignorance of, evolutionary theory in the social sciences.

Sponsor(s): Robert Deaner

KIRKHOF CENTER 2270

I Can Connect Nothing With Nothing: Stylistic Sterility in T.S. Eliot's "The Wasteland"

Presenter(s): Maureen Di Virgilio

T.S. Eliot s poem The Wasteland explores various themes, including the presence of cultural, sexual, and spiritual sterility in modern culture. The bulk of critical interest in this work has focused on decoding the complex metaphors and allegories which pervade the poem and being thus able to derive meaning, while less attention has been devoted to the stylistic elements of The Wasteland. Certain themes, however, are in fact evoked not only through imagery but are supported by linguistic evidence. In I Can Connect Nothing with Nothing: Stylistic Sterility in The Wasteland, a close analysis of sections two and three will reveal consistent stylistic choices in the text, particularly regarding transitivity, which create impressions of ambiguity, passivity, and brokenness - traits that lend themselves to the key theme of sterility.

Sponsor(s): Ben Lockerd

KIRKHOF CENTER 2259 (1—1:20 P.M.)

A Trip with the Beast

Presenter(s): Michelle Thomas

Walmart is a drug. With its cheery commercials showing us the way to better savings and happy family togetherness, how can we resist? How can we escape the clutches of our retail beast? My trip through Walmart is riddled with entertainment. A strange old lady paints her nails with the un-paid-for nail polish, a small boy crashes into my cart in a hit and run, and a hopeful teenage salesman employs his creepiest techniques to engage in conversation with me. All of these things are starting to wear on my patience, though. I just want my essentials. I just want this to be a good trip with the beast.

Sponsor(s): Ron Dwelle

Film Presentations, Panels, & Demonstrations

NOTES 9:00 A.M.—2:00 P.M.

Film Presentations, Panels, & Demonstrations

9:00 A.M.—2:00 P.M.

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9—10 A.M.

KIRKHOF CENTER 2259

Spanish Poetry Panel

Jaime Malone

This panel is composed by Spanish Students who are the winners of the 1st. Spanish Poetry Competition on campus, as part of the Spanish Poetry Week "In Honor to Ernesto Cardenal". We are going to be presenting the top four winners. Poems will be read by their authors in a bilingual version and with an introduction done by Jaime Malone.

Sponsor(s): Natalia Gómez and Zulema Moret

9—9:30 A.M.

KIRKHOF CENTER AREA 51

Clinical Laboratory Science Recruitment and Awareness

Josh Mireley, Falon Gray, and Rebecca McAuliffe

The purpose of this project is multi-faceted. It is meant to be informational to potential students or anybody who may be interested in the Clinical Laboratory Sciences. It also has the potential to be used as a recruitment tool for high school students interested in working in the health field but unsure the direction they want to take. This study includes information about all the different aspects of the career of the Clinical Laboratory Scientist. It exposes the extreme shortage, comparing the projected statistics for years to come and the drastic difference in number between the demand of the profession and the graduates coming into the field. The Clinical Laboratory Scientist is vital to hospitals and doctors' offices, and their diagnostic process. This project highlights the importance of the Clinical Laboratory Scientist in the health field and gives students, the general public, and other health professionals a chance to learn about the Clinical Laboratory Science career.

Sponsor(s): Linda Goossen

11—11:30 A.M.

KIRKHOF CENTER AREA 51

What Every Business Student Should Know About Industrial Security Firms

Joe Woods and Travis Cornwell

Each year, companies lose billions of dollars due to the theft of valuable physical and intellectual property. Much of these thefts are committed by internal employees and can be prevented quite easily. Industrial security firms can provide the technology and consulting services needed to stop such theft from ever occurring. Unfortunately, many business students and professionals alike are unaware of the benefits that industrial security firms can provide. Last summer, students Travis Cornwell and Joe Woods worked along side Professor Star Swift to create a basic primer on the surveillance techniques used by industrial security firms and the legality of their use. The project was accepted to the 30th Annual McMaster World Congress in Hamilton, Ontario. The project was presented on January 14. Cornwell and Woods were the only students accepted to present at the prestigious conference and the project was well-received by industry practitioners and academic professionals alike.

Sponsor(s): Star Swift

11:30 A.M.—12 P.M.

KIRKHOF CENTER AREA 51

Goal Setting: Setting Your Own Within An Organization

Malorie Obrecht and Justin Pitt

Our main goal in creating this video was to present information about goal setting in a fun and creative way. We showcase how to set goals, why they are important, how they could fit into the strategic plan of the organization you work for, and what advantages there are to setting good goals within ones job. After posing the question, What is a goal? we present a montage of different answers - some of them funny, some of them simple, and some pretty close to the definition. For the next step, we present show me the goals with different goals people might set. We wanted them to be funny and realistic. We offer Quick Rulesin goal setting to provide viewers with an opportunity to see what is important when setting goals. In sum, this video aims to be educational and informative to be used as a teaching tool for undergraduate classes or human resource training for various organizations. (This video was produced as a semester project for PA 420 Organization Theory in winter 2008.)

Sponsor(s): Linda Goossen

1—2 P.M.

KIRKHOF CENTER WEST LAWN

Early Weapons Technology: The Atlatl - Precursor to the Bow and Arrow

Alexander Atkin

Humankind, without the advantages of hyper-keen senses, sharp teeth, claws, great speed, or size for hunting and defense, have long been pressured to develop other means for survival. Mechanical advantage is what propelled our kind to the top of the food chain and seated us as the earth's supreme predator. This was first accomplished thousands of years prior to the Bow and Arrow with the Atlatl and Dart--the original weapons system of humankind. Based on the function of rear-propulsion and spring energy stored in the flex of the Atlatl and Dart, this weapons system can be used at distances of over 100 meters and can commonly achieve dart speeds of over 150 km/h. The research carried out here has aimed to address the efficiencies of different designs, and to assess the overall abilities of the Atlatl and Dart system.

Sponsor(s): Mark Schwartz

Index of Presenters

NOTES 9:00 A.M.—2:00 P.M.

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Sustainable Book Benefits

The environmental impact of this book based on 1388 lbs of paper.

The savings below are achieved when PC recycled fiber is used in place of virgin fiber. Your project uses 1388 lbs of paper which has a postconsumer recycled percentage of 30%.

4 trees
not cut down

12 lbs waterborne
waste not created

1,698 gal. wastewater
flow saved

188 lbs solid waste
not generated

370 lbs net greenhouse
gases prevented

2,831,520 BTUs energy
not consumed