4-22-2008

Student Research Colloquium Proceedings 2008

St Cloud State University

STUDENT RESEARCH COLLOQUIUM

2008

PROCEEDINGS

APRIL 22, 2008

Atwood Memorial Center
9 a.m. to 8 p.m.

ST. CLOUD STATE UNIVERSITY

11th Annual St. Cloud State University
Student Research Colloquium 2008

Program Highlights

Registration

All student presenters and project sponsors are asked to register for the Student Research Colloquium (SRC). A registration table is located outside of the ballroom on the 2nd floor of Atwood Memorial Center. Anyone who would like a copy of the 2008 SRC Proceedings should go to the registration table.

Invited Alumni Address – Cascade Room

12:30 p.m. Keynote Address – *Research in Action: Helping People*

Keesha Gaskins, Executive Director of Minnesota Women's Political Caucus
Bob Goff, Co-founder and owner of Goff & Howard, Inc., a public relations firm
Amy Schultz, Geropsychologist from OPAL Institute, Oregon Passionate Aging and Living

These distinguished alumni will discuss how research helps them do their jobs. Panelists will describe their careers and answer questions about the secret to their success.

1:30 p.m. — Reception

Reception and Closing Ceremony – Cascade Room

6:30 p.m. — All SRC attendees are welcome to a reception in the Cascade Room of the Atwood Memorial Center. Students who present their fully stamped passports will be entered into a drawing to win $400 in prizes!

7:00 p.m. — The 2008 Student Research Colloquium Best Poster Awards and Best Paper Competition Awards will be announced and the winners awarded. Prizes are as follows:

- Best paper presentation will be awarded $300; up to six honorable mentions will be awarded $150 each.
- Best poster will be awarded $300; up to six honorable mentions will be awarded $150 each.

The College of Science and Engineering Denise M. McGuire Student Research Awards will be announced and winners awarded.

SCHEDULE OF EVENTS

Event	Time	Room in AMC
Early Morning Presentations		
Registration for Presenters and Project Sponsors	8:00 – 5:00	Outside Ballroom
Session A: All Disciplines (Poster Session)	9:00 - 10:50	Ballroom
Session B: Paper Presentation Competition I	9:30 - 10:50	South Voyagers
Session C: Biochemistry	9:30 - 10:50	North Glacier
Session D: Humanities	9:30 - 10:50	North Voyageurs
Session E: Business and Design	9:30 - 10:50	South Glacier
Late Morning Presentations		
Session F: SCSU Survey	11:00 - 12:30	Granite
Session G: Paper Presentation Competition II	11:10 - 12:30	South Voyageurs
Session H: Social Sciences I	11:00 - 12:00	North Voyageurs
Session I: Philosophy	11:00 - 12:20	North Glacier
Session J: Science and Engineering I	11:00 - 12:20	South Glacier
Session K: Helping People Succeed	11:00 - 12:20	Lady's Slipper
Keynote Address and Reception		
"Research in Action: Helping People"	**12:30 - 1:30**	**Cascade**
Reception for Alumni Panel: Keesha Gaskins, Bob Goff and Amy Schultz	**1:30 - 2:00**	**Cascade**
Afternoon Presentations		
Session M: Science and Engineering II	2:00 - 3:20	North Voyageurs
Session N: Paper Presentation Competition III	2:00 - 3:20	South Voyageurs
Session O: Economics	2:00 - 3:20	North Glacier
Session P: Management	2:00 - 3:20	South Glacier
Session R: English	2:00 - 3:30	Granite
Session S: Aviation	2:00 - 3:00	Oak
Session T: All Disciplines (Poster Session)	2:00 - 3:50	Ballroom
Session U: Social Sciences II	3:30 - 4:30	North Glacier
Session V: Communication Studies	3:30 - 5:00	Lady's Slipper
Session W: Paper Presentation Competition IV	3:30 - 5:10	South Voyageurs
Session X: Science and Engineering III	3:30 - 4:30	North Voyageurs
Session Y: Special Education	3:30 - 5:10	South Glacier
Session Z: Ethnic Studies	3:30 - 4:30	Oak
Session ZA: Behavioral Science	3:30 - 4:30	Granite
Session ZB: Emerging Trends in Science	3:30 - 4:50	Mississippi
Evening Presentations		
Session ZC: Education	5:00 - 6:20	Granite
Session ZD: Science and Engineering IV	5:00 - 6:00	North Voyageurs
Session ZE: Social Sciences II	5:00 - 5:40	North Glacier
Reception and Closing Ceremony		
Reception Open to All Attendees	6:30 – 7:00	Cascade
Closing Ceremony	7:00 – 8:00	Cascade

Acknowledgement of Research Sponsors

St. Cloud State University

College of Education

Community Psychology

- Edrishinha, Chaturi
- Jorgensen, Leeann

Health, Physical Education Recreation & Sport Science

- Bacharach, David
- Seifert, John

Higher Education Administration

- Imbra, Christine

Human Relations and Multicultural Education

- Andrzejewski, Julie

Special Education

- Salk, Janet
- Wilkins, Julia

College of Fine Arts and Humanities

Communication Sciences and Disorders

- Rangamani, Grama
- Whites, Margery

Communication Studies

- Rehling, Diana

English

- Davis, Glenn
- Dillman, Richard
- Fox, Catherine
- Heiman, James
- Koffi, Ettien
- Mohrbacher, Carol
- Philippot, Raymond
- Robinson, James
- Ross, Suzanne

English as a Second Language

- Kim, Choon
- Veeder, Rex

Philosophy

- Nuccetelli, Susana
- Shaffer, Michael

G.R. Herberger College of Business

Business Computer Information Systems

- Schmidt, Mark

Management

- Mboko, Swithina
- Polacco, Alex

College of Science and Engineering

Aviation

- Aceves, Robert

Biological Sciences

- Arriagada, Jorge
- Cetkovic-Cvrlje, Marina
- Cook,William
- Gazal, Oladele
- Gulrud, Kristin
- Jacobson, Bruce
- Julius, Matthew
- Kvaal, Christopher
- Minger, Mark
- Olson, Brian
- Restani, Marco
- Schoenfuss, Heiko
- Schrank, Gordon
- Schuh, Timothy
- Simpson, Patricia
- Tubbiola, Maureen
- Voelz, Neal
- Wolff, Jerry

Chemistry

- Dvorak, Michael
- Gregory, Daniel
- Jeannot, Michael
- Krystyniak, Rebecca
- Mahroof-Tahir, Mohammad
- Mechelke, Mark
- Munshi, Kaylan
- Ramakrishnan, Latha
- Sadrai, Mahin
- Sreerama, Lakshmaiah

Computer Science

- Herath, Jayantha

Earth and Atmospheric Sciences

- Fedele, Juan
- Hansen, Anthony
- Kubesh, Rodney
- Nastrom, Greg
- Pekarek, Alfred
- Pound, Kate
- Weisman, Robert

Acknowledgement of Research Sponsors

Electrical and Computer Engineering
- Glazos, Michael
- Hou, Ling
- Petzold, Mark
- Vogt, Timothy
- Yao, Aiping
- Zheng, Yi

Environmental and Technological Studies
- Bender, Mitch
- Holmen, John
- Rose, Chuck

Mathematics
- Huang, Danrun
- Walk, Stephen

Mechanical and Manufacturing Engineering
- Baliga, Bantwal
- Bekkala, Andrew
- Byun, Jeongmin
- Covey, Steve
- Miller, Kenneth

Nursing Science
- DeBruycker, Jo
- Lenz, Brenda
- Morrison-Sandberg, Leslie
- Warner, Susan
- Zelenak, Mary

Physics
- Haglin, Kevin
- Harlander, John
- Lidberg, Russell

Statistics
- Robinson, David
- Sather, Laura

College of Social Sciences

Economics
- Grossman, Philip

Ethnic Studies
- Casanova, Stephen
- Freilinger, Rebecca

Geography
- Blinnikov, Mikhail
- John, Gareth
- Richason, Benjamin

History
- Galler, Robert
- Glade, Betsy
- Lewis, Richard

Political Science
- Frank, Stephen
- Nyendu, Morgan
- Uradnik, Kathy
- Wagner, Steven

Psychology
- Buswell, Brenda
- Illies, Jody
- Valdes, Leslie

Sociology
- Ore, Tracy

Women's Studies
- Berila, Elizabeth

Student Life & Development

College Experience
- Umberger, Stuart

College of St. Benedict

Communication Studies
- Kramer, Jennifer

Chemistry
- Schaller, Chris

College of St. John's University

Chemistry
- Ross, Michael

Force 10 Networks, Inc.

Electrical and Computer Engineering
- Goergen, Joel
- Tomaszewski, Pete

Program

9:00- 10:50 All Disciplines (Poster Session) **Ballroom**

Moderator Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development

Presentation Index	Presenter(s)	Title
A1	Spanier, Hannah; Shelton, Lisa	Gender and Emotion: Ignoring Emotional Faces
A2	Schrofe, Ryan	Land Use Changes in St. Michael, Minnesota
A3	Antunez, Leyda; Langlois, Renee; Morgan, Tiffany; Shelton, Lisa	False Memory: Effects of Distractor Relatedness
A4	Nadeau, Daniel; Stafne, Joe	Analysis of Nutrient Loading in Johnson Creek
A5	Smelter, Amber	Relationship between Birthplace and Retirement Choice for the Elderly
A6	Hehling, Jenna; Swanson, Megan; Hehling, Jessica	Personality and Creativity: Differences between Quality and Originality
A7	Gelhaus, Patrick	Genetic Modification of Wild Rice
A8	Mlodzik, Kevin	The Nature of Questions Tapped by Biographical Data Questions
A9	Giese, Amy	Is There a Gold Deposit in the Center Valley Area?
A10	Swanson, Jennessa	What Should Be Done About Global Warming?
A11	Mendonsa, Riyan	GMR Pathfinder
A12	Onadiran, Akimdeen; Smith, Cory	Global Conflict's Effects on Inequality in the U.S.
A13	Breimhorst, Peter; Saari, Angela; Koitzsch, Kendra; Jungels, Michelle	Human Sexuality Education in Mille Lacs County
A14	O'Neal, Kris; White, Ashley; Wagner, LaRissa; Theis, Angie; Lamser, Stephanie; Maas, Kori; Davis, Pam; Leuze, Jacklyn	Community Assessment of Youth Sexuality Education
A15	Yang, Joua; Marong, Kemo; Welle, Laurel; Vetsch, Jenna; Freeman, Michele; Thorsten, Rena; Molin, Kelly; Harrison, Katherine	Community Assessment: Asthma in Stearns County
A16	Jacobsen, Lisa; Tollefson, Susan; Libbesmeier, Jill; Miller, Ingrid; Anderson, Jocelyn; Hillstrom, Jackie; Hannigan, Leeah	A Descriptive Study: Nurse Recruitment and Retention in Meeker County
A17	Haney, Holly; Sanftner, Heather	Interest in Child Development: Mille Lacs Band of Ojibwe
A18	Larson, Justin	Middle School Knowledge on Gastric Bypass
A19	Smith, Chelsey	Mealtime Manding
A20	Knutson, Lacy; Wesenberg, John; Vesel, Shawn; Johanson, Cassandra; Doyle, Lyndsay; Meyer, William; Smith, Chelsey	Increasing Attention in Individuals with Traumatic Brain Injury
A21	Sharma, Anshu	The First Annotation of the Histidine Biosynthetic Pathway of Ammonifex Degensii
A22	Hixson, Jessica	Retracing George Catlin's Path to the Pipestone Quarry in 1836

Program

9:00- 10:50 All Disciplines (Poster Session) **Ballroom**

Moderator Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development

Presentation Index	Presenter(s)	Title
A23	Dagban-Ayivon, Yawosse	Sub-Cloning and Characterization of Aldehyde Dehydrogenase 5A1 (Microsomal Aldehyde Dehydrogenase) and Its Role in Environmental Toxicology
A24	Rejman, Ranee	Am I Pretty? Effects of the Menstrual Cycle on Self-Perceived Attractiveness
A25	Tsan, Fei Chin; Nemkul, Niza; Fast, Patricia; Ghate, Ketaki	The Effect of WHI-P131 on Proliferation of Isolated Mouse CD4+ T-Cells
A26	Ghate, Ketaki; Haney, Phillip; Shrestha, Sharad	Detection of T-Cells by Immunofluorescence
A27	Ghate, Ketaki; Perera, Deshani	Does WHI-P131 Induce Cell Death in the Isolated CD4+ T-cells of NOD Mice?
A28	Moore, Ryan	The Difficulties Students Have in Nomenclature and Formula Writing, and the Differences between Beginner Chemistry Students and Advanced Chemistry Students
A29	Ogbon, Enite	Characterization of Truncated Human Class-3 Aldehyde Dehydrogenases (ALDH3A1)
A30	Antunez, Giovanni	Human ALDH3A1 Genetic Polymorphism Analysis
A31	Fernando, Koshali	Synthesis and Characterization of Vanadium-naringenin Complexes with Potential Insulin Mimicking Properties
A32	Mboko, Wadzanai;	Fasting-Induced Changes in Plasma Motilin Levels in Dairy Goats
A33	Bastyr, Erin; Dotseth, Andrew	Water Quality Analysis of Little Birch Lake Tributary and Outlet
A34	Sanoski, Brian	GIS Analysis of Getchell Creek for Monitoring
A35	Shrestha, Binaya; Leet, Jason	Spectroscopic Characterization of Aromatic Organic Crystals Tetracene and Rubrene via Time-Resolved Laser Spectroscopy
A36	Schwitzer, Megan	A Comparison of Radar Estimated Rainfall Rates to Ground Based Rain Gauge Rainfall Rates
A37	Peters, Becky	Rocky Mountain National Park
A38	Singh, Kunwar	Monitoring and Modeling of Post-USSR Land Use Land Cover Change in Ryazan Oblast of European Russia Using Multi-Temporal Satellite Data
A39	Anderson, Adam	Geologic Trap of Cedar Valley, Nebraska
A40	Abel, Jon	A Limited Climatology of Capping Inversions in Nighttime Northern Plains Thunderstorms
A41	Holste, Tor; Magnan, Brandon	Surface Charge Carrier Mobilities in Organic Semiconductor Materials by Field-Effect and Time-of-Flight Measurement Techniques
A42	Krehic, Damir; Tatge, Zach; Suzuki, Motohisa	Powertrain for an Electric Motorcycle
A43	Sappurissakul, Sutee; Steckelberg, John; Toomey, Jesse	Control Interface for Electric Motorcycle

Program

9:00- 10:50 All Disciplines (Poster Session) **Ballroom**

Moderator Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development

Presentation Index	Presenter(s)	Title
A44	Mankowski, Joshua	Quantity and Quality of Suspended Particulate Organic Matter Upstream and Downstream of a Series of Surface Release Impoundments on the Upper Mississippi River
A45	Janke, Naomi; Saxton, Kelsey	Semantic Therapy with Atypical Exemplars in Stroke Survivors with Aphasia
A46	Eannelli, Michael	Characterization and Solution Speciation Studies of Oxovanadium-Flavonoid Compounds and Their Potential Anti-Diabetic Properties
A47	Hulkonen, Rachel	Salivary Hormone Levels and Sensation Seeking in Female Athletes
A48	Rochat, Nicole; Bennett, Michael; Deuermeyer, Hank; Hendrickson, Katie; Mareini, Fatuma	FYE-Pre-Medicine
A49	Bjorklund, Andrew	A Comparison of Two Testing Methods for Knee Extension Endurance
A50	Overfield, Rachel; Blomstrom, Susan; Hilsgen, Heather; Knutson, Katie; McCarthy, Fay	Integrating Client and Family Considerations Into Speech-Language Pathology Services
A51	Starz, Kimberly	Speech-Language Pathologists' Perceptions of Multicultural Issues Affecting Service Delivery
A52	Perez, Nichole; Vandenheuvel, Laura; Westling, Heather; Braun, Laura	Factors Affecting the Use of Evidence-Based Practice by Speech-Language Pathologists
A53	Wixon, Erik	Spatial Analysis of Historic Yellow Brick Houses in St. Cloud
A54	Carlson, Sarah; Rue, Laura; Pittman, Sarah; Lamb, Kate	Speech-Language Pathologists' Knowledge and Beliefs About Evidence-Based Practice Usage
A55	Day, Jolene; Gardner, Eric; Haider, Elizabeth; Paffrath, Lyndsey; Rhuby, Andrea	Use of Evidence-Based Practice Principles in Service Delivery Planning by Speech-Language Pathologists
A56	Johnson, Sara; Olson, Marin; Rajbhandari, Prince	Incidence of Type 1 Diabetes (T1D) in the Colony of NOD/Ltj Mice Models at Saint Cloud State University
A57	Cheng, Shiang Kai	Development of Gas Chromatography Mass Spectrometry and High Performance Liquid Chromatography Methods for the Detection of Ethylene Glycol Ethers
A58	Bhattarai , Nirjal; Henning, Phillip	Mechanism of Action of Alzheimer's Disease Drugs on the Aggregation of Amyloid Beta Peptide
A59	Mususu, Muchima	Mad Protein Under-Regulation or Over-Expression Outside The Nucleus: A Possible Cause for Adenocarcinoma Breast Cancer Cell Resistance to Ottelione A
A60	Alfano, Tony; Lennemann, Nick	Identification of a PGC-1 Destroying Protein for the Treatment of Neurodegenerative Disorders

Program

Session B: Paper Presentation Competition I — **South Voyageurs**

Moderator Christina M. Imbra, Professor, Higher Education Administration, College of Education

Time	Presenter(s)	Title
9:30 a.m.	Frikken, Jon	Bifold Window Doors to Increase R-Value
9:50 a.m	Laliberte, David	Baseball at Native American Boarding Schools in Minnesota: A History
10:10 a.m.	McGee, Meghan	Predator Avoidance Performance of Larval Fathead Minnows (Pimephales Promelas) Exposed to Estrogen Mixtures
10:30 a.m.	Lepkowski, Christine	Effects of Gender on the Career Aspirations of Administrators in the Minnesota State Colleges and Universities System

Session C: Biochemistry — **North Glacier**

Moderator Jo McMullen-Boyer, Station Manager KVSC 88.1FM, Adjunct Instructor, Mass Communications

Time	Presenter(s)	Title
9:30 a.m.	Ohman, Chris	Quenching of the Triplet State for Sulfur Atoms
9:50 a.m.	Reberg, Alexander	Toxoplasma Gondii CDK7 Ortholog Protein-Protein Interactions
10:10 a.m.	Petersen, David	Taratogenic Effects of Ethylene Glycol Ethers on Xenopus Laevis Development and Role of Aldehyde Dehydrogenases in Determining Taratogenicity
10:30 a.m.	Kane, Rahul	Toxoplasma Gondii CYC2 Ortholog Protein-Protein Interactions

Session D: Humanities — **North Voyageurs**

Moderator Dr. Carolyn Ruth A. Williams, Ph.D., Associate Dean, Multicultural Affairs and STEM Initiatives

Time	Presenter(s)	Title
9:30 a.m.	Timp-Pilon, Michele	Effective Peer Review Groups: A Writing Center Approach
9:50 a.m.	Kohman, Josh	Regarding Davidson's "What Metaphors Mean"
10:10 a.m.	Deuser, Cindy	ESL Creative Writers: Motivation, Process and Product
10:30 a.m.	Berrisford, Hayley; Kemp, Abby	What Does it Mean to be Deaf?

Session E: Business and Design — **South Glacier**

Moderator Mark Schmidt, Ph.D., Associate Professor, Computer Business Information Systems

Time	Presenter(s)	Title
9:30 a.m.	Paez, Carlos; Tamariz, Lyncol	Air Bearing Design
9:50 a.m.	Bandara, Vidarshana	Zonal Rumor Routing: Simulation Study
10:10 a.m.	Das, Debjani	Strategic Alignment: Integrating IT into the Corporate Strategy

Program

Session F: SCSU Survey — **Granite**

Moderator Steven C. Wagner, Ph.D., Professor and Chairperson, Department of Political Science, Faculty Co-director, SCSU Survey

Time	Presenter(s)	Title
11:00 a.m.	Loehlein, Michael; Thapa, Birat; Otteson, Rhonda; Nelson, Heidi; Lynch, Trevor; Galadima, Hadiza; Barthel, Craig; Helm, Renee; Hofstad, Luke	SCSU Survey Coverage of Previous Surveys

Session G: Paper Presentation Competition II — **South Voyageurs**

Moderator Heiko L. Schoenfuss, Ph.D., Associate Professor of Anatomy, Director, Aquatic Toxicology Laboratory

Time	Presenter(s)	Title
11:10 a.m.	Loes, Tim	Daphnia Magna Preferentially Select Against Consumption of Diatom Algae Exposed to 4-Nonylphenol
11:30 a.m.	Klint, Karl	Web 2.0 and the English Classroom - Warning: Students may Riot
11:50 a.m.	Pradhananga, Amit	E. Coli Loading of Water and Sediment in the Sauk River
12:10 p.m	Fast, Patricia; Ghate , Ketaki; Nemkul, Niza; Perera, Deshani; Shrestha, Sharad; Tsan, Fei chin	What Does Janus Tyrosine Kinase (JAK) 3 Inhibitor Do to the T-Cells in Vitro?

Session H: Social Sciences I — **North Voyageurs**

Moderator Mitchell Rubinstein, Associate Vice President for Academic Affairs, Office of Academic Affairs

Time	Presenter(s)	Title
11:00 a.m.	Jordan, Edward	Difference in Private and Public Sector Wages
11:20 a.m.	Rai, Jyoti	A Short Run Analysis of Philips Curve of United States
11:40 a.m.	Eickhoff, Aaron; Gulden, Brennen; Shelton, Lisa	Exploring the Impact of Past Emotional Experiences on Future Events

Session I: Philosophy — **North Glacier**

Moderator Susana Nuccetelli, Associate Professor, Department of Philosophy

Time	Presenter(s)	Title
11:00 a.m.	Ahlers, Jonathan	Pushimi-Pullyu Representations
11:20 a.m.	Johnson, Eric	No Need for a Name (Frega's Puzzles)
11:40 a.m.	Coss, David; Smith, Sarah	The Evolution of Language and Its Use
12:00 p.m.	Busse, William; Frank, Erick; Lindberg, Eric; Shepard, Brandon	A Puzzle About Belief

Program

Session J: Science and Engineering I — **South Glacier**

Moderator Patricia Bresser, Associate Professor, Department of Nursing Science

Time	Presenter(s)	Title
11:00 a.m.	Dillman, Allissa	The Design and Synthesis of Novel Goniothalamin Analogues
11:20 a.m.	Ahmed, Sunny; Rana, Deepak; Nasir, Taqi	Automation of Liquid Chromatography Instrument
11:40 a.m.	Carlson, Ryan; Meyer, Kyle	Sartell Valves, Inc. AWWA Valve Project
12:00 p.m.	Beuning, Mark; Miller, Jon; Larson, Jaclyn	Prosthetic Aortic Heart Valve Fatigue Tester

Session K: Helping People Succeed — **Lady's Slipper**

Moderator Dr. Suellen Rundquist, Associate Dean, College of Fine Arts and Humanities

Time	Presenter(s)	Title
11:00 a.m.	Nakamura, Shinobu	Novice ESL Teachers' Process of Developing Their Own Way of Written Feedback on Student Writing
11:20 a.m.	Fonken, Gael	Teaching Lingua Franca English in a Baroque Inner-City Contact Zone: Negotiating Basic Literacy With/For Working-Class Adolescents in India
11:40 a.m.	Vesel, Shawn	Social Skills Training to Teach Abuse Prevention for an Adult with Developmental Disabilities
12:00 p.m.	Mason, Keesha	Female Entrepreneurs in Africa: The Road to Capital Challenged by Inequality

12:30- 2:00 p.m. — **Cascade**

Keynote Address and Reception - "Research in Action: Helping People"

FEATURED SPEAKERS
Keesha Gaskins, Executive Director of Minnesota Women's Political Caucus
Bob Goff, Co-founder and owner of Goff & Howard, Inc., a public relations firm
Amy Schultz, Geropsychologist from OPAL Institute, Oregon Passionate Aging and Living

These distinguished alumni will discuss how research helps them do their jobs. Panelists will describe their careers and answer questions about the secret to their success.

Session M: Science and Engineering II — **North Voyageurs**

Moderator Dr. Carolyn Ruth A. Williams, Ph.D., Associate Dean, Multicultural Affairs and STEM Initiatives

Time	Presenter(s)	Title
2:00 p.m.	Dryden, Nick	Modeling White Pine Respose to Herbivory and Transplanting
2:20 p.m.	Elich, Hallie	On Homomorphisms of Finitely Generated Abelian Groups and the Associated Rings
2:40 p.m.	Stovern, Michael	Lightning Detection Using Instrumentation
3:00 p.m.	Malin, Charlene	The Third Dimension of the Wind

Program

Session N: Paper Presentations Competition III — **South Voyageurs**

Moderator Stephen M. Walk, Associate Professor, Department of Mathematics

Time	Presenter(s)	Title
2:00 p.m.	Braith, Justin	Fuzzy Logic and Fuzzy Intervals
2:20 p.m.	Stephanek, Josh	4-Nonylphenol Binding to Glass as a Possible Toxicity Mechanism in Diatoms, an Important Aquatic Producer
2:40 p.m.	Thompson, Rose	Amending Our Morals
3:00 p.m.	LeClaire, James; Zimmerman, James; Mikkelsen, Brent	High Speed Optical Data Link

Session O: Economics — **North Glacier**

Moderator Philip J. Grossman, Professor, Department of Economics

Time	Presenter(s)	Title
2:00 p.m.	Keita, Mory	Has Democracy Led to Economic Growth in Africa?: A Case Study of Sixteen Countries in West Africa
2:20 p.m.	Helland, Robert	Planes, Trains and Automobiles: The Economic Effects of Transportation Systems
2:40 p.m.	Loehlein, Michael	Characteristics of Minnesota Gamblers
3:00 p.m.	Newell, Mike	Factors Affecting the Number of Annual Deportations From the United States to Mexico

Session P: Management — **South Glacier**

Moderator Alex Polacco, Professor of Management, College of Business

Time	Presenter(s)	Title
2:00 p.m.	Saxton, Elliott	History of Business Organizations
2:20 p.m.	M'Banga, Shandra	Women in Global Entrepreneurship
2:40 p.m.	Boser, Brett; Klaverkamp, Peter	St. Cloud State University Advising Program

Session R: English — **Granite**

Moderator Dr. Suellen Rundquist, Associate Dean, College of Fine Arts and Humanities

Time	Presenter(s)	Title
2:00 p.m.	Martin, Kari	Learning to Write in English: An Analysis of ESL Students in the Writing Center
2:20 p.m.	Heimermann, Mark	Lloyd Alexander's, The Chronicles of Prydain, as Arthurian Literature
2:40 p.m.	Muhlenkort, Amy	Saying Goodbye: An Examination of the Leave-Taking Act
3:00 p.m.	Pickens, Alexandra; Hanson, Ryan; Holstrom-Johnson, Susan	Tutoring Strategies for Developmental Writers

Program

Session S: Aviation **Oak**

Moderator Dr. Robert I. Aceves, Assistant Professor, Department of Aviation

Time	Presenter(s)	Title
2:00 p.m.	Bjornsson, Robert; Thewlis, Patrick	Geothermal Heating of Airport Runways
2:20 p.m.	Heimann, Blake; Simon, John	Ground Surveillance Radar System
2:40 p.m.	Cooke, Trista; Hase, Joshua; Scallon, Andrew	Automated Airport Taxi Assistance and Guidance System

2:00- 3:50 All Disciplines (Poster Session) **Ballroom**

Moderator Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development

Presentation Index	Presenter(s)	Title
T1	Studniski, Sarah; Orwoll, Katie; Galbrecht, Angela; Salonek, Angela; Stockinger, Kate; Noll, Carly; Harms, Charissa; Christopher, Lexie; Angell, Casey	Wright County Nursing Presentation
T2	Wenz, Donald	Synthesizing Vanadium-Flavonoid Complexes that May Show Potential Anti-Diabetic Properties
T3	Vocelka, Luke; Grosz, Danielle	Hormonal Changes From Copulation to Fatherhood in Rats
T4	Ghosh, Sukanya	Elder Abuse and Neglect
T5	Hall, Bruce	Energy in the Wind
T6	Stein, Nick; Voegele, Eric; Doheny, Ryan	Autonomous Meteorological Aircraft
T7	Weiss, Kevin; Arnfelt, Nickolas; Courneya, Jonas	Airport Foreign Object Debris Prevention
T8	Sajid, Noureen	The Artificial Neuron
T9	Rockow, Nathan	Geothermal Energy
T10	Choi, Sung Yeol	Digital Modulation Classification on Software Defined Radio
T11	Paturi, Naga Sameeraj	Low Voltage Analog Circuit Design Techniques
T12	Gill, Satinder	PAPR Reduction in OFDM
T13	Hein, Jason	Development of Nucleic Acid Aptamer for Neuronal Nicotinic Acetylcholine Receptor Subtype Alpha-4-Beta-2
T14	Hanson, Jessica	An Investigation of the Link Students Make Between Real Life Examples and Particulate Drawings of the Phases of Matter
T15	Albrecht, Sarah	Preparation of Farnesyl Pyrophosphate Analogues: Competitive Inhibitors of Farnesyl Protein Transferase
T16	Lindgren, Rachel	Is it Safe to Drink the Water?: Filtering Algal Toxins in Rural Settings
T17	Kleven, Mark	Vanadium-Flavonoid Complexes as Inhibitors of Enzymes Involved in Glucose Metabolism
T18	Jufar, Tewodros; Kleven, Mark; Maher, Michael; Mboko, Wadzana	The First Annotation of the Phenylalanine, Tyrosine and Tryptophan Biosynthetic Pathways of Ammonifex Degensii

Program

2:00- 3:50 All Disciplines (Poster Session) **Ballroom**

Moderator Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development

Presentation Index	Presenter(s)	Title
T19	Daynuah, Kokpor	Biochemical Analysis of Hydrogen Cyanide (HCN) in Cassava Plant Products
T20	Schlegal, Craig	College Performance and Personality
T21	Carlyon, Joseph	Integrated Control of Common Tansy
T22	Leonard, Rhonda; O'Toole, Kelly; Lund, Andrew	Dying Green
T23	Bjork, Michael	Should Changes be made in the Emergency Warning System for Severe Weather?
T24	Hanson, Eric	Paleolimnological Investigation of Lake Ogechie, MN: Inferring Paleoenvironment through Stratigraphic Analysis of Lake Core Sediments
T25	Fisher, Kala; Hayman, Michael	Avon Hills Conservation Action Plan
T26	Storlien, Joseph	Comparative Risk Analysis of Abandoned Manure Basins
T27	Kirstin, Gleicher	Saharan Air Layer Vertical Profiles as Observed During NAMMA
T28	Conboy, Lindsey	Hydrologic and Hydraulic Analysis of the Upper Rum River System, from the Mouth of the Lake Mille Lacs to the mouth of Lake Ogechie, Kathio State Park, Minnesota
T29	Bratsch, Allison	The Influence of Self-Esteem and Stress on Performance
T30	Basarich, April; Murn, Lindsay	Understanding Leadership: The Role of Performance Pressure and Social Intelligence
T31	Hofstad, Luke; Otteson, Rhonda	SCSU Survey Feeling Thermometer
T32	Kanewischer, Dustin	Sports Geography
T33	Lindfors, Kristen	Isolation and Characterization of Bacillus Cereus from Common Food Products
T34	Hansen, Zachary	Abstinence and Moderation Treatment for Alcohol Abuse: Considerations for Counselors
T35	Cammilleri, Dana	Coping and Interaction Among Hospice Nurses: An Investigation of the Impact of Spirituality Programs
T36	Schapman, John	Comparison of Metabolic Power Between Seated Elliptical and Recumbent Ergometers at the Same Perceived Exertion
T37	Baumann, Patrick; Dombrovski, Holly	Automated Lawn Mowing System
T38	Mukherjee, Debashree	Signal Integrity Basics
T39	Liu, Yu	VoIP technology
T40	Nwachukwu, Chudy	Analyzing Signal Integrity in High Speed Print Circuit Boards
T41	Carlson, Jenna	Should We Continue to Explore Space?
T42	Albright, Michael	Photon Production in High-Energy Heavy Ion Collisions
T43	Fuchs, Brody	Atmospheric Wind Interferometer Characterization
T44	Haugen, Neale; Pundsack, Thomas	Investigations of Temperature Dependence of Charge Carrier Mobilities

Program

2:00- 3:50 All Disciplines (Poster Session) **Ballroom**

Moderator Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development

Presentation Index	Presenter(s)	Title
T45	Perera, Deshani; Piotrowski, Aaron; Gast, Dawn; Shrestha, Sharad	The First Annotation of the Valine, Leucine and Isoleucine Biosynthetic Pathways of Ammonifex Degensii
T46	Manandhar, Sonal; Shrestha, Sharad	Antiviral Chemotherapeutics from Natural Products: Strategic Design, Designed Synthesis & Characterization of a New Series of Bioactive Triterpenoids
T47	Mahroof, Taqdees	Anticancer Activity of Ru-Benzimidazol Metal Complexes
T48	Schwinn, Andrew; Zimdars, Laraine	The Role of CDC-4 in the Degradation of PGC-1 and Human Diseases
T49	Chin, Fei T; Petersen, David; Kone, Nabi; Paudel, Omkar	The First Annotation of the Glycine and Serine Biosynthetic Pathways of Ammonifex Degensii
T50	Paudel, Omkar	Identification and Characterization of Aldehyde Dehydrogenase in Fathead Minnow Tissues
T51	Pamplona, August	The First Annotation of the Gluamate and Glutamine Biosynthetic Pathways of Ammonifex Degensii
T52	Sandquist, Nathan	Synthesis of Metal Ion Complexes from Bidentate N-Heterocyclic Carbenes
T53	Mills, Jeff	Avoidance of Confrontation Relating to Personality and Gender
T54	Hoffer, Jeannette	Translating Research in Education: A Paleoclimatology Example
T55	Brandriet, Alexandra	A Comparison of Science and Liberal Arts Majors' Knowledge of Physical Change and Environmental Topics
T56	Wojciechowski, Travis	Hydrologic and Hydraulic Analysis of the Upper Rum River System from Buckmore Dam to Lake Onamia Kathio State Park, Northwest of Onamia, Minnesota
T57	Willing, Alexander	Synthesis and Characterization of Naringin Flavonoid with Vanadium Complexes
T58	Doyle, Lyndsay; Johanson, Cassandra; Knutson, Lacy; Meyer, William; Smith, Chelsey; Vesel, Shawn; Wesenberg, John	Teaching Leisure Activities to Individuals with Autism
T59	Ong, Ta Re	Oxidation of Ethylene Glycol Ethers by Class 3 Aldehyde Dehydrogenase
T60	Lennemann, Nick; Navara, Stephanie; Ong, Ta Re; Rajbhandari, Labchan	The First Annotation of the Arginine and Proline Biosynthetic Pathways of Ammonifex Degensii

Session U: Social Sciences II **North Glacier**

Moderator Dr. Diana Lawson, Dean, G.R. Herberger College of Business

Presentation Index	Presenter(s)	Title
3:30 p.m.	Chris , Gliadon	How Does Per-Pupil Spending Affect Graduation Rates?
3:50 p.m.	Canfield, Bryan	173d Airborne Brigade
4:10 p.m.	Corbett, Benjamin	New York Times Talks

Program

Session V: Communication Studies — **Lady's Slipper**

Moderator Diana L. Rehling, Associate Professor, Communication Studies

Time	Presenter(s)	Title
3:30 p.m.	Krava, Elizabeth; Gohner, Trevor; Babinski, Rebecca; Baso, Andrew; Brown, Tara	Meaning Beyond Words: Nonverbal Communication Research

Session W: Paper Presentation Competition IV — **South Voyageurs**

Moderator Michael Gorman, Assistant Professor, Reference and Instruction Librarian, Learning Resources and Technology Services

Time	Presenter(s)	Title
3:30 p.m.	Carlson, Jason	Bald Eagles as Contaminant Bioindicators
3:50 p.m.	Haney, Phillip; Miller, Daniel; Salzl, Scott; Smith, Austin	SCSU FSAE Project
4:10 p.m.	Storlien, Joseph	Manure Storage Basin Abandonment Alternatives and Water Quality Improvement
4:30 p.m.	Ries, Andrew	The Paradox of Paradise: A Study of Setting in the Works of Sinclair Lewis
4:50 p.m.	Cole, Amanda	The Effects of Singular and Mixture Exposures of Estrogens on a Model Aquatic Invertebrate Daphnia Magna

Session X: Science and Engineering III — **North Voyageurs**

Moderator Lakshmaiah Sreerama, Professor, Department of Chemistry

Time	Presenter(s)	Title
3:30 p.m.	Lahr, Richard	The Development of an Instrumental Actinometer
3:50 p.m.	Piotrowski, Aaron	Taratogenic Effects of Oxovanadium Complexes (Possible Anti-Cancer Compounds) on Xenopus Laevis Development
4:10 p.m.	Gulbranson, Daniel	Method Development for Quantification of Ibuprofen in Surface Water by Liquid-Liquid Microextraction/GCMS

Session Y: Special Education — **South Glacier**

Moderator Morgan Nyendu, Ph.D., Assistant Professor, Department of Political Science

Time	Presenter(s)	Title
3:30 p.m.	Johanson, Brandy	The Uses and Implications of the Term "Retarded" on YouTube
3:50 p.m.	Saufley, Nancy	Do Institutions of Higher Education in Minnesota Prepare Future Special Education Teachers to Deal with Terminally Ill Students and Student Death?
4:10 p.m.	Barth, Britta; Grunewald, Jennifer; Haider, Cindee; Janssen, Melissa; Klever, Heather	Transition Planning

Program

Session Z: Ethnic Studies — **Oak**

Moderator Stephen Casanova, Associate Professor of Chicano/a Studies, Department of Ethnic Studies

Time	Presenter(s)	Title
3:30 p.m.	Jacobs, Megan; Smith, John; Ochoa, Walter; Gomez, Angelica; Chavarria, Hector; Hernandez, Evelyn	Latino Immigration Issues in Central Minnesota

Session ZA: Behavioral Science — **Granite**

Moderator Mitchell Rubinstein, Associate Vice President for Academic Affairs, Office of Academic Affairs

Time	Presenter(s)	Title
3:30 p.m.	Naheel, Rihab	The Status of the Kurdish Language in the Middle East
3:50 p.m.	Figueroa, Alexis; Johnson, Terri	Children of Color Identity
4:10 p.m.	Koch, Ryan; Krygowski, Nick; Jacobson, Shane; Sigette, Jeremy	Airport Runway Incursions Research

Session ZB: Emerging Trends in Science — **Mississippi**

Moderator Dr. Mahin Sadrai, Professor, Chemistry Department

Time	Presenter(s)	Title
3:30 p.m.	Horvat, Stephen; Swanson, Joshua	Peeling the Quark Onion with a Trillion Degree Furnace
3:50 p.m.	Meyer, Andrew; Nang, Quincy; Pickrell, Charles	Harmful Effects of Nano Tubes on the Environment and Organisms Bodies

Session ZC: Education — **Granite**

Moderator Steve Ludwig, Vice President for Administrative Affairs

Time	Presenter(s)	Title
5:00 p.m.	Holtan, Lisa	The Experiences of Students with Disabilities in a United States Public Higher Education Institution
5:20 p.m.	Coss, David	Pragmatic Rationality within the Prisoner's Dilemma
5:40 p.m.	Schwankl, Amber	The Significance and Implementation of Vocabulary Instruction
6:00 p.m.	Rasmussen, Stacy	Reading Literature: A Viable Way to Teach Composition

Program

Session ZD: Science and Engineering IV — **North Voyageurs**

Moderator Jeongmin Byun, Ph.D., Assistant Professor, Mechanical and Manufacturing Engineering

Time	Presenter(s)	Title
5:00 p.m.	Greku, Tedd; Landherr, Adam; Maves, Adam	Electrolux Transport/Leveling Device
5:20 p.m.	Prom, Daniel; Tamariz, Raphael; Pérez, David	Study on the Stretching Problem of Film Cutting
5:40 p.m.	Yang, Phillip; Yee, Jong-Shan; Lim, James	Mechanical and Manufacturing Design Projects for Vascular Solutions, Inc

Session ZE: Social Sciences II — **North Glacier**

Moderator Philip J. Grossman, Professor, Department of Economics

Time	Presenter(s)	Title
5:00 p.m.	Bargabus, Kathryn	State Mandates and Health Care
5:20 p.m.	Winscher, Damon; Franzen, Angela; Kanenza, Benita	The Colonial Legacy in Africa

6:30- 7:00 p.m. Reception Open to All Attendees — **Cascade**

All SRC attendees are welcome to a reception in the Cascade Room of the Atwood Memorial Center. Students who present their fully stamped passports will be entered into a drawing to win $400 in prizes!

7:00- 8:00 p.m. Closing Ceremony — **Cascade**

The 2008 Student Research Colloquium Best Poster Awards and Best Paper Competition Awards will be announced and the winners awarded. Prizes are as follows:

- **Best paper presentation will be awarded $300; up to six honorable mentions will be awarded $150 each.**
- **Best poster will be awarded $300; up to six honorable mentions will be awarded $150 each.**

The College of Science and Engineering Denise M. McGuire Student Research Awards will also be announced and the winners awarded.

Abstracts

Session A **All Disciplines** **Ballroom**

Gender and Emotion: Ignoring Emotional Faces

In the current study, participants had to decide whether a hat was centered on a head. The expression of the face and gender were irrelevant to the task. There are numerous studies (e.g., Eastwood, Smilek, & Merikle, 2003; Fenske, & Eastwood, 2003; Valdes, Rutledge, Miles, & Olah, 2006) that have found that people are less able to ignore sad faces than happy faces. It was hypothesized that making judgments about women's sad faces will be slower than men's sad faces because of the automatic activation of this gender stereotype. Faces were constructed using Poser software. Results are discussed.

Presentation Index: A1
Department: Psychology
Student Presenter(s): Shelton, Lisa; Spanier, Hannah

Time: 9:00 a.m.
Project Sponsor(s):
Valdes, Leslie

Land Use Changes in St. Michael, Minnesota

Many studies have been done on global and regional land cover and land use changes, but less attention has been paid to land use changes in individual cities. This article analyzes the land use changes in the city of St. Michael, Minnesota from 1996 to 2006. The study area was mapped by using high resolution remote sensing imagery and GIS software, which provided the tools and information that are needed to analyze changes in the urban and rural landscape spatially and temporally. The reasons for these changes in land use and their implications are also discussed.

Presentation Index: A2
Department: Geography
Student Presenter(s): Schrofe, Ryan

Time: 9:00 a.m.
Project Sponsor(s):
John, Gareth

False Memory: Effects of Distractor Relatedness

In this study participants studied a list of words that were related to a single concept or theme. They then took a recognition test with the theme word presented. Generally people remember incorrectly the theme word or critical lure more frequently than unrelated words (Roediger & McDermott, 1995). The current study is going to manipulate how related the distractors are to a single concept. It is predicted that when distractors are related to a theme instead of being all unrelated to each other more false memory will occur. Results will be discussed.

Presentation Index: A3
Department: Psychology
Student Presenter(s): Shelton, Lisa; Antunez, Leyda; Langlois, Renee; Morgan, Tiffany

Time: 9:00 a.m.
Project Sponsor(s):
Valdes, Leslie

Analysis of Nutrient Loading in Johnson Creek

Land use has a significant effect on water quality. Agriculture and residential development are two main contributors of this degradation. Fertilizers are being overused on agricultural land and in residential areas. Furthermore, animal waste and septic systems are frequently not managed correctly. Fertilizers and animal wastes contain nutrients which can be carried to waterways during rainfall. Johnson Creek, a trout stream, starts in a wetland and flows to the Mississippi River near St. Augusta, MN. From November 2007 through May 2008, a study was conducted on Johnson Creek to examine water quality indicators of the creek. The water was analyzed for pH, conductivity, phosphorus, nitrate, ammonium, total suspended solids, total solids, total coliform, and E. coli. Samples were taken once a week, as well as after significant rainfall events. The creek and the river it drains into are impacted by the surrounding land use and may result in the impairment of water quality.

Presentation Index: A4
Department: Environmental and Technological Studies
Student Presenter(s): Nadeau, Daniel; Stafne, Joe

Time: 9:00 a.m.
Project Sponsor(s):
Bender, Mitch; Rose, Chuck

Abstracts

Session A **All Disciplines** **Ballroom**

Relationship between Birthplace and Retirement Choice for the Elderly

A lot of research has been done on the elderly and their migration to warmer areas when they retire. There is less information written recently on the elderly who age-in-place and even much less information on the elderly and any attachments they may have towards a certain place or places. This project explores if the elderly feel a sense of place toward their birthplace or their place of retirement. Residents currently living at St. Benedict's Senior Community are the focus of the study. A portion of the residents were selected to take a survey regarding their experience and possible feelings they may have towards their birthplace or place of current residence. Data was also collected regarding the residents' age and birthplace location to create statistical data.

Presentation Index: A5
Department: Geography
Student Presenter(s): Smelter, Amber

Time: 9:00 a.m.
Project Sponsor(s):
John, Gareth

Personality and Creativity: Differences between Quality and Originality

Past research has shown that certain personality characteristics predict creativity (Barron & Harrington, 1981). Creativity is often defined as the generation of a product or idea that is both original and useful or of high quality (Runco & Charles, 1993). Expanding on previous research, the present study takes a further look into the relationship between personality and creativity by exploring if different personality constructs are important for predicting the two main factors of creative problem solving, solution quality and solution originality. Undergraduate participants were asked to respond to an ill-defined problem. After proposing a solution to the problem, students were then required to take the NEO-PI-R personality inventory (Costa & McCrae, 1992), which measures the Big Five personality factors of openness to experience, neuroticism, agreeableness, conscientiousness and extroversion. We expect results to show that conscientiousness predicts higher quality solutions whereas openness to experience predicts the originality of the solutions. In addition to these two specific predictions, we will also explore how the other Big Five personality factors influence solution quality and originality.

Presentation Index: A6
Department: Psychology
Student Presenter(s): Swanson, Megan; Hehling, Jenna; Hehling, Jessica

Time: 9:00 a.m.
Project Sponsor(s):
Illies, Jody

Genetic Modification of Wild Rice

An inquiry study that looks at the research that is being done in the field of genetics, specifically regarding the mapping of the wild rice (Zizania palustris) genome. This inquiry looks at the potentials for advancement in the area of domestically cultivated wild rice, as a result of the recently mapped genome completed at the University of Minnesota. This potential research has a conflict with the Native Americans in Minnesota who believe that the wild rice was given to them by the "creator." This scientific inquiry looks at the conflict of interests between the scientific community and that of the Native American religious beliefs. As the field of genetics advances, this is one of many potential conflicts, and the struggle between the University of Minnesota and the Native Americans could set the precedent for many discrepancies in the future.

Presentation Index: A7
Department: Biological Sciences
Student Presenter(s): Gelhaus, Patrick

Time: 9:00 a.m.
Project Sponsor(s):
Simpson, Patricia

The Nature of Questions Tapped by Biographical Data Questions

Creativity in the workplace, or the attempt to adapt to or improve one's environment, is becoming an increasingly more important factor as corporations strive to achieve a competitive advantage. Ongoing research is being conducted to determine how to predict which job candidates will most likely exhibit creative work performance. Biodata has been shown to predict work performance overall. Biodata examines different aspects of past experience, such as "How did you feel about a past negative experience with a supervisor?". One of the questions being addressed in this study is whether different types of biodata experience result in different levels of prediction of work place creativity. The results could contribute to how corporations assess job candidates during the selection processes.

Presentation Index: A8
Department: Psychology
Student Presenter(s): Mlodzik, Kevin

Time: 9:00 a.m.
Project Sponsor(s):
Illies, Jody

Is There a Gold Deposit in the Center Valley Area?

Nearly a century ago Mr. Billmeyer, prospected unsuccessfully for gold in the Center Valley area of Morrison County, Minnesota. To test for any mineralization of the prospected area, 20 samples were selected from tailing piles, and outcrops next to the old prospect pits. Thin section analysis is being used to identify variations in rock types. Scanning electron microscope, whole rock chemical, and trace element analyses are being used to test for precious metal enrichment. Metals specifically being tested for are gold, platinum, palladium and silver. These processes are in progress, and will be sufficient to determine any precious metal enrichment of the Center Valley area in Morrison County, Minnesota.

Presentation Index: A9
Department: Earth and Atmospheric Sciences
Student Presenter(s): Giese, Amy

Time: 9:00 a.m.
Project Sponsor(s):
Pekarek, Alfred

What Should Be Done About Global Warming?

On February 2, 2007, the leading International Network of Climate Scientists concluded for the first time that global warming is caused by human activity. Because of this fact, I chose to investigate what should be done to reduce our impact on global warming. I asked 150 students in Biol. 151 at St. Cloud State University a series of questions relating to these three research questions: 1) To what extent do SCSU students in Biol. 151 know about global warming? 2) What are the beliefs of SCSU students in Biol. 151 regarding possible solutions to global warming? 3) To what extent do daily activities of SCSU students in Biol. 151 impact global warming? My research found that most students know, to a great extent, what causes global warming and believe in finding and using products that reduce their personal carbon dioxide emissions, including daily behaviors that may affect their lifestyles.

Presentation Index: A10
Department: Biological Sciences
Student Presenter(s): Swanson, Jennessa

Time: 9:00 a.m.
Project Sponsor(s):
Simpson, Patricia

GMR Pathfinder

Magnetic Random Access Memory (MRAM) technology has been touted as the technology of the future with the promise of high speed switching and long lasting non-volatile memory. MRAM's have the capability of speeding up computer boot times, reducing power usage and should be easy to fabricate. MRAM's utilize sub-micron ferro-magnetic structures called bits. These bits are patterned on a common substrate such as silicon. Bits are essentially tiny magnets whose magnetization is switched by an externally applied magnetic field using the mechanism of Giant Magneto Resistance (GMR). The problem holding the technology back is mainly the unreliable switching characteristics of the bits. To solve this we take advantage of the pseudo-spin valve (PSV) structure which virtually eliminates the thermal affects on the state of the bit thus making the device more reliable. To further improve the reliability of the bits, additional layers of PSV 's will be added to each bit adding redundancy to the device and increasing the anisotopic field strength required to switch the bit to reduce the impact of external magnetic fields on the state of the bit. Design factors aside, the most important factor in MRAM device reliability is the uniformity of well defined device features which will give predictable anisotropic fields throughout the device. This is accomplished by developing reliable manufacturing processes using cutting edge technology such as ion implantation as apposed to traditional ion mill methods. Ion implantation minimizes surface variation and improves the physical edge of the bit thereby minimizing switching irregularities. The development of the manufacturing process using ion implantaion techniques instead of traditional ion milling techniques for the production of MRAM is the primary focus of the research.

Presentation Index: A11
Department: Electrical and Computer Engineering
Student Presenter(s): Mendonsa, Riyan

Time: 9:00 a.m.
Project Sponsor(s):
Vogt, Timothy

Global Conflict's Effects on Inequality in the U.S.

Global conflict has drastically affected the lives of Arab Americans through social stereotypes, political actions, and economic suppression within the United States. Where once Arabs were an invisible minority in our country, conflict in the Middle East beginning with the Arab-Israeli War and culminating in current US involvement in that region has removed not only the protection of being unseen but also their rights and even safety here in the homeland. Evidence from the film Reel Bad Arabs suggests that Hollywood has played a key role in creating and perpetuating the stereotypes of Arabs in America. American political actions have consistently been unfavorable towards Arab Americans since the Arab-Israeli war 41 years ago as well. This includes propaganda which has led the media to reinforce these stereotypes, direct actions to remove Arabs from America, and immigration policies which make it more difficult for Arabs to obtain citizenship or visas. Much of this has been supported by the general public and by corporations. Even prior to the attack of 9/11 and the War in Iraq many people had a negative prejudice towards Arabs without knowing fully why, but 9/11 solidified those preconceived notions. Afterwards, Arab Americans found themselves answering for crimes they did not commit or condone. Through this presentation I will discuss the origin of stereotypes about Arab Americans and immigrants and illustrate the ways in which Arab Americans have, and continue to be, discriminated against based on these stereotypes. Ultimately this presentation will argue that Arab Americans are Americans and, as members of our country, deserve full recognition as citizens including all of the rights that current prejudice and discrimination denies them.

Presentation Index: A12
Time: 9:00 a.m.
Department: Sociology; English
Project Sponsor(s):
Student Presenter(s): Smith, Cory; Onadiran, Akimdeen
Ore, Tracy; Fox, Catherine; Freilinger, Rebecca

Human Sexuality Education in Mille Lacs County

Due to the high rate of teen sexual activity and pregnancy in the Northern Mille Lacs County school districts, the Mille Lacs Public Health office sought to explore attitudes toward sexuality education among those involved in student education. A quantitative, descriptive, 13-item survey was distributed to Isle, Onamia, and Nay-Ah-Shing schools. Findings were that 95% of participants thought a comprehensive sexuality education program belongs in the schools. Answers revealed that nearly 90% of teachers and administrators agreed that abstinence should be included in sexuality education, but not as the only option. Most thought condoms and oral contraceptives should be taught as birth control options. Over 81% believed that teen pregnancy is an issue in their school, but the average person was unsure of whether the sexuality education taking place in their school is appropriate. It was found that 44.6% of participants thought that sexuality education should begin between 3rd and 5th grade, while another 44.6% said it should begin between 6th and 8th grade. Through these findings we discovered that most teachers and educators in these schools agreed that comprehensive sexuality education, as opposed to abstinence only, should be taught in the schools beginning between third and eighth grade. Political, social, and environmental issues that would have to be addressed include the school board needing to approve and change policies, the need to implement educational programs for faculty and parents about the sexual education content, and the need for financial resources. In conclusion, a comprehensive sexuality education program should be developed and implemented in these schools and possibly at a younger age.

Presentation Index: A13
Time: 9:00 a.m.
Department: Nursing
Project Sponsor(s):
Student Presenter(s): Jungels, Michelle; Breimhorst, Peter; Koitzsch, Kendra; Saari, Angela
Lenz, Brenda; Morrison, Leslie

Community Assessment of Youth Sexuality Education

The teen pregnancy rate in Kandiyohi County is disproportionately high compared with the state of Minnesota. The purpose of this study was to identify educational deficits that exist in the community regarding healthy youth sexuality education. In collaboration with Kandiyohi County Public Health and the Coalition for Healthy Adolescent Sexuality (CHAS) a 15- question survey was developed. The questions assessed youth sexual education and the attitudes, beliefs and curriculum the programs offered. The sample population consisted of community faith-based organizations, non-profit organizations, and any other organization that had direct contact with youth and/or parents/guardians. Follow-up phone calls were made to each organization prior to final survey collection. Results indicated that in Kandiyohi County those that included healthy teen sexuality education did not follow a specific sexual education curriculum, many desired to include a more comprehensive education curriculum, and most identified the importance of introducing youth sexuality education before the age of 12. Appropriate funding from state and local government resources is necessary to initiate and implement these programs. Support from community members, students, teachers, and parents are essential to expanding the current sexual education curriculum for youth. The results from this survey are part of an overall assessment of the community. The next step will be the Coalition for Healthy Adolescent Sexuality conducting an overall assessment of the community that will conclude attitudes, beliefs, and needs. Programs will be developed in order to increase healthy sexuality education for youth to decrease the incidence of teen pregnancy.

Presentation Index: A14
Time: 9:00 a.m.
Department: Nursing
Project Sponsor(s):
Student Presenter(s): Leuze, Jacklyn; Davis, Pam; Lamser, Stephanie; Theis, Angie; Wagner,LaRissa; White, Ashley; O'Neal, Kris; Maas, Kori
Lenz, Brenda; Warner, Susan

Community Assessment: Asthma in Stearns County

Asthma is one of the most common chronic diseases in the United States. The prevalence of asthma has increased 150% in the last two decades. Approximately 20 million Americans have asthma, including 1 out of every 15 children in Minnesota. Nationwide, asthma costs $16 billion dollars and results in 14 million missed school days per year. A Stearns County community assessment was performed to gain a better understanding of asthma in public schools. The survey consisted of twelve questions assessing the school nurses' perception of asthma in children kindergarten through sixth grade.

Presentation Index: A15
Time: 9:00 a.m.
Department: Nursing
Project Sponsor(s):
Student Presenter(s): Welle, Laurel; Freeman, Michele; Harrison, Katherine; Molin, Kelly; Marong,Kemo; Vetsch, Jenna; Thorsten, Rena; Yang, Joua
Lenz, Brenda; Zelenak, Mary

A Descriptive Study: Nurse Recruitment and Retention in Meeker County

Within Meeker County, recruitment and retention of nurses (RN and LPN) was assessed. Research was focused based on community need, to learn where nurses are working, what attracted them to work in that setting and length of employment as a nurse. Surveys were distributed to licensed nurses working at various sites in Meeker County. Significant findings included: 44% of nurses surveyed have been working for at least 21 years (n=84); 85% of nurses surveyed see themselves working in Meeker County in 5 years (n=84); 100% of nurses surveyed were females (n=91); location, hours, and flexibility in scheduling were key components in both recruitment and retention; wages and benefits such as health and dental insurance were found to have less impact on the recruitment and retention of nurses; coworkers and work environment were factors scoring highly in nurse retention. This indicates a need to tailor interventions to recruit younger nurses. Recruiting can begin by promoting the positive qualities of Meeker County such as: affordable housing, low crime rate, excellent schooling and a sense of community. Survey data supports previous research findings that indicate a shortage of rural nurses. There is also an aging nursing population. Finding effective strategies to recruit and retain nurses in rural communities is a continuing problem that must be addressed. Research within Meeker County indicates flexibility in scheduling and work hours are key factors in recruitment and retention of nurses.

Presentation Index: A16
Time: 9:00 a.m.
Department: Nursing
Project Sponsor(s):
Student Presenter(s): Anderson, Jocelyn; Tollefson, Susan; Libbesmeier, Jill; Miller, Ingrid; Jacobsen,Lisa; Hillstrom, Jackie; Hannigan, Leeah
DeBruycker, Jo; Lenz, Brenda

Interest in Child Development: Mille Lacs Band of Ojibwe

Mille Lacs Band of Ojibwe Public Health nurse wants to create a Follow Along program to help parents track child development and detect early developmental delays. Information is wanted regarding mothers' knowledge and perceptions of child development and related lifestyle behaviors. Research was done to identify the perceptions of mothers on WIC from the reservation regarding child development and associated behaviors. The research will help the public health nurse determine if a Follow Along program would be used by the community or if a different intervention to track child development would be more appropriate. The research would also help determine the extent of perceived importance of child development to the population. The findings indicate child development is important to the subjects and a Follow Along program would be used.

Presentation Index: A17
Time: 9:00 a.m.
Department: Nursing
Project Sponsor(s):
Student Presenter(s): Haney, Holly; Sanftner, Heather
Morrison-Sandberg, Leslie

Middle School Knowledge on Gastric Bypass

This research focuses on how middle school students in a rural school district view obesity as a disease, and what treatments are appropriate to treat it. Specifically, I focus on previous knowledge on the gastric bypass procedure, which is a permanent procedure that removes most of the stomach in order to limit food consumption. I found that students were well aware of the risks of gastric bypass surgery, and how to prevent obesity. I did see areas where the middle school could assist in combating the rising epidemic of obesity, such as offering daily physical education classes as opposed to an every-other-day schedule used currently.

Presentation Index: A18
Time: 9:00 a.m.
Department: Biological Sciences
Project Sponsor(s):
Student Presenter(s): Larson, Justin
Simpson, Patricia

Mealtime Manding

To increase functional communication in an adult diagnosed with Autism Spectrum Disorder, manding was taught during meals to request more food. The mand was in the form of a manual sign distinguished as a clap or clasp of both hands. Another function of mand training was to reduce the inappropriate behavior of swiping a plate of food off of the table. Food items were placed one by one on the participant's plate, therefore allowing numerous opportunities to mand or communicate with the trainer. Upon swallowing of one bite, verbal instruction was given and the client was allowed 30 seconds to respond with the appropriate mand. Data was collected on the percentage of bites in which the participant manded.

Presentation Index: A19
Department: Community Psychology
Student Presenter(s): Smith, Chelsey

Time: 9:00 a.m.
Project Sponsor(s):
Edrisinha, Chaturi

Increasing Attention in Individuals with Traumatic Brain Injury

A traumatic brain injury, TBI, is usually the result of a sudden, violent blow to the head. Your brain controls your movements, behaviors, thoughts and sensations. Not surprisingly, then, a brain injury can affect many different aspects of your physical and emotional well-being. Signs of TBI include but are not limited to memory and concentration problems, confusion, and diminished attention spans. The client under study showed signs of diminished attention span along with an increase in wandering. The client refused to engage in social activities and would instead leave the room and walk around the building without supervision. Decreasing wandering by increasing attention span was the focus of this study. A highly preferred social activity, watching a movie, was utilized. To demonstrate experimental control, a changing criterion design was used across several time frames starting at five minutes. In addition, we used attention, in the form of verbal praise, plus an edible to reinforce staying in the room and paying attention to the movie. In order to accommodate the day services company fading of our attention was done by integrating another client to replace our attention. Results and implications for future research are discussed.

Presentation Index: A20
Department: Community Psychology
Student Presenter(s): Meyer, William; Knutson, Lacy; Doyle, Lyndsay; Smith, Chelsey; Wesenberg,John; Johanson, Cassandra; Vesel, Shawn

Time: 9:00 a.m.
Project Sponsor(s):
Edrisinha, Chaturi

The First Annotation of the Histidine Biosynthetic Pathway of Ammonifex Degensii

Ammonifex degensii is an obligate anaerobic chemolithoautotrophic (obtains energy from inorganic compounds and carbon from carbon dioxide) bacteria isolated from a volcanic hot spring in East Asia in 1994. Ammonifex is the archetype of a new genus (ammonium maker). Ammonifex degensii is an extremely thermophilic gram negative rod shaped bacterium with optimal growth occurring at 70 degrees C and a pH of 7.5. The genome of ammonifex degensii is 85% complete, funded by the Department of Energy Joint Genome Program. Saint Cloud State University is part of a consortium of institutions that make up the Collaborative Undergraduate Genomic Annotation Team. SCSU has undertaken the responsibility of using comparative genomics to identify the amino acid biosynthetic pathways. Histidine is an amino acid with a positively charged R group. We hypothesize that this amino acid has biosynthetic pathways in ammonifex degensii, and that we will be able to identify the genes responsible for the synthesis of this amino acid using a comparative genomics approach.

Presentation Index: A21
Department: Biological Sciences
Student Presenter(s): Sharma, Anshu

Time: 9:00 a.m.
Project Sponsor(s):
Kvaal, Christopher

Retracing George Catlin's Path to the Pipestone Quarry in 1836

George Catlin was an artist/explorer who was fascinated by the Native Americans in the early 19th century and spent two years traveling throughout what is known today as the state of Minnesota. He claims to be the first white man to visit the sacred Pipestone Quarry in southwestern Minnesota. His exact path to reach the quarry hasn't been fully retraced, but through historical research and the application of geographic information science, it is possible to not only re-create his route but to produce a model and a record describing the process of utilizing GIS for historical visualization purposes. This poster offers an insight into the landscape of southwestern Minnesota before the time of settlement.

Presentation Index: A22
Department: Geography
Student Presenter(s): Hixson, Jessica

Time: 9:00 a.m.
Project Sponsor(s):
John, Gareth

Sub-Cloning and Characterization of Aldehyde Dehydrogenase 5A1 (Microsomal Aldehyde Dehydrogenase) and Its Role in Environmental Toxicology

Aldehyde dehydrogenases are a group of enzymes that catalyze the oxidation of aldehydes, including aldehyde intermediates produced during anticancer drug cyclophosphamide metabolism. There are 17 ALDHs in human body. Role of several human ALDHs in the metabolism of cyclophosphamide has been established, but not that of ALDH5A1. In this regard we have cloned ALDH5A1 into a bacterial expression vector and are in the process of over expressing and purifying the recombinant protein in E. coli. The purified protein will be characterized with regard to its ability to catalyze the detoxification of cyclophosphamide and toxification certain environmental chemicals.

Presentation Index: A23
Department: Chemistry
Student Presenter(s): Dagban-Ayivon, Yawosse

Time: 9:00 a.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

Am I Pretty? Effects of the Menstrual Cycle on Self-Perceived Attractiveness

This study attempts to determine if women appear to be more physically attractive during the luteal phase of their menstrual cycle, when fertility is highest. Female volunteers answered questions regarding their menstral cycle, hormonal birth control methods and feelings of attractiveness. Based on their answers to their menstrual cycle questions, the researcher will determine when ovulation is likely, based on previous research by D. A. Beaulieu. Their photograph was taken at high and low fertility phases in their cycle. Women judged their attractiveness by self assessment and by evaluating their photographs. Participants' judgements were affected by time of the month and the method for assessing attractiveness. Implications for the evolutionary theory, called the good-genes hypothesis, are discussed.

Presentation Index: A24
Department: Psychology
Student Presenter(s): Rejman, Ranee

Time: 9:00 a.m.
Project Sponsor(s):
Valdes, Leslie

The Effect of WHI-P131 on Proliferation of Isolated Mouse CD4+ T-Cells

Type 1 diabetes (T1D) is a disease that results from elimination of insulin-producing pancreatic ß-cells by the autoimmune T-cells, which express a signal transduction protein molecule called Janus tyrosine kinase 3 (JAK3). Recently, it was found that a potent inhibitor of JAK3, WHI-P131, can prevent the development of T1D in a mouse model (NOD mice) of this disease.The results obtained in the Dr. Cetkovic's lab suggested that WHI-P131 affects T-cell function. However, a heterogeneous T-cell population, isolated from the mouse spleen, was used in those experiments. In order to define the mechanism of WHI-P131 action solely on a particular type of immune cells, they need to be isolated from a heterogeneous cell pool. Therefore, the aim of this study is to isolate a particular subpopulation of T-cells, called T helper or CD4+ T-cells, and to determine the effects of WHI-P131 on the growth/proliferation of those cells in culture. Isolation of CD4+ T-cells from the mouse splenocytes was performed using the magnetic beads-labeled anti-CD4 antibody and MS column separation (Miltenyi Biotec). Single cell suspension was made using the spleens from 4-7-wk-old female mice (NOD and control C57BL/6 mice). The isolated CD4+ T-cells were resuspended into culturing medium and cultured with addition of anti-CD3 (10 µg/mL) and anti-CD28 (2 µg/mL) antibody in the concentration of 1x106/mL in 96- or 24-well tissue culture plates from one to three weeks. WHI-P131 was added to the cell culture in three different concentrations: 1.5, 3, and 6 µg/mL. Cell's viability was determined using Trypan Blue exclusion test after the first, second and third week of culturing. Statistical analysis of data was performed by Student's t-test. It is found that WHI-P131 affected the proliferation of isolated CD4+ T-cells in a dose-response manner.

Presentation Index: A25
Department: Biological Sciences
Student Presenter(s): Tsan, Fei Chin; Ghate, Ketaki; Nemkul, Niza; Fast, Patricia

Time: 9:00 a.m.
Project Sponsor(s):
Cetkovic-Cvrlje, Marina

Detection of T-Cells by Immunofluorescence

T cells are white blood cells divided into three different subpopulations: T helper, T cytotoxic and T regulatory cells that express specific markers on their cell surface. The CD4 and CD8 molecules are the markers of the helper and cytotoxic T cells, respectively. The T regulatory cells have both CD4 and CD25 markers expressed on their surface. Based on the expression of the CD molecules T-cells can be detected and quantified by using fluorochrome-labeled antibodes that bind to these markers. The fluorescence can be detected either by flow cytometer (faster and easier method) or by imunofluorescent microscope (labor-intensive method). As we do not have a flow cytometer at SCSU, but need to immunophenotype T-cells, the goal of this project is to optimize the condition for detection of different T-cell phenotypes by immunofluorescence. The imunofluorescent microscope (Olympus B071), that contains a filter for detection of fluorescein-isothiocyanate (FITC)-induced fluorescence, was used. The FITC-labeled antibodies (CD4, CD8, CD25) were purchased from the BD Biosciences and Miltenyi Biotec. The 1) freshly prepared and 2) cultured (with addition of either mitogen or anti-CD3 plus anti-CD28 antibodies) heterogeneous T-cells, and isolated CD4+ T-cells (isolated by magnetic anti-CD4-labeled microbeads, Miltenyi Biotec) were obtained from the spleens of 5-8-wk-old C57BL/6 and NOD mice. Various concentrations of cells (1-10x105/ml), cell fixatives (paraformaldehyde and acetone), slide types (plain and poly-L-lysine-coated), antibody dilutions (1:10-1:100), and antibody types (different anti-CD4 antibodies), tested for visualization of desirable subpopulations of T-cells by immunofluorescence, will be discussed.

Presentation Index: A26
Department: Biological Sciences
Student Presenter(s): Haney, Phillip; Shrestha, Sharad; Ghate, Ketaki

Time: 9:00 a.m.
Project Sponsor(s):
Cetkovic-Cvrlje, Marina

Does WHI-P131 Induce Cell Death in the Isolated CD4+ T-cells of NOD Mice?

Janus tyrosine kinase (JAK) 3 is a signal transduction molecule that is expressed by T-cells. By inhibiting JAK 3 it might be possible to disrupt the function of autoimmune T-cells and thereby prevent development of autoimmune diseases such as type 1 diabetes (T1D). It has been shown that WHI-P131, a specific JAK 3 inhibitor, can prevent T1D in a mouse model (NOD mouse) of T1D. The mechanism of prevention of disease development in NOD mice by WHI-P131 is not known. The goal of this research is to study whether WHI-P131 induces cell death in T-cells exposed to the drug in vitro. The cell death was studied in the heterogeneous population of splenocytes, as well as in isolated CD4+ T-cells of 4-7-wk-old NOD and control C57BL/6 female mice. Cells were cultured in a concentration of 1x106/ml in a 96-well-plate, stimulated with either mitogen (whole splenocytes) or by anti-CD3 (10 mg/ml) and anti-CD28 (2 mg/ml) antibodies (isolated CD4+ T-cells) for a time period of 2, 5 and 7 days. WHI-P131 was added in a concentrations of 6, 3, and 1.5 mg/ml. Cell death was measured by BrdU (colorimetric) ELISA test (Roche Diagnostics) that measures BrdU-labeled DNA fragments with an anti-BrdU antibody. The absorbance was detected by an ELISA reader at 450 nm. The dose-response-dependent induction of cell death was observed by addition of the drug in both heterogeneous, as well as in isolated CD4+ populations of T-cells. The absorbance of the cells (both entire splenocytes and isolated CD4+ T-cells) exposed to the highest concentration of WHI-P131 (6 mg/ml) was four to seven times lower compared to the absorbance of control cells ($p<0.05$). These results suggest that WHI-P131 induces cell death in cultured CD4+ T-cells.

Presentation Index: A27
Department: Biological Sciences
Student Presenter(s): Perera, Deshani; Ghate, Ketaki

Time: 9:00 a.m.
Project Sponsor(s):
Cetkovic-Cvrlje, Marina

The Difficulties Students Have in Nomenclature and Formula Writing, and the Differences between Beginner Chemistry Students and Advanced Chemistry Students

Chemical nomenclature can be taught in three main ways: teaching students to convert names to formulas, formulas to names, or both. This research will attempt to answer two questions: What difficulties do students have in naming and formula writing? What differences are there between introductory chemistry students and advanced chemistry students' ability to solve chemical nomenclature? Data will be collected via a twenty item instrument. Ten of the items will be converting names to formulas and ten will be converting formulas to names, and all of the problems are of similar difficulty. Twenty-five students will be introductory chemistry students and twenty-five will be advanced chemistry students. Four students from each group will also be asked to participate in a think-aloud to further probe their understanding. Results of this research and directions for future research will be discussed.

Presentation Index: A28
Department: Chemistry
Student Presenter(s): Moore, Ryan

Time: 9:00 a.m.
Project Sponsor(s):
Krystyniak, Rebecca

Characterization of Truncated Human Class-3 Aldehyde Dehydrogenases (ALDH3A1)

Cyclophosphmide and ifosfamide (also known as oxazaphosphorines) are the most common drugs used to treat breast cancer and various forms of leukemia. Human class-3 aldehyde dehydrogenase (ALDH3A1) is one of several enzymes responsible for the detoxification of oxazaphosphorines. ALDH3A1 exhibits polymorphism and so far three isoforms of ALDH3A1 have been identified. One of the forms is a truncated form. The gene coding for the truncated ALDH3A1 has been cloned into an expression vector and 13 clones containing the truncated ALDH3A1 gene have been identified. These clones have been further screened to identify truncated ALDH3A1 protein by immunoblot analysis. We are now in the process of purification of truncated ALDH3A1 protein to further characterize it with reference to its ability to detoxify cyclophosphamide.

Presentation Index: A29
Department: Chemistry
Student Presenter(s): Ogbon, Enite

Time: 9:00 a.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

Human ALDH3A1 Genetic Polymorphism Analysis

Aldehyde dehydrogenases (ALDH) are a family of enzymes that are involved in detoxification of oxazaphosphorines, class of anticancer drugs. Certain human ALDHs, e.g., ALDH1A1 and ALDH3A1 in particular have been investigated in the process of detoxification of oxazaphosphorines. Three genetic variants of ALDH3A1 have been identified and their genetic identities have been recently established. Two of the 3 genetic variants, tentatively named as nALDH3A1 (found in normal tissues), and tALDH3A1 (found in tumor tissues) differ from each other by 2 bases. The genetic differences in ALDH3A1 also create differences in detoxification of cyclophosphamide and ifosfamide. Whether these genetic variants are commonly found in general human population is the subject of this investigation. Genetic polymorphism analysis indicates that these variants are present in normal human populations. The results of these investigations will have an impact on the therapy, detection, diagnosis, chemoprevention, fundamental molecular biology and/or genesis of cancer.

Presentation Index: A30
Department: Chemistry
Student Presenter(s): Antunez, Giovanni

Time: 9:00 a.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

Synthesis and Characterization of Vanadium-naringenin Complexes with Potential Insulin Mimicking Properties

Research on vanadium and flavanoid complexes is paving the way as a promising therapeutic agent in diabetes. Diabetes currently affects about 170 million people around the world and this number is expected to increase 300 million by the year 2030. Diabetes results from the lack of insulin secretion due to auto-immune mediated destruction of pancreatic â cells or the resistance in cells to uptake insulin leading to unregulated blood glucose levels. Research on both vanadium and flavanoids has shown promising insulin mimicking properties. Naringenin also known as 4', 5, 7 – Trihyroxyflavanone is one such flavanoid. Vandium-naringenin complex, a red – brown compound, was synthesized by a 2:1 ratio of naringenin to vanadyl acetylacetonate in methanol. Infrared spectroscopy analysis indicated a shift in the C=O and the C=C to a higher energy peak indicating the coordination of the naringenin to the vanadium center with some change to the configuration of the complex. Mass spectroscopy analysis showed a peak corresponding to naringenin which indicated the presence of naringenin in the synthesized compound. A solution study on this compound was also carried out as it allows us to gain a better understanding of the biochemical behavior of this compound in animal studies. This was done using vanadium NMR spectroscopy and behavior of this complex in solution was observed.

Presentation Index: A31
Department: Chemistry
Student Presenter(s): Fernando, Koshali

Time: 9:00 a.m.
Project Sponsor(s):
Mahroof-Tahir, Mohammad

Fasting-Induced Changes in Plasma Motilin Levels in Dairy Goats

Motilin is a peptide hormone produced by cells in the gastrointestinal tract of many mammals. Its secretion increases during fasting and the peptide has been implicated in migrating myoelectric complex, a type of smooth muscle contractions that occurs during fasting and that spans the segment of the gut beginning in the stomach and ending in the terminal ileum. A majority of studies determining the effect of fasting on motilin has been done in monogastrics. As part of our on-going studies into nutritional regulation of reproduction, we sought to characterize the effect of fasting on plasma motilin levels in the goat. We tested the hypothesis that fasting will increase plasma motilin in dairy goats. Six dairy goats were fed ad-libitum for 48 hours and blood samples were obtained from an indwelling catheter for 4 hours at 10 minute intervals. Thereafter, goats were fasted for 48 hours and provided with water and blood samples were obtained for 4 hours at the same frequency. Plasma motilin concentrations were determined using radioimmunoassay. Results indicate that motilin is secreted in the dairy goat in a pulsatile manner. Fasting for 48 hours tended to increase (P = .06) motilin levels. These data suggest that fasting for 48 hours may be insufficient to cause a significant increase in plasma motilin in ruminants.

Presentation Index: A32
Department: Biological Sciences
Student Presenter(s): Mboko, Wadzanai

Time: 9:00 a.m.
Project Sponsor(s):
Gazal, Oladele

Water Quality Analysis of Little Birch Lake Tributary and Outlet

Water quality throughout the environment is degrading from human activity. Water quality has significant effects on the aesthetics and the ecology of our bodies of water. Many of the causes of these problems come from agriculture, residential development and recreational use. In May 2007, a water quality study examining the flow of nutrients and E. coli into and out of Little Birch Lake began. This study, in cooperation with the Little Birch Lake Association, is being conducted to help develop a lake management plan that will deal with water quality problems. This is important because many things can cause nutrient overloading and E. coli contamination. The increase in residential development and agricultural land use along the shores of this lake can cause an excess amount of nutrients and E. coli to enter into the lake. Nutrients enter the lake through methods such as the destruction of shorelines, excessive fertilization and grass clippings. Furthermore, E. coli can enter into the lake from poorly maintained septic systems or excess manure runoff. The results from this study will be used to determine any potential problems and provide a direction for the Little Birch Lake Association to maintain water quality through better management.

Presentation Index: A33
Time: 9:00 a.m.
Department: Environmental and Technological Studies
Project Sponsor(s):
Student Presenter(s): Dotseth, Andrew; Bastyr, Erin
Bender, Mitch

GIS Analysis of Getchell Creek for Monitoring

Getchell Creek, located near Melrose, MN, is listed as an impaired water by the Minnesota Pollution Control Agency. Furthermore, the creek is a tributary of the Sauk River; another impaired water. To better understand the creek's impairment and to determine remediation methods, a GIS study was performed to examine the possible effects of land use on water quality. Watershed characteristics, such as slope, land use and locations of tributaries and agricultural drainage ditches, were identified and assembled into a geographical information map for use by watershed managers and the public. Based upon this information, locations of future water quality monitoring stations will be evaluated.

Presentation Index: A34
Time: 9:00 a.m.
Department: Environmental and Technological Studies
Project Sponsor(s):
Student Presenter(s): Sanoski, Brian
Bender, Mitch

Spectroscopic Characterization of Aromatic Organic Crystals Tetracene and Rubrene via Time-Resolved Laser Spectroscopy

The luminescence properties of single crystals and solutions of tetracene and rubrene compounds have been studied via time resolved laser spectroscopy. Specifically we have investigated the fluorescence decay response of these systems at both room temperature and at 77 Kelvin. Along with understanding the spectral signatures of these systems, we are interested in correlating differences between different compound environments and their associated fluorescence lifetimes. These efforts are ultimately in support of on-going efforts aimed at understanding the fundamental energy and charge transport dynamics within crystals composed of these compounds.

Presentation Index: A35
Time: 9:00 a.m.
Department: Chemistry; Physics
Project Sponsor(s):
Student Presenter(s): Leet, Jason; Shrestha, Binaya
Dvorak, Michael; Lidberg, Russell

A Comparison of Radar Estimated Rainfall Rates to Ground Based Rain Gauge Rainfall Rates

There are currently two methods used in operational meteorology to estimate rainfall rates. The first method uses rain gauge instrumentation to measure the amount of rain that has fallen over a particular amount of time. The second method involves radar reflectivity in a mathematical relationship to estimate rainfall rates. This project explores both of these methods while using rain gauge observations as ground truth to compare with radar estimated rainfall rates. This project uses radar data from the Colorado State University CHILL (University of Chicago and Illinois State Water Survey) radar, which has unique, dual-polarization capabilities that yield multiple parameters that can be used to estimate rainfall rates. This project will investigate the accuracy of conventional as well as polarimetric rainfall estimation methods for a range of rainfall rates. The goal of the research project is to determine which estimation methods are most accurate for a given range of rainfall rates. Previous studies have shown that conventional reflectivity estimations can underestimate rainfall rates when very small water droplets are present, and they can under or over estimate rainfall rates when mixed precipitation is present. This is the reason for studying both conventional and polarimetric parameters when estimating rainfall rates. Previous research states that polarimetric estimation methods will perform better than conventional reflectivity methods because polarimetric parameters have the capability of measuring water droplet sizes and shapes more efficiently, which helps to better estimate rainfall rates. Results from a variety of summer precipitation case studies from the years of 2003, 2005, 2006 and 2007 will be analyzed.

Presentation Index: A36
Time: 9:00 a.m.
Department: Earth and Atmospheric Sciences
Project Sponsor(s):
Student Presenter(s): Schwitzer, Megan
Nastrom, Greg

Rocky Mountain National Park

Mountain climbing, whitewater rafting, hiking, skiing are things that you think of when you think of Rocky Mountain National Park. Looking at what we enjoy about the National Park today, one begins to wonder what the original purpose of the National Park was and whether that is still the purpose today. Are we beginning to lose the benefits of the land that was set aside or was it set-aside just for recreational purposes.

Presentation Index: A37
Department: Geography
Student Presenter(s): Peters, Becky

Time: 9:00 a.m.
Project Sponsor(s):
John, Gareth

Monitoring and Modeling of Post-USSR Land Use Land Cover Change in Ryazan Oblast of European Russia Using Multi-Temporal Satellite Data

After the breakdown of the USSR in 1991, Russia has undergone dramatic change in its social, economic and political systems, which has provided enough anthropogenic activities to greatly change land use and land cover. For instance, in some areas of Russia more than half of the farmland has been abandoned and is converting to scrublands and forests. Therefore, understanding the impacts of the new socioeconomic, political and environmental conditions on land use land cover change (LULCC) is important to determine controls and driving forces of LULCC to establish their relative importance and to predict future change. This research will utilize the collapse of the former Soviet Union in 1991 to determine the controls and driving forces and their relative importance on LULCC within the Ryazan oblast of European Russia, which is located on southern side of Moscow. About 30% land is covered with transitional forest steppe with average agricultural productivity, population density; average to below average collective form productivity and huge problem areas with poor ranking in commercial farming. The dynamics of the LULCC will be investigated by the combined use of satellite remote sensing and a geographic information system (GIS). Time series Landsat Satellite scenes of 1989, 1994 and 1999 will be utilized for classification, mapping and change detection. Change Vector Analysis change detection method will be employed in extracting LULCC for analyzing the direction, rate, and spatial pattern of LULCC in the Ryazan oblast of European Russia. Mapping, detection of land cover changes and establishment of their anthropogenic driving forces exhibit the past and present scenarios of LULCC. Modeling of LULCC using existing land use land cover dynamics and socioeconomic driving forces will provide tools for understanding the causes and consequences of rapid LULCC. LULCC modeling will also prove useful for disentangling the complex suit of socioeconomic and biophysical factors that influence the rate and spatial pattern of land cover change and in estimating the impacts of changes in land cover in the future.

Presentation Index: A38
Department: Geography
Student Presenter(s): Singh, Kunwar

Time: 9:00 a.m.
Project Sponsor(s):
Blinnikov, Mikhail; Richason, Benjamin

Geologic Trap of Cedar Valley, Nebraska

The Cedar Valley Field in Scottsbluff County, Nebraska has produced over 2 million barrels of oil. The Cedar Valley Field is located on the northeast flank of the Denver Basin and the producing sedimentary rock has been termed the "J" Sandstone. The "J" Sandstone is located approximately 5000 feet below the surface (1100 feet below sea level) in this area and was deposited about 100 million years ago during the Lower Cretaceous. Wells were drilled in the area during the 1960s, first as wildcat wells and then as production wells. The average porosity of the J Sandstone is 20% and the average permeability is about 260 millidarcys. In order for the production of oil, there must be a geologic trap which would allow for the accumulation of oil and would prevent the oil from then dispersing. Through the analysis of well logs, the J Sandstone can be correlated and mapped. The structure shows a constant 1-2 degree slope to the northeast in this area with no discernable fold or fault. Therefore the structure of the J Sandstone does not provide a geologic trap for the oil to accumulate in. The stratigraphy of the J Sandstone is the probable trap for the Cedar Valley Field and will be further analyzed in order to determine the trap.

Presentation Index: A39
Department: Earth and Atmospheric Sciences
Student Presenter(s): Anderson, Adam

Time: 9:00 a.m.
Project Sponsor(s):
Pekarek, Alfred

A Limited Climatology of Capping Inversions in Nighttime Northern Plains Thunderstorms

Accurately forecasting convection is one of the most important issues facing meteorologists today. Capping inversions make forecasting convective events very difficult in the northern plains of the United States. In this study, 12z soundings of ten Northern Plains stations were looked at in June, July and August from 1998 to 2003. The events, having been categorized previously by Wieseler (2007) as convective or non-convective, were looked at using the 12z sounding to determine a lid strength for that day. The goal of the study is to find a critical lid strength to aid in the forecasting of convection in the northern plains.

Presentation Index: A40
Department: Earth and Atmospheric Sciences
Student Presenter(s): Abel, Jon

Time: 9:00 a.m.
Project Sponsor(s):
Weisman, Robert

Surface Charge Carrier Mobilities in Organic Semiconductor Materials by Field-Effect and Time-of-Flight Measurement Techniques

In a number of electronic devices (such as field effect transistors), the transport of the charge carriers (electrons and holes) is on or near the surface of the material. The mobility of a material is a quantity that relates the charge carrier transport speed under an applied electric field, and can be computed from time-of-flight (TOF) measurements. Field Effect Transistors (FETs), in general, operate by inducing a field between the gate and body of the device resulting in a buildup of charge carriers at the body surface to form a channel of charge. Contacts near each end of the channel allow current to flow through the device, provided that the channel has enough charge carriers present; the mobility of the carrier influences the device's current capability. The mobility of charge carriers in a FET can be computed from current-voltage data from the FET. In this project, we will fabricate organic field-effect transistors (OFET) using rubrene crystals. We will characterize and compare the surface charge carrier mobilities of the rubrene crystal using TOF and standard FET device characterization techniques.

Presentation Index: A41 **Time**: 9:00 a.m.
Department: Electrical and Computer Engineering; Physics **Project Sponsor(s):**
Student Presenter(s): Magnan, Brandon; Holste, Tor Vogt, Timothy; Lidberg, Russell

Powertrain for an Electric Motorcycle

Our goal is to provide a reliable, zero emission, and efficient alternative to a combustion engine which will be used for commuting in city traffic. We will be replacing the gas powertrain of a motorcycle with an electric powertrain. The electric powertrain consists of the electric motor, electrical control system, batteries, and a battery recharging system. The battery recharging system will connect to a regular household outlet. This will provide an alternative form of transportation and reduce pollutant emissions. All of these components will later be mounted to the electric motorcycle. Using knowledge acquired from coursework, and research going beyond the classroom, we will be designing the necessary components to integrate all of these systems into one.

Presentation Index: A42 **Time**: 9:00 a.m.
Department: Electrical and Computer Engineering **Project Sponsor(s):**
Student Presenter(s): Krehic, Damir; Tatge, Zach; Suzuki, Motohisa Glazos, Michael

Control Interface for Electric Motorcycle

The goal of this project is to design and build lighting, braking, sensor, and display systems for an electric motorcycle capable of carrying one person. The complete system will include batteries to supply power to the lights, sensors, brakes, and display along with a charging system for the batteries. The system will be able to operate continually for a minimum 4 hours without recharging. The lighting system will consist of headlights, brake lights, and turning signal lights. Each of these would be implemented using ultra bright LEDs. The braking system will be realized by adapting the current mechanical system to work with an electric motor. The sensor system will include sensors to monitor the speed of the bike, the charge of the battery for the main motor, charge of the battery for the lighting system. The batteries must have sufficient capacity to supply power to all the systems. The charging system will bring the batteries to full charge within 8 hours of continuous charging. This project will use electrical knowledge to help address the problems of fuel consumption and further the pursuit of environmentally friendly transportation.

Presentation Index: A43 **Time**: 9:00 a.m.
Department: Electrical and Computer Engineering **Project Sponsor(s):**
Student Presenter(s): Steckelberg, John; Toomey, Jesse; Sappurissakul, Sutee Glazos, Michael

Quantity and Quality of Suspended Particulate Organic Matter Upstream and Downstream of a Series of Surface Release Impoundments on the Upper Mississippi River

Impoundments can impact a river in many ways. They can change the river flow and temperature, as well as impact the quantity and quality of particulate organic matter (POM). POM is an important food resource for many bottom-dwelling invertebrates, such as insects. A study was conducted on the Upper Mississippi River to compare the differences in both the quantity and the quality of the POM that flows into the reservoir to that which flows out of the impoundment. It is hypothesized that the carbon to phosphorous ration will decrease below the impoundment. There will also be an increase in the amount of find POM. Nine, one liter samples were collected upstream and downstream of four impoundments on the Upper Mississippi River. The ratio of organic to inorganic particulate matter will be determined. The quality of the samples will be determined by comparing the ratio of carbon to phosphorous.

Presentation Index: A44 **Time**: 9:00 a.m.
Department: Biological Sciences **Project Sponsor(s):**
Student Presenter(s): Mankowski, Joshua Voelz, Neal

Semantic Therapy with Atypical Exemplars in Stroke Survivors with Aphasia

Language treatment for naming in aphasic individuals has typically involved treatments that begin with familiar and simple semantic items and progress to more complex elements. However, recent studies have shown greater improvements and generalization effects when starting at complex levels (complexity account of treatment efficacy (CATE) effect, Thompson, et. al., 2003). This study aimed to replicate Kiran and Thompson's (2003) study, and also to determine if training in one semantic category generalized to a second semantic category when the categories shared common semantic features. Participants included two monolingual chronic stroke survivors. The treatment category exemplars were selected from Kiran and Thomson's (2003) original study. Three categories (birds, animals and instruments) were included, of which the bird category was the treatment category and the other two were control categories. Treatment began with four atypical exemplars in the bird category once a week for one hour. During each therapy session, semantic therapy tasks were completed for all target exemplars. Results were analyzed after 10 to 14 therapy sessions. Both participants showed improvements in naming of the targeted exemplars. More specifically, participant 1 showed an increase in naming accuracy of the atypical category. The intermediate category was not trained but consistency of naming accuracy improved. There was no change in naming with the typical category but types of errors improved. Results for participant 2 showed an increase in naming accuracy with the atypical categories. The intermediate and typical categories were not trained and no increases were noted in naming accuracy. However, there was noticeable change in error patterns indicating some improvements. No explainable improvements were seen in the control categories for either participant. In conclusion, a good match between the deficit and type of treatment can result in better learning. When patients have semantic deficits, they may have more difficulty with typical items.

Presentation Index: A45
Department: Communication Science
Student Presenter(s): Saxton, Kelsey; Janke, Naomi

Time: 9:00 a.m.
Project Sponsor(s):
Rangamani, Grama

Characterization and Solution Speciation Studies of Oxovanadium-Flavonoid Compounds and Their Potential Anti-Diabetic Properties

The purpose of our research is to synthesize and characterize compounds that may possess potential anti-diabetic properties with a focus on solution speciation studies. Solution chemistry is important because pharmaceutical drugs are subjected to various solution environments within biological systems. Prior research conducted on flavonoids and vanadium salts have yielded well supported results alluding to their glucose-lowering and other important anti-diabetic properties. It is anticipated, given the properties of flavonoids and vanadium salts, that coordination of the two would work synergistically as an anti-diabetic agent that could be administered orally. In this study, the coordination behavior of morin, a flavonoid, with vanadium is studied in solution state using UV-vis spectroscopy following the Job's method. It indicates the coordination of morin with vanadium in 2:1 molar ratio. This study also indicates binding of the vanadium with carbonyl and hydroxy oxygen bonds to C-5. A vanadium-morin complex was also isolated in solid state by reacting vanadyl sulfate with morin in 1:2 molar ratio. The isolated complex was characterized by using IR spectroscopy and direct inlet mass spectrometry. IR spectrum exhibits peaks associated with morin –OH and C=O groups indicating presence of this ligand in the synthesized complex. Mass spectrum also exhibits peaks corresponding to morin and oxovanadium indicating presence of both vanadium and morin in the compound. Solution speciation studies including the purity of the isolated compound will be presented.

Presentation Index: A46
Department: Chemistry
Student Presenter(s): Eannelli, Michael

Time: 9:00 a.m.
Project Sponsor(s):
Mahroof-Tahir, Mohammad

Salivary Hormone Levels and Sensation Seeking in Female Athletes

Personality traits are important factors in determining why a given individual participates in a given sport. While much research has been done on personality and sports participation, few studies have considered the biological correlates of these two variables in women. This study investigated sensation seeking and salivary testosterone and cortisol in female noncompetitive athletes and nonathletes. Noncompetitive athletes (n=17) and nonathletes (n=18) were recruited from undergraduate psychology and chemistry courses. Participants provided a saliva sample and were given the Sensation Seeking Scale Form V (Zuckerman, Eysenck, & Eysenck, 1978). Noncompetitive athletes scored slightly higher than nonathletes on sensation seeking (t (14) = .287, ns). More research is needed to clarify the role sensation seeking plays in women's participation in sports.

Presentation Index: A47
Department: Psychology
Student Presenter(s): Hulkonen, Rachel

Time: 9:00 a.m.
Project Sponsor(s):
Illies, Jody

FYE-Pre-Medicine

Scores of students enroll at St. Cloud State University as pre-medical students. These students usually declare Biology or Chemistry as their majors. In an effort to increase the awareness of such students of the medical profession and enhance their preparation and competitiveness for admission to medical schools, the first-year experience (FYE) – pre-medicine program was started under the auspices of the Dean of Undergraduate Studies. A cohort of students enrolled in introductory Biology and Chemistry courses (BIOL 151, BIOL 152, CHEM 210, CHEM 211) formed the foundation stock for the FYE pre-med program. Students share the same lecture and laboratory groups and also participate in weekly review sessions with an academic resource mentor. In addition, weekly seminars are attended by students where they discuss study skills, listen to the experiences of former students who are successfully enrolled in medical schools, interact with and benefit from the experiences of practicing physicians. Further, staff and faculty of medical schools' admission offices are invited to discuss factors crucial for success in medical school admissions. The experiences of students that are participating in this program at St. Cloud State University during the fall of 2007 and spring of 2008 will be discussed.

Presentation Index: A48
Department: Biological Sciences
Student Presenter(s): Mareini, Fatuma; Bennett, Michael; Deuermeyer, Hank; Hendrickson, Katie; Rochat,Nicole

Time: 9:00 a.m.
Project Sponsor(s):
Gazal, Oladele

A Comparison of Two Testing Methods for Knee Extension Endurance

Berg established an isometric knee extension task for testing skiers' force production and muscle endurance. This test is typically conducted with cable tensiometry (CT) at a knee angle of 120°. Upon recording the maximal voluntary contraction (MVC), 60% of the MVC is used in the endurance test. However, in field testing or testing a large numbers of skiers, CT is problematic. For years, skiers have conducted their own endurance testing via wall sit test (WS). This test is conducted with the subjects leaning against a wall with hip and knee angles of 90° and feet flat on the floor. What is not known is if the WS and CT tests will yield similar results and therefore, make the WS an acceptable testing method. Thus, the purpose of this study was to investigate whether the 90° WS test would yield similar results to the 120° CT test. Ten healthy students volunteered to participate in four trials where they completed endurance tests of WS with knee angles of 90° and 120° and two CT tests with knee angles of 90° and 120°. Maximal voluntary isometric contractions were performed for CT, with 60% of MVC used for the endurance tests. Time to volitional exhaustion was used as the performance criterion. Testing of conditions was balanced. ANOVA testing revealed that no difference (p=.13) existed between the 90° WS (96.2+/- 35.9 sec) and 120° CT (75.6+/-35.07 sec) endurance tests. When similar knee angles were compared between WS and CT, subjects maintained contractions for significantly longer times with WS compared to CT. Although the 90° WS test result has somewhat longer endurance times than the 120° CT, the difference between WS and CT was not statistically significant. In specific cases, a WS test appears to be sufficient for testing leg endurance which would give similar results to the accepted method of CT.

Presentation Index: A49
Department: Health, Phy Ed, Rec, & Sport Science
Student Presenter(s): Bjorklund, Andrew

Time: 9:00 a.m.
Project Sponsor(s):
Bacharach, David; Seifert, John

Integrating Client and Family Considerations Into Speech-Language Pathology Services

The purpose of the present study was to investigate how speech-language pathologists (SLPs) integrate their clients' and families' values into their clinical services. We wanted to find out about the following: (1) the ways in which SLPs consider their clients' and families' cultures, goals, and needs in therapy and (2) the expectations, values, and sources of information that SLPs perceive their clients and families bring to therapy. Participants included 36 SLPs, 2 males, 34 females, who worked primarily in the Midwest. Their work experience ranged from one to 33 years (mean = 11.8); 24 participants worked in a school setting and 12 worked in a medical/other setting. The SLPs were interviewed and surveyed by student researchers. Results indicated that the majority of SLPs consider their clients' and families' cultures when providing speech therapy, even though many SLPs only have a few culturally diverse clients. Results also indicated that the SLPs consider their clients' and families' own therapy goals as well as the amount of family support. Less than half of SLPs consider the clients' and families' financial situation, and less than half offer their clients a variety of service options. Finally, SLPs reported that the top four client and family expectations are that: (1) they make progress in therapy, (2) the problem will be fixed, (3) the SLP is competent, and (4) their questions will be answered.

Presentation Index: A50
Department: Communication Sciences and Disorders
Student Presenter(s): Knutson, Katie; Overfield, Rachel; McCarthy, Fay; Blomstrom, Susan; Hilsgen,Heather

Time: 9:00 a.m.
Project Sponsor(s):
Whites, Margery

Abstracts

Session A **All Disciplines** **Ballroom**

Speech-Language Pathologists' Perceptions of Multicultural Issues Affecting Service Delivery

An emerging issue in the field of speech-language pathology is service delivery to individuals from culturally diverse backgrounds. Due to changes in the U.S. population, speech-language pathologists (SLPs) are serving more multicultural individuals. The purpose of this study was to find out what multicultural challenges are being faced by SLPs working in the clinical setting. Thirty-six SLPs from the upper Midwest who were working with clients in the educational or medical settings participated. Work experience ranged from 10 to 35 years. Open-ended interview questions and follow-up survey questions were administered to each participant. Responses to interview questions were categorized based on themes that emerged. Responses to survey questions were grouped as "agree," "disagree," "neutral" and "not applicable". For the open-ended interview question "What has been the most challenging multicultural issue you have faced on the job?", five themes emerged: (1) Interpreter Challenges, (2) Client Challenges, (3) Professional Challenges, (4) Family Challenges, and (5) Cultural Difference Challenges. When asked what they had to learn over the past ten years in order to remain effective in their positions, many SLPs indicated they had to learn about working with English Language Learners (ELLs), interpreters, and about cultural diversity. Survey results indicated that half of the SLPs felt they received adequate training on multicultural issues. When asked about how many English Language Learners (ELLs) were on their caseloads, nearly all SLPs indicated that ELLs made up 25% or less. The results suggest that SLPs may need more training in the major issues affecting the implementation of effective service delivery. Of particular note is the area of working with interpreters. Although guidelines and strategies for working with interpreters are widely available to professionals, it is unclear if these are adequate to address the pressing needs of SLPs in the field.

Presentation Index: A51
Department: Communication Sciences and Disorders
Student Presenter(s): Starz, Kimberly

Time: 9:00 a.m.
Project Sponsor(s):
Whites, Margery

Factors Affecting the Use of Evidence-Based Practice by Speech-Language Pathologists

The American Speech-Language-Hearing Association (Asha) promotes using Evidence Based Practice (EBP) as a vital part of providing the best service possible to clients and their caregivers. What is not clear, however, is how consistently speech-language pathologists (SLPs) are using EBP in their clinical work. A number of factors may affect its use, including workplace factors, SLP knowledge about EBP, and perceptions about rewards of using EBP as vital parts of their jobs. This study sought to find out (1) what SLPs perceive as rewards for using and consequences of not using EBP, (2) job factors that may affect the use of EBP by SLPs (e.g., financial incentives, supervisor factors – knowledge, requirements, performance appraisal, time, insurance reporting), and (3) what SLPs perceive as most helpful in increasing their knowledge and skills in EBP. The participants for this study included a random selection of 36 SLPs primarily from the Midwest; 23 worked in the school setting and 13 in the medical setting. Participants answered open-ended interview questions then completed surveys. The SLPs stated that the top reward for using EBP was client progress due to using effective therapy techniques. The number one job factor affecting the use of EBP is the lack of having sufficient time during the workday to do research on therapy programs. Most SLPs did not receive financial incentives for using EBP. The SLPs perceived that continuing education and collaboration with other SLPs were the most helpful factors in increasing knowledge and skills in EBP. Results suggest that a whole range of factors may affect the use of EBP on the job.

Presentation Index: A52
Department: Communication Sciences and Disorders
Student Presenter(s): Westling, Heather; Vandenheuvel, Laura; Perez, Nichole; Braun, Laura

Time: 9:00 a.m.
Project Sponsor(s):
Whites, Margery

Spatial Analysis of Historic Yellow Brick Houses in St. Cloud

A distinguishing characteristic of historic St. Cloud was the use of "yellow" brick in residential and commercial buildings. By conducting a visible survey, this study located the existing yellow brick houses within a 1 mile radius of the Stearns County Courthouse. Houses were classified into four categories by age, utilizing the Sanborn Fire Insurance Maps. Spatial patterns of these remaining unique yellow brick houses were identified and cartographically portrayed. Photographic examples of these categories are also presented. A review of literature and the records maintained at the Stearns History Museum revealed that currently no maps exist, showing how few of these unique houses remain in St. Cloud. This research fills that gap.

Presentation Index: A53
Department: Geography
Student Presenter(s): Wixon, Erik

Time: 9:00 a.m.
Project Sponsor(s):
John, Gareth

Speech-Language Pathologists' Knowledge and Beliefs About Evidence-Based Practice Usage

The American Speech-Language-Hearing Association (ASHA) Certificate of Clinical Competence standards now require speech-language pathologists (SLPs) to use evidence-based practice (EBP) as part of clinical service delivery. SLPs have used treatment efficacy and outcome models in the past; however, the full EBP model of the use of current best evidence integrated with clinical expertise and client/family values is a recent addition to the field. Thus, SLPs who believe they use EBP may actually not be using it accurately. SLPs also may have developed a variety of attitudes and beliefs about the use of EBP that may not be consistent with the current Asha model. It is important that SLPs become aware of these factors so that misconceptions about EBP are prevented. The participants in this study included a random selection of 36 SLPs who worked in either the medical or educational setting. They ranged in work experience from one to 33 years with an average of 11.8 years. Student researchers interviewed and surveyed the participants then compiled the results. The results of this study suggest that SLPs may not have a complete understanding of all the components that are included in the ASHA model of EBP regardless of their work setting or amount of work experience. While most of the SLPs indicated they needed to increase their knowledge about and skills in the use of EBP to remain effective in their positions, most also indicated they were up to date in their knowledge and skills of EBP. Therefore, it is not entirely clear what the SLPs' level of competence is in EBP while delivering clinical services. Despite this contradiction, most participants felt EBP was important to the profession. Future studies may need to address obstacles as well as incentives for increasing knowledge and use of EBP by SLPs.

Presentation Index: A54 **Time:** 9:00 a.m.
Department: Communication Sciences and Disorders **Project Sponsor(s):**
Student Presenter(s): Lamb, Kate; Pittman, Sarah; Rue, Laura; Carlson, Sarah Whites, Margery

Use of Evidence-Based Practice Principles in Service Delivery Planning by Speech-Language Pathologists

Evidence Based Practice (EBP) has recently become important in many professions, including speech language pathology. A critical component of EBP is the integration of current best evidence with clinical expertise and client values. Thus, why and how speech-language pathologists (SLPs) find and use evidence is of critical importance in day-to-day service delivery. This study sought to find out (1) why, where, when, how and how often SLPs seek information when working with clients and (2) if SLPs use EBP principles in their service delivery planning. Thirty-six SLPs, two males, 34 females, working primarily in the Midwest, participated in this research project. The SLP's were employed in either the medical or school setting. All of the participants have obtained their Master's Degrees. Work experience ranged from one to 33 years with a mean average of 11.8 years. Participants were divided into two groups: less experienced (1-7 years) versus more experienced (8 + years.) The participants were interviewed and surveyed about their beliefs and use of EBP. Results of the study indicated that most of the SLPs felt that EBP was an important and necessary part of providing the best therapy services possible. The majority of the participants also felt they knew when they needed to review EBP, as well as how to evaluate treatment efficacy. Most participants stated that they incorporated clinical expertise and research, but fewer indicated they incorporated client/patient values. Lastly, the majority also agreed that the best way to further their clinical knowledge was to attend continuing education courses. Information from this study suggests that many SLPs believe that using EBP is very important in providing therapy services.

Presentation Index: A55 **Time:** 9:00 a.m.
Department: Communication Sciences and Disorders **Project Sponsor(s):**
Student Presenter(s): Gardner, Eric; Haider, Elizabeth; Day, Jolene; Rhuby, Andrea; Paffrath,Lyndsey Whites, Margery

Incidence of Type 1 Diabetes (T1D) in the Colony of NOD/Ltj Mice Models at Saint Cloud State University

Type 1 diabetes (T1D) is an autoimmune disease that is characterized by an absence of insulin, because insulin-producing pancreatic beta cells are destroyed by own immune T-cells. The best animal model for the study of T1D is a NOD mouse model. While the NOD mice are ~ 99% genetically identical, it has been known that the environmental factors influence the incidence of the T1D. Therefore, it is necessary to study the diabetes incidence in NOD mice in a particular environment before the further reseach is performed in these mice. Insulitis is a characteristic histopathological lession of T1D that represents an accumulation of the immune T-cells in the pancreatic islets of Langerhans. The objectives of this research is to study diabetes incidence and kinetic of insulitis development in our SCSU colony of NOD/LtJ mice. Three breeding pairs of NOD/LtJ mice were purchased from The Jackson Laboratory, Bar Harbor, ME. Initially, the breeding of these mice at SCSU was very problematical. The purchasing of the new caging system in our Animal room resolved that problem and we were able to proceed with our study. The blood glucose level of female (n=25) and male (n=14) NOD/LtJ mice has been measured every second week from six to 30-wks of age. Diabetes incidence will be analyzed statisticaly by life-table analysis. The pancreata from female and male NOD/LtJ mice (n=3-4 mice/time point; 4-, 6-, 8-, and 12-wk of age time points) will be semi-quantitatively analyzed for the insulitis. Pancreata will be removed, fixed, embeded in paraffin, cut, stained by hematoxylin-eosin and analyzed for the level of insulitis.

Presentation Index: A56 **Time:** 9:00 a.m.
Department: Biological Sciences; Statistics **Project Sponsor(s):**
Student Presenter(s): Olson, Marin; Johnson, Sara; Rajbhandari, Prince Cetkovic-Cvrlje, Marina; Sather, Laura

Development of Gas Chromatography Mass Spectrometry and High Performance Liquid Chromatography Methods for the Detection of Ethylene Glycol Ethers

Ethylene glycol ethers (EGEs), especially 2-ethnoxyethanol and 2-butoxyethanol (BE) are excellent solvents. Accordingly, they are used in many industrial and commercial products. Upon human use, these solvents are discharged into waterways. Given the use and discharge of EGEs, both humans, as well as aquatic animals are exposed to EGEs. Exposure to EGEs results in various toxicities including encephalopathy, hemolysis and metabolic acidosis in humans. In addition to these toxicities, carcinogenesis and mutagenesis is also observed in animal models. Actual concentrations of EGEs in waste water discharges are not clearly established accordingly. The objective of this research project is to develop a method to determine the presence of butoxyethanol (BE), one of the most common EGEs used, and its possible metabolites butoxyacetaldehyde (BAL) and butoxyacetic acid (BAA) in waste water sample. The group is currently standardizing a gas chromatography mass spectrometry method for this purpose and is in the process of developing a high performance liquid chromatography method.

Presentation Index: A57
Department: Chemistry
Student Presenter(s): Cheng, Shiang Kai

Time: 9:00 a.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

Mechanism of Action of Alzheimer's Disease Drugs on the Aggregation of Amyloid Beta Peptide

Alzheimer's disease (AD) is characterized by the deposition of amyloid â peptide (Aâ) plaques in the brain. Aâ is physiologically produced from enzymatic cleavage of the larger precursor called amyloid precursor protein (APP). Aâ in its soluble form is not toxic to brain cells (neurons); however its aggregation into insoluble fibrils which then combines with cell debris to form plaques causes neurotoxicity. Since the aggregation of Aâ peptide to insoluble fibrils is due to their hydrophobic interaction, it is proposed that small chemical compounds which are hydrophobic might inhibit the hydrophobic interaction between amyloid peptides, hence inhibiting the formation of insoluble fibrils which precedes the plaque formation. The proposed research is to see how hydrophobic drugs, which are currently used for treating AD patients, such as Galantamine, Memantine and Tacrine affect the formation of amyloid aggregates. Thioflavin T (ThT) dye will be used to study the aggregation of peptides as the dye has very good affinity with aggregated peptide. It is proposed that greater the aggregation of amyloid peptide greater will be the fluorescence intensity of the dye and in the presence of drugs that inhibit the aggregation of the peptide fluorescence intensity of the dye will decrease. The study of fluorescence intensity as a function of different concentration of drug will show which drug is most effective in inhibiting aggregation of amyloid peptide. The most effective drug could be used as a potential molecular framework for designing new improved drugs with fewer side effects to treat AD.

Presentation Index: A58
Department: Chemistry
Student Presenter(s): Henning, Phillip; Bhattarai, Nirjal

Time: 9:00 a.m.
Project Sponsor(s):
Ramakrishnan, Latha

Mad Protein Under-Regulation or Over-Expression Outside The Nucleus: A Possible Cause for Adenocarcinoma Breast Cancer Cell Resistance to Ottelione A

In the world, breast cancer is the fifth leading cause of cancer related death after lung, stomach, liver and colon cancer. By the end of this year, breast cancer is expected to cause 40,910 deaths (7% of all cancer deaths, almost 2% of all deaths) in the U.S alone. One of the biggest problems in the treatment of cancer today is drug resistance. Therefore, research on anti-cancer drug resistance is very important in finding treatment for cancer. This research will focus on finding out why cancer cells, breast cancer cells in particular, are resistant to the anti-cancer drug, Ottelione A (OttA). Recent research has shown that Ottelione A is a very potent anticancer drug that inhibits tubulin polymerization. OttA blocks cell division at the metaphase/anaphase junction of mitosis and triggers the signal cascade, prompting programmed cell death (apoptosis). The mechanism by which OttA inhibits tubulin polymerization is unknown. Human breast adenocarcinoma MCF 7/0 cells are wild type tumor cells sensitive to OttA. MCF 7/OttA cells (sub-line of human breast adenocarcinoma MCF 7/0) are relatively insensitive to OttA. Genomic Analysis of MCF 7/O and MCF 7/OttA cells have shown that > 50 genes are differently expressed in MCF 7/OttA cells compared to MCF 7/0 cells. This observation has further led to the hypothesis that OttA drug resistance is due to the down-regulation and/or over-expression of mitotic arrest deficient (MAD) proteins, MAD1 and MAD2 outside the nuclei. Therefore, this research will investigate the mis-localization of MAD1 and MAD2 proteins outside the nuclei.

Presentation Index: A59
Department: Chemistry
Student Presenter(s): Mususu, Muchima

Time: 9:00 a.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

Abstracts

Session A | **All Disciplines** | **Ballroom**

Identification of a PGC-1 Destroying Protein for the Treatment of Neurodegenerative Disorders

Neurodegenerative disorders such as Parkinson's disease affect the fine motor control functions in the patient's brain causing the loss of muscle control in the body, leading to excessive uncontrolled movement, or the loss of movement in the patient. The loss of cells in the area of the brain that controls these movements is the primary cause of these diseases. All human cells are comprised of proteins, the three-dimensional building blocks that are used to construct the structures and carry out functions for the cells. One particular protein, the PGC-1 protein, has been shown to help protect brain cells from degeneration. We recently discovered that two other human proteins cause the degradation of PGC-1, thus reducing the beneficial activity of this protein. Here we propose to find the identity of these proteins. The long term goal is to design a drug that inhibits these proteins, thus keeping PGC-1 levels high, halting Parkinson's disease.

Presentation Index: A60
Time: 9:00 a.m.
Department: Biological Sciences
Project Sponsor(s):
Student Presenter(s): Alfano, Tony; Lennemann, Nick
Olson, Brian

Session B | **Paper Presentation Competition I** | **South Voyageurs**

Bifold Window Doors to Increase R-Value

Today's increasing needs for energy efficiency has pushed window manufacturers to pursue window designs which possess higher R-values. Window manufacturers have been able to increase a window's R-value to around 7 by utilizing technologies such as coatings and double or triple glazing. However, significant gain can be achieved by adding insulated bifold doors to the interior of the window. By adding insulated bifold doors to the interior of the window, a theoretical gain of an additional R-value of 6 can be achieved when using extruded polystyrene insulated doors or an additional R-value of 7.5 when using sprayed foam insulated doors. Utilizing these insulated bifold doors may serve to add an aesthetically pleasing element to a window opening while producing much improved window opening R-value.

Presentation Index: B1
Time: 9:30 a.m.
Department: Environmental and Technological Studies
Project Sponsor(s):
Student Presenter(s): Frikken, Jon
Holmen, John

Baseball at Native American Boarding Schools in Minnesota: A History

Near the close of the nineteenth century, the burgeoning American republic witnessed numerous social reforms bent on perfecting the national community. For many Native Americans, long proponents of strong cultural ties, this complex era saw the proliferation of Indian Industrial schools, institutions designed to "civilize" native children—often by erasing their tribal heritage—toward full American citizenship. In Minnesota, several off-reservation boarding schools arose, training both Ojibwe and Dakota students to speak English, accept Christianity, and labor industriously. Prominent scholars including David Wallace Adams and Brenda J. Child have written extensively on Industrial institutions, detailing the acculturating tactics of the schools and the varied responses of indigenous children. Moreover, emerging scholarship—including recent works by John Bloom and Sally Jenkins—has illuminated athletics as a noteworthy component of many boarding school curriculums. Still, while significantly broadening scholarship on Industrial sports, these and other writings have focused predominately on football at the nation's largest institutions, neglecting sports at smaller, regional schools and overlooking baseball's distinct popularity amongst Native boarders. This paper, then, details Laliberte's original research into baseball at several boarding schools in late nineteenth century Minnesota, including St. John's and Morris Industrial Schools. Laliberte describes the origins, participants, and organization of these unique teams, and comments on their competitions versus local white clubs. In the process, Laliberte evidences that both Ojibwe and Dakota boys refashioned baseball from an assimilationist tool into an instrument of tribal persistence—in language, values, and traditions—thus transforming the national pastime in imaginative and surprising ways.

Presentation Index: B2
Time: 9:50 a.m.
Department: History
Project Sponsor(s):
Student Presenter(s): Laliberte, David
Galler, Robert

Session B | **Paper Presentation Competition I** | **South Voyageurs**

Predator Avoidance Performance of Larval Fathead Minnows (Pimephales Promelas) Exposed to Estrogen Mixtures

The effects of endocrine disrupting compounds (EDCs) on adult fathead minnows are well established, however, survival to adulthood also requires adequate predator avoidance responses which are mediated by neurological structures and physiological factors and may be delayed by exposure to the same compounds. Assessing non-reproductive, behavioral and physiological endpoints provides a further understanding of the effects of EDCs across ontogeny. Larval fishes use an innate "C"-start behavior to rapidly move away from any threat stimulus. The C-start response is initiated by central nervous system Mauthner cells. In aquatic toxicology, compounds have been shown to inhibit AChE activity in the brains of exposed fish while adversely affecting swimming performance and predator detection and avoidance. The aim of this research was to test the hypotheses that (1) larval fathead minnows exposed to estrogens singularly or in mixture suffer reduced ability to perform an innate C-start behavior when faced with a threat stimulus; (2) synergistic interactions increase the potency of estrogens in mixture; (3) reduced C-start performance can be predicted by the morphometric character of Mauthner cells in the central nervous system; (4) reduced C-start performance can be predicted by inhibition of AChE activity. In this study, larval fathead minnows were exposed to 17ƒÒ-estradiol, estrone, and ethynylestradiol singularly and in mixture. High-speed (1,000 frames/second) video recordings, transferred to NIH Image for frame-by-frame analysis, measured latency period and escape velocities of exposed larvae. In all experiments, exposed larvae suffered delayed C-start responses. Detailed results of immunohistochemistry staining and AChE assay will be presented at the conference.

Presentation Index: B3
Department: Biological Sciences
Student Presenter(s): McGee, Meghan

Time: 10:10 a.m.
Project Sponsor(s):
Schoenfuss, Heiko

Effects of Gender on the Career Aspirations of Administrators in the Minnesota State Colleges and Universities System

A recent national survey found women hold only 23 percent of higher education institution presidencies (American Council on Education, 2007). However, women now earn 58 percent of all bachelor's degrees and 45 percent of all doctorates (U.S. Department of Education, 2005). These findings suggest something may be interfering with the pool of capable women moving through the pipeline to attain higher education administrative positions. Gender differences in the career aspirations has been suggested as one potential reason for this disparity. This study examined the career aspirations of women and men holding administrative positions of dean or higher within the institutions in the Minnesota State Colleges and Universities (MnSCU) system. An online questionnaire was sent to 389 administrators, and 139 participated. Preliminary analysis of the data found that these female and male administrators did not differ in their desire to advance to a higher administrative position, level of career planning, number of current mentors, or perceptions of how much they would need to change leadership style in order to advance. Women were found to participate more in leadership development programs than men. Additional analysis is currently being conducted. These initial results suggest the gender disparity in higher education administrative positions might not be due to a lack of women aspiring to such positions.

Presentation Index: B4
Department: Higher Education Administration
Student Presenter(s): Lepkowski, Christine

Time: 10:30 a.m.
Project Sponsor(s):
Imbra, Christine

Session C | **Biochemistry** | **North Glacier**

Quenching of the Triplet State for Sulfur Atoms

Phenylisothiocyanates undergo desulfurization upon photolyzation with 254 nm light. This process results in a triplet sulfur atom being ejected from the phenylisothiocyanate to form an isocyanide ion. However, an undesirable reverse reaction can occur in which the phenylisothiocyanate is reformed. This research is aimed at finding a method to prevent this reverse reaction, namely keeping the product in the cyanide ion form that is desirable. To accomplish this, a sulfur quencher will be introduced into the system. A Rayonet, an instrument that emits highly ultraviolet light, will be used to photochemically achieve the state of the reaction described above. Specifically, the Rayonet causes the sulfur atom in the phenylisothiocyanate to become energetically excited and jump into a triplet state, forming the cyanide ion and yielding positively charged nitrogen triple bonded to a negatively charged carbon. Measurements will be taken through quantum yields and calibration curves obtained using the Gas Chromatography/Mass Spectrometer. Research to date has shown that the quantum yield of this reaction is approximately 7.3. Further research is being conducted to accumulate with these results. Upon completion of this research it is hoped that an understanding of the reactivity of phenylisothiocyanates will lead to a solid knowledge of how these molecules will act in industrial and synthetic applications.

Presentation Index: C1
Department: Chemistry
Student Presenter(s): Ohman, Chris

Time: 9:30 a.m.
Project Sponsor(s):
Gregory, Daniel

Toxoplasma Gondii CDK7 Ortholog Protein-Protein Interactions

Toxoplasma gondii is an obligate intracellular protozoan parasite with the ability to infect humans. Congenital toxoplasmosis may lead to fetal abortions. Immunocompromised individuals, such as those with HIV, have increased mortality, when infected with T. gondii. Once within a host, the tachyzoite form of the parasite divides asexually by endodyogeny, resulting in the formation of two daughter cells within a mother cell. This unique cell cycle could be exploited to develop a better pharmacological treatment for this disease. Unfortunately, this method of cell division is not well understood. However, homologous cell division protein coding genes exist within the T. gondii genome. One of these proteins, cell division kinase 7 (CDK7) activates other CDKs by phosphorylating a threonine residue on their T-loop domains. This activity is dependent upon interaction with a cyclin H (CycH) subunit. The CDK7/CycH interaction is strengthened by the interaction of a third subunit, Mat1. This trimeric complex is termed the CDK activating kinase (CAK). To determine if these or other interactions occur with the T. gondii CDK7 homolog a screen was performed against a cDNA library with the yeast 2-hybrid system. The gene sequences of the interacting proteins were obtained and then identified using the T. gondii genome database, www.toxodb.org. Identification of the protein-protein interactions of these cell cycle regulators would increase our understanding of the process of endodyogeny and could lead to better parasite-targeted pharmacological treatment.

Presentation Index: C2
Department: Biological Sciences
Student Presenter(s): Reberg, Alexander

Time: 9:50 a.m.
Project Sponsor(s):
Kvaal, Christopher

Taratogenic Effects of Ethylene Glycol Ethers on Xenopus Laevis Development and Role of Aldehyde Dehydrogenases in Determining Taratogenicity

Aldehyde dehydrogenase enzymes (ALDHs) are known to toxify ethylene glycol ether aldehydes in animal models. ALDHs are expressed differentially during the development of Xenopus. Accordingly, the purpose of this research project is to identify ALDHs that may play a role in toxification of ethylene glycol ether aldehydes during the developing Xenopus laevis embryos. The toxicity of ethylene glycol ether aldehydes was made by inducing mating in Xenopus laevis and growing the embryos at varying concentrations of ethylene glycol ether aldehyde concentrations, the two ethylene glycol ethers used in this study were ethoxyethanal and butoxyethanal. To determine which ALDH was present, various stages of X. laevis development were collected and subjected to an ALDH assay to determine if ALDH was present. The stages that showed the most ALDH activity were further subjected to isoelectric focusing. Butoxyethanal was found to be toxic to developing embryos at a concentration of 500 ìM or greater, whereas ethoxyethanal was not toxic at levels of 1 mM. The assays showed that ALDH activity was present in the embryos at various stages and aldehyde dehydrogenase activity seems to correlate with eh toxicity. Identification of ALDHs present in various stages of Xenopus development is on-going.

Presentation Index: C3
Department: Chemistry; Biological Sciences
Student Presenter(s): Petersen, David

Time: 10:10 a.m.
Project Sponsor(s):
Sreerama, Lakshmaiah; Gregory, Dan; Schuh, Timothy

Toxoplasma Gondii CYC2 Ortholog Protein-Protein Interactions

Toxoplasma gondii, an obligate intracellular pathogen that infects the nucleated cells of warm-blooded vertebrates, is the causative agent of human toxoplasmosis. T. gondii infection rates in human populations worldwide range from 10-90%. Twenty-two percent of Americans are seropositive. As a member of the phylum Apicomplexa, it is related to several parasites, including Plasmodium Falciperum, the causative agent of malaria and Cryptosporidium Pavum, which causes life threatening prolonged diarrhea to immunocompressed patients. T.gondii has a very a complex lifecycle composed of sexual cycle, which occurs in cats, the definitive host, and asexual cycle, which is composed of two distinct , tachyzoite and bradyzoite, stages, which occurs in warm blooded mammals including humans. Just like all other eukaryotes, T.gondii cell cycle is regulated by sequential activation of different CDK/Cyclin complexes. Better understanding of these interactions will lead to designing a control of T.gondii cell cycle and possibly of other related Apicomplexan parasites. Cyclins are positive regulatory subunits of cdks whose levels oscillate during cell cycle progression. Cyclin 2 was chosen as a bait, and a yeast two-hybrid screen was performed against a cDNA library. The interactive proteins were sequenced and identified using bioinformatics tools. Further, an effort was made to produce and purify cyclin2 protein with an objective of studying the interactions in detail.

Presentation Index: C4
Department: Biological Sciences
Student Presenter(s): Kane, Rahul

Time: 10:30 a.m.
Project Sponsor(s):
Kvaal, Christopher

Effective Peer Review Groups: A Writing Center Approach

Many college composition instructors use peer review groups and peer review sessions as a component of their student-centered, social-constructivist pedagogy. Scholars such as Trimbur, Weiner, Bruffee, and Lunsford all seem to agree that peer review sessions should foster a collaborative arena where students work together to question and challenge peer assumptions and ideas, which should lead to clearer and more refined articulations. Peer review sessions should ultimately impact not only the student whose paper is being reviewed, but also the student reviewer who is being called upon to share and revisit his or her own expertise. Unfortunately, this is not the experience many instructors who use peer review groups and sessions have. These instructors, therefore, are unable to justify devoting much class-time to peer review with the little knowledge students gain, and so instructors limit or stop using peer review practices altogether. How can instructors ensure time devoted to peer review groups and sessions benefit students rather than watch students bestow unwarranted praise on classmates or complete worksheets with no conversation during this class-time? In this presentation, I will share findings from a three semester study on student and instructor perceptions of traditional and writing center orientated peer review groups that I completed for my M.A. thesis. Through this study, I have found peer review sessions more beneficial to student writers and reviewers when writing center practices are implemented. I will use a power point slideshow and handouts to detail and share my findings and methods.

Presentation Index: D1
Department: English
Student Presenter(s): Timp-Pilon, Michele

Time: 9:30 a.m.
Project Sponsor(s):
Mohrbacher, Carol

Regarding Davidson's "What Metaphors Mean"

Analyzing why Davidson believes grammar does not determine meaning, and in the course of doing this we will look closely at metaphors.

Presentation Index: D2
Department: Philosophy
Student Presenter(s): Kohman, Josh

Time: 9:50 a.m.
Project Sponsor(s):
Nuccetelli, Susana

ESL Creative Writers: Motivation, Process and Product

Writing is hard work. Any writing, if done well, requires thought, organization, revision, and practice. This includes creative writing such as poetry, fiction, and memoir. English as a Second Language (ESL) writers face unique challenges in an academic setting. College ESL students are under pressure to achieve near-native writing skills—expressing ideas with clarity and conciseness as well as with grammatical and syntactical accuracy. In this study, data was examined for insights into the motivation, process, and product of ESL creative writers. The majority of data was collected from two students—one an ESL student and one a Native English (NE) student—that included surveys, interviews, and creative work. Text produced was collected at various stages of writing (rough draft, revision, final draft) and analyzed. Other ESL creative writers were surveyed and interviewed and creative writing teachers were also interviewed regarding their teaching and evaluating of ESL creative writing. The analysis focused on three questions. What motivates ESL writers to write creatively in a second language? What processes do ESL writers use in their approach to creative writing in English? What is the quality of creative writing produced by ESL writers? Although no broad conclusions can be drawn, it is hoped that the information gained can lead to increased understanding of ESL creative writers so that educators can formulate better strategies in teaching and evaluating creative writing.

Presentation Index: D3
Department: English;
Student Presenter(s): Deuser, Cindy

Time: 10:10 a.m.
Project Sponsor(s):
Robinson, James

Session D **Humanities** **North Voyageurs**

What Does it Mean to be Deaf?

Deaf communication is vastly different from communication between the hearing. Research shows that hearing communities are not doing a good job communicating with the deaf. From doctor's office visits to elementary schools, many deaf people face obstacles when trying to communicate with hearing people. The hearing community often lacks compassion and patience for these obstacles, and there is a feeling that it is acceptable to be ignorant to the communication needs of the deaf. As society becomes more interconnected, there is a greater need to acknowledge people's different abilities and learn to respect them. Children, in particular, need to learn to comprehend differences in order to become more tolerant as teenagers and later as adults. Our children's book was developed as part of a creative research assignment for an interpersonal communication course and was further improved through consultations with education professionals. The book was intended for eight to ten year olds and designed to stress the importance of recognizing the emotional states of deaf, as well as the patience needed when communication between the deaf and the hearing. Also highlighted is the importance of family involvement in the communication during this process. Our hope is that children will take away the importance of learning about the deaf co-culture and strategies of improving the communication with its members.

Presentation Index: D4
Department: Communication Studies
Student Presenter(s): Berrisford, Hayley; Kemp, Abby

Time: 10:30 a.m.
Project Sponsor(s):
Kramer, Jennifer

Session E **Business and Design** **South Glacier**

Air Bearing Design

Shrink wrapping processes are used extensively in the packaging industry in which various plastic films are used to unify single items of products into sets of packages. This makes the distribution of products to various destinations more efficient and cost effective. The feeding process of plastic film into the shrink-wrap systems can be done in various ways. One way of feeding the plastic film includes having a roll of film positioned parallel to the film cutter. Another way requires the roll of plastic film to be positioned at a location perpendicular to the film cutter. The latter way of feeding the plastic film is more ergonomic since it makes the replacing of the roll of film easier for the operator. However, this way of feeding the plastic film requires a 45 degree turning bar to smoothly change the direction of the plastic film by 45 degrees into the film cutter at high velocities. The current 45 degree turning bar used in a shrink-wrap system is appropriate but not the most energy efficient. This has raised the necessity of an optimized turning bar that utilizes less air consumption and reduces the effects of friction on the plastic film. In this research, the air distribution of the air bearing, air consumption, and frictional effects is studied in order to optimize the current turning bar. Cost analysis is performed to provide quantitative data that gives proof that the optimized design is more energy efficient than the current one.

Presentation Index: E1
Department: Mechanical and Manufacturing Engineering
Student Presenter(s): Tamariz, Lyncol; Paez, Carlos

Time: 9:30 a.m.
Project Sponsor(s):
Byun, Jeongmin

Zonal Rumor Routing: Simulation Study

Zonal Rumor Routing (ZRR), a branch of Rumor Routing protocol, is a promising technique to save communication energy – the dominant component of energy in a Wireless Sensor Network (WSN). ZRR would extend the lifespan of energy-limited WSN nodes, and thereby of the entire sensor network. ZRR breaks the sensor network into "zones" and hops messages from zone-to-zone, as opposed node-to-node. As an event is advertised in the network, ZRR also sets-up a path to the event source, so that an interested node can query along the path, which leads to saved energy tracing the event source. The simulation study carried out on ZRR tested the behavior of the protocol under a wide range of scenarios. Transmission energy, reception energy and delivery rate were the key parameters used to measure performance of the protocol. The second phase of the simulation study apprehended security vulnerabilities of the protocol and showed susceptibility to seven classes of attacks. The paper expects to bring out the experience gained developing the simulation platform and present a number of security vulnerabilities realized.

Presentation Index: E2
Department: Computer Science
Student Presenter(s): Bandara, Vidarshana

Time: 9:50 a.m.
Project Sponsor(s):
Herath, Jayantha

Session E **Business and Design** **South Glacier**

Strategic Alignment: Integrating IT into the Corporate Strategy

In this electronic era, Information Technology is applied to provide significant strategic and operational benefits to organizations. Unfortunately, many organizations are failing to reap the expected benefits from their investment in technology and information systems. In order to realize the maximum return on technology investments, Information Technology must be in lock-step with business strategy. The effective and efficient utilization of Information Technology requires the alignment of IT strategies with the Business Strategies, something that was not done successfully in the past, with traditional approaches. Proper alignment helps to identify practical methods and technologies that generate the greatest business value for strategic initiatives like revenue growth, improving customer service, managing a complex supply chain, or anything else strategic. In this paper, we look at the change in the nature of Business and the impact on Organization, the Alignment Model, the value of Business Componentization, and strategic value of Service Oriented Architecture (SOA). We will also explore some areas of concern for enterprises like incessant technological changes, unrelenting changes of e-commerce, and emergence of m-commerce. The ultimate objective is to find the strategic fit between the Business problems and the solutions that Information Technology has to offer.

Presentation Index: E3
Department: Business Computer Information Systems
Student Presenter(s): Das, Debjani

Time: 10:10 a.m.
Project Sponsor(s):
Schmidt, Mark

Session F **SCSU Survey** **Granite**

SCSU Survey Coverage of Previous Surveys

The Student Directors of the St Cloud State University Survey will be presenting on the results of the fall 2007 Minnesota state wide omnibus survey. Topics will include: the most important problem facing the state, early reactions to the smoking ban, the response to the 35W bridge collapse and taxes.

Presentation Index: F1
Department: Political Science; Statistics
Student Presenter(s): Loehlein, Michael; Helm, Renee; Nelson, Heidi; Galadima, Hadiza; Lynch,Trevor; Hofstad, Luke; Otteson, Rhonda; Thapa, Birat; Barthel, Craig

Time: 11:00 a.m.
Project Sponsor(s):
Frank, Stephen; Robinson, David; , Wagner, Steven

Session G **Paper Presentation Competition II** **South Voyageurs**

Daphnia Magna Preferentially Select Against Consumption of Diatom Algae Exposed to 4-Nonylphenol

Four-nonylphenol is a ubiquitous component of many wastewater effluents and is frequently detected at low µg/L concentrations. Its presence is attributed to its use in many domestic and industrial cleaning applications as a surfactant. The compound is known to mimic estrogens in animal models and has been regulated as an endocrine-disrupting compound. However, recent studies have demonstrated effects of the compound in non-animal organisms independent of endocrine systems; specifically nonylphenol appears to bind to the glass cell wall of diatom algae. This study attempts to document the preferential food specificity of Daphnia magna, a model invertebrate organism, to non-exposed Melosira varians over 4-nonylphenol-exposed diatoms. In this investigation, diatoms were transferred to their respective filter plates (control or exposure) and placed onto the floor opposite each other in the preference arena. Adult Daphnia magna were added to the center of a preference arena and allowed to acclimate for 3 minutes. A digital camera was set up to take a photo every 3 minutes for a duration of 15 minutes to establish which plate the daphnids were consuming food from. Previous investigations have demonstrated the apparent lack of biological magnification of this compound through the food web. In the future, we will study the impact of 4-nonylphenol's effect on diatom algae in relation to higher trophic levels.

Presentation Index: G1
Department: Biological Sciences
Student Presenter(s): Loes, Tim

Time: 11:10 a.m.
Project Sponsor(s):
Schoenfuss, Heiko

Web 2.0 and the English Classroom - Warning: Students may Riot

With the advent of Web 2.0 technologies, students today have an expanded ability to write for audiences found outside the classroom setting. Forms of textual communication, including weblogs and user groups, have become common public outlets for student writing. At the same time, the original use for many Web 2.0 writing spaces can be found within social networking. With this in mind, students of the Millennial Generation tend to view Web 2.0 writing spaces as a component of their personal life; a life that exists outside of education. Even so, in efforts to streamline classroom activities and expand pedagogical opportunities, English instructors are finding curriculum applications for Web 2.0 technologies. The ability to expand distinctive outlets of textual delivery for students is, after all, a positive outcome for English composition. However, educators must understand that classroom use of Web 2.0 technologies may be viewed by Millennial Generation students as an intrusion into personal space. This paper will look at Millennial Generation student responses concerning the inclusion of Web 2.0 technology within the classroom. Situations when these students found this inclusion useful and frustrating will be included. Finally, the concept of Underlife, as originally outlined by Robert Brooke, will be modified to offer educators a window into how student/classroom attitudes are affected by the introduction of Web 2.0 technologies. With an understanding of how students view classroom use of online writing space, the pedagogical expansion into Web 2.0 technologies will only become a positive inclusion for English instructors and students alike.

Presentation Index: G2 **Time**: 11:30 a.m.
Department: English **Project Sponsor(s):**
Student Presenter(s): Klint, Karl Heiman, James

E. Coli Loading of Water and Sediment in the Sauk River

Escherichia coli (E. coli) is a member of the fecal coliform group of bacteria that inhabit the gastrointestinal tract of humans and other animals. E. coli is associated with various diseases like meningitis, sepsis, and gastroenteritis. E. coli is released to water bodies (lakes and rivers) through leaking septic systems, feedlot runoff and manure application to fields. While much work has been done to study E. coli loading in water and the sources of E. coli found in water, the relationship between E. coli loading of water and sediment has not been studied extensively. The purpose of this study is to determine if a correlation exists between E. coli loading of water and sediment in Sauk River, Minnesota. Water samples will be collected in triplicate from 17 different sites along the Sauk River once a month from April to September 2008. Sediment samples will be collected in triplicate from 3 sites once a month from April to September 2008. Water samples will be analyzed for E. coli using EPA approved membrane filtration technique. Sediment samples will be analyzed for E. coli using multiple tube fermentation technique and enumerated using most probable number (MPN) method. In addition to bacterial analysis, the samples will also be analyzed for nutrients (nitrate, phosphorus, and ammonia), pH, conductivity, and suspended and total solids. E.coli data will be statistically analyzed to determine if a correlation exists between E.coli loading of water and sediment.

Presentation Index: G3 **Time**: 11:50 a.m.
Department: Environmental and Technological Studies **Project Sponsor(s):**
Student Presenter(s): Pradhananga, Amit Bender, Mitch

What Does Janus Tyrosine Kinase (JAK) 3 Inhibitor Do to the T-Cells in Vitro?

T-cells, the cells of the immune system, are the crucial players in autoaggresion against pancreatic insulin-producing beta cells that results with a development of autoimmune type 1 diabetes (T1D). There are several different subtypes of T-cells that can express protective (Th2, Treg) and pathogenic roles (Th1) in the beta cell destruction. These T-cell subtypes can be distinguished by their surface molecular markers, as well as by the specific cytokine profiles. T-cells express cytoplasmic signal transduction molecule JAK3, which in vivo inhibition by a specific JAK3 inhibitor WHI-P131 was implied as a protective in development of diabetes in a NOD mouse model of T1D. The goal of this study is to examine the effects of WHI-P131 on the survival, mechanism of cell death and cytokine secretion of isolated subpopulation of CD4+ T-cells, in order to get an insight into the possible mechanism of WHI-P131 action. The CD4+ T-cells were isolated from the spleens of 5-7-wk old prediabetic NOD and control C57BL/6 female mice (bred at our Animal room at SCSU) by positive magnetic separation. The cells were stimulated by anti-CD3 plus anti-CD28 antibodies, exposed to three different concentrations of WHI-P131 (6, 3, and 1.5 mg/ml) and cultured for the period of three weeks. The apoptotic cell death was determined in cell lysates and cytokine secretion (IL-10, IL-4, IL-2, IFN-ƒ× and TGF-ƒÒ) was analyzed in cell supernatants post each round of cell culturing (1, 2 and 3 weeks). It is found that WHI-P131 induces a dose-dependent apoptotic cell death of the CD4+ T cells, clearly confirming that WHI-P131 indeed affects CD4+ T-cells. It is expected that cytokine profiles obtained from the CD4+ cells long-term cultured with addition of WHI-P131 would provide an insight about the subtypes (protective vs. pathogenic) of CD4+ cells induced/affected by WHI-P131 action.

Presentation Index: G4 **Time**: 12:10 p.m.
Department: Biological Sciences **Project Sponsor(s):**
Student Presenter(s): Ghate, Ketaki; Nemkul, Niza; Fast, Patricia; Tsan, Fei chin; Shrestha,Sharad; Perera, Deshani Cetkovic-Cvrlje, Marina

Session H | **Social Sciences I** | **North Voyageurs**

Difference in Private and Public Sector Wages

Examining the wage differential between public and private sector workers, this paper analyzes the concept that state government employees earn a significant amount less than their private sector counterparts. Utilizing the classical concept of income variance as the primary method of examination, the hypothesis that local government employees earn less than similarly employed private sector workers may be directly tested. Non-classical examination, such as the effect of gender, race, and age, are also examined in order to determine the degree that non-classical variables play within the public and private employment sectors. Overall the analysis of this paper indicates that state government employees earn significantly less for jobs requiring higher education, and non-classical variables do play a role within the decision of which employment sector to work in.

Presentation Index: H1
Time: 11:00 a.m.
Department: Economics
Project Sponsor(s):
Student Presenter(s): Jordan, Edward
Grossman, Phillip

A Short Run Analysis of Philips Curve of United States

This paper reviews the fundamentals of inflation, unemployment and the Philips Curve. It uses quantity theory of money as an analytical basis for explanation of inflation and presents empirical estimates of the structural determinants of the natural rate of unemployment in United States. Finally, it tries to explain the degree of association between unemployment and inflation through Philips Curve. Tradeoff between inflation and unemployment remains a necessary building block of business cycle theory. Consensus view states that there is an inverse relationship between the rate of unemployment and the rate of inflation in an economy. In other words, the lower the unemployment in an economy, the higher the rate of change in wages paid to labor in that economy. The model is estimated using monthly time series data on inflation and unemployment rate for United States from January,1997 to January, 2007.

Presentation Index: H2
Time: 11:20 a.m.
Department: Economics
Project Sponsor(s):
Student Presenter(s): Rai, Jyoti
Grossman, Phillip

Exploring the Impact of Past Emotional Experiences on Future Events

Emotions are not static entities, just as thoughts are not isolated examples of the mind at work. Rather, emotions, of which we are often aware, are as versatile and fluid as the evaluations that drive them. The appraisal theory of emotions, as explained by Leventhal and Scherer (1987), provides an illustration of this interaction between cognition and emotion. They maintain that thought not only uncovers emotion-eliciting information, but they also investigate the step-by-step cognitive process that occurs during an emotion-inducing situation. By using the framework of Scherer's 1999 study we examined the extent by which this process can be influenced. Participants were asked to identify the emotion experienced by the protagonist in several short stories. Each part of story corresponded to a level of Scherer's appraisal theory of emotions. While participants read the short stories, words rich with emotional content were flashed on the computer screen at sub-threshold levels. This is to say, words relating to specific emotions, joy or anger, were presented for a short duration of time, quickly enough for participants to be unaware of their display, but long enough as to affect their non-conscious. This was done to induce an emotional state. We hypothesized flashing joy-related words would entail better efficiency and accuracy on stories that were not only characterized as emotionally positive, but specific to joy. The same expectation is maintained with anger-related flashed words and stories characterized as instilling anger.

Presentation Index: H3
Time: 11:40 a.m.
Department: Psychology
Project Sponsor(s):
Student Presenter(s): Eickhoff, Aaron; Shelton, Lisa; Gulden, Brennen
Valdes, Leslie; Buswell, Brenda

Session I | **Philosophy** | **North Glacier**

Pushimi-Pullyu Representations

This presentation looks into the things we do by speaking. The reason is that, by saying things, we do more than just convey information.

Presentation Index: I1
Time: 11:00 a.m.
Department: Philosophy
Project Sponsor(s):
Student Presenter(s): Ahlers, Jonathan
Nuccetelli, Susana

Abstracts

Session I **Philosophy** **North Glacier**

No Need for a Name (Frega's Puzzles)

I consider some reasons and arguments offered in contemporary theory of meaning and reference and contrast them with an opposite view.

Presentation Index: I2
Department: Philosophy
Student Presenter(s): Johnson, Eric

Time: 11:20 a.m.
Project Sponsor(s):
Nuccetelli, Susana

The Evolution of Language and Its Use

The group addresses the question of whether language evolved as a result of natural selection, and disputes some of Chomsky's assumptions regarding evolution. The group will also focus on the things we implicate by the things we say, or by our use of words.

Presentation Index: I3
Department: Philosophy
Student Presenter(s): Coss, David; Smith, Sarah

Time: 11:40 a.m.
Project Sponsor(s):
Nuccetelli, Susana

A Puzzle About Belief

Philosopher's have recently wondered whether the content of our belief and the meaning of our sentences depend completely on brain processes. Their discussions have generated interesting puzzles that we will explain and discuss in these presentations.

Presentation Index: I4
Department: Philosophy
Student Presenter(s): Lindberg, Eric; Frank, Erick; Busse, William; Shepard, Brandon

Time: 12:00 p.m.
Project Sponsor(s):
Nuccetelli, Susana

Session J **Science and Engineering I** **South Glacier**

The Design and Synthesis of Novel Goniothalamin Analogues

Every two minutes a woman in the United States is diagnosed with breast cancer. In recent years, one method to identify potential chemotherapeutic agents has been the mass screening of natural products for cytotoxicity. One compound discovered in this manner was goniothalamin. Goniothalamin was isolated from the dried stem bark of the plant goniothalamus sesuipedalis and exhibits cell specific anticancer activity against breast cancer cell lines. Goniothalamin has been extensively studied, and a large number of synthetic analogues have been prepared in an attempt to determine the structural features necessary for bioactivity. These structure/activity relationship studies have focused primarily on the manipulation of goniothalamin's styryl substituent. The focus of this research is on the lactone core of goniothalamin. Analogues have been prepared that replace the lactone ring with a lactam. It is anticipated that alteration of the lactam nitrogen substituent will potentially lead to analogues that have better bioavailability and reactivity than the natural product.

Presentation Index: J1
Department: Chemistry
Student Presenter(s): Dillman, Allissa

Time: 11:00 a.m.
Project Sponsor(s):
Mechelke, Mark

Automation of Liquid Chromatography Instrument

The purpose of this project is to design a digital controller for a Water 501 HPLC Pump used by the Chemistry/ Biology department for Liquid Chromatography and to build a system that will be interfaced with a computer to collect analog output from a detector and perform various calculations by digitizing and analyzing the data and then display the results on a GUI system. The device should be accurate, reliabe and user friendly and it should be capable of delivering exact proportion of liquids as desired in the milliliters/minute range and also collect data such that it could be easier to understand and worked upon when displayed. This will allow students and faculty of Biology and Chemistry department to perform liquid chromatography experiments from the luxury of their work station.

Presentation Index: J2
Department: Electrical and Computer Engineering; Biological Science
Student Presenter(s): Rana, Deepak; Ahmed, Sunny; Nasir, Taqi

Time: 11:20 a.m.
Project Sponsor(s):
Hou, Ling; Jacobson, Bruce

Session J | **Science and Engineering I** | **South Glacier**

Sartell Valves, Inc. AWWA Valve Project

Valves are used to control the flow of fluid for everything from chemicals in an oil refinery to city water supplies. Many of these valves vary in size from just a few inches (0.075 m) diameter to over 120 inches (3 m). There are butterfly valves, ball valves, plug valves, and others. For this project, ball valves will be explained in further detail. Ball valves have a semi-spherical flow control geometry which has an opening (or port) through the center for the open position and faces which stop flow via seals when the ball is rotated by an actuator. As part of this project, advanced valve geometries, seat shapes, seat materials, and modeling techniques are utilized to minimize the actuation torque. Computer-aided design software, SolidWorks, was used extensively to assist in the design of the ball valve. A variety of seal shapes and materials were analyzed to provide the necessary sealing forces during closing. Experiments were performed on different seal materials to determine necessary material properties and friction behaviors. Computer modeling techniques, such as finite element and computation fluid dynamics methods, were used to assess pressure and velocity implications for each design. Analytical bolted joint and bearing design techniques were also employed.

Presentation Index: J3
Department: Mechanical and Manufacturing Engineering
Student Presenter(s): Meyer, Kyle; Carlson, Ryan

Time: 11:40 a.m.
Project Sponsor(s):
Covey, Steve

Prosthetic Aortic Heart Valve Fatigue Tester

The desire for a machine to fatigue test prosthetic heart valves was expressed by Boston Scientific Inc. The need for such a machine stems from the ethical and regulation requirement that the heart valves be tested for fatigue before being used in human patients. The initial steps in the design process consisted of background research. Research was conducted in heart function, blood properties and current fatigue test machines. This research lead to the determination of the proper conditions in which the heart valve needed to be tested and the fluid properties surrounding blood flow. In addition, the research pointed out the strengths and weaknesses of current designs. After such research, design ideas were brought forth and considered. Initially three ideas were considered: two of which used a liquid and one which used a gas to cycle the heart valve while holding the valve in a static position. Further research led to the discarding of all three ideas. Design ideas were once again developed and agreed upon. The final design idea uses a concept in which the valve itself is actually moved in a liquid medium. This design idea will allow the heart valve to be cycled at rates exceeding 20 Hz while maintaining constant transvalvular pressures. In addition, the design will allow for the monitoring of load on the valve.

Presentation Index: J4
Department: Mechanical and Manufacturing Engineering
Student Presenter(s): Larson, Jaclyn; Beuning, Mark; Miller, Jon

Time: 12:00 p.m.
Project Sponsor(s):
Covey, Steve

Session K | **Helping People Succeed** | **Lady's Slipper**

Novice ESL Teachers' Process of Developing Their Own Way of Written Feedback on Student Writing

This study explores novice second language teachers' process of learning to provide written feedback on their students' writing over a period of time (16 weeks). Participants in this study are five second language writing instructors who are also candidates of Master's degree in Teaching English as a Second Language. All of these participants were in their first or second semester of teaching academic writing at the time of data collection. Present study will analyze the following data: (1) these instructors' ten different journal entries written immediately after they provided written feedback on their students' writings; three interviews (at the beginning of semester, after mid-term exam, and after final exam) with each of these five teachers; and two observations (at the beginning of semester and at the end of semester) of three teachers while they correct, provide written comments, and grade their students' writing samples. This study focused on these novice second language writing teachers' beliefs, strategies, and their decision-making processes related to providing written feedback. The presentation will report the results from a preliminary analysis of partial data from the entire study since the data collection of this study will still be in progress at the time of presentation. The presentation will be based on the analysis of at least seven journals out of ten from each writing instructor, two interviews with each instructor, and first observations of three teachers providing written feedback on students' essays. The findings from this study will provide practical implication for language teaching and language teacher training.

Presentation Index: K1
Department: English as a Second Language
Student Presenter(s): Nakamura, Shinobu

Time: 11:00 a.m.
Project Sponsor(s):
Kim, Choon; Robinson, James

Teaching Lingua Franca English in a Baroque Inner-City Contact Zone: Negotiating Basic Literacy With/For Working-Class Adolescents in India

Teaching English in India to struggling working-class Bengali students at an award-winning democratically-inclusive English-medium school tests many hallowed ideals. Given the ten "naughtiest" girls in the school, I was asked to create appropriate curricula for others like them from non-English-speaking families lacking the cultural capital to access mainstream resources. While the reasons for these orally-fluent students' failures to read and write remained a mystery (attention-deficit, malnutrition, broken homes, illiterate parents, class conflict?), constructing a more culturally-familiar multilingual lingua-franca (LFE) environment for them made English more accessible. Amidst educators who spoke Irish, British, Australian, Dutch, as well as Indian English, my Western-US accent and Pakistani upbringing afforded me a unique entry-point into this baroque environment that also facilitated/fostered/mediated an LFE approach. Jointly deploying our marginal identities, my students and I fashioned a pedagogical safehouse amidst competing Euro-liberal, Bengali-nationalist, and Irish-Catholic claims on their identities, needs, and potentials. The sociolinguistic concept of 'alignment' helps explain how this pedagogy worked. Following Atkinson and Canagarajah, I describe my students' oral (LFE) skills as assets that fit well with a modified CLT task-based curriculum framed within an adaptive special-education approach. After years struggling within an alienating formal exam system, this structured-yet-negotiable environment rewarded 'alignment alone.' Graded solely on sustained 'effort to connect' evidenced by immediately-bankable points, the students could focus their attention on writing as a meaning-making process. Together, we wrote texts on the blackboard, reinventing English from below-through sentence-combining, language-experience, and cultural 're-writes.' The resulting texts helped teach reading/grammar too. Banking on underappreciated strengths, the students gradually stopped evading difficulties and invested more in themselves. Locating my classroom within Kolkata's neo-baroque society, this first-ever attempt to develop remedial pull-out methods for the school's burgeoning population of working-class students both affirms and extends the school's democratic language-policy agenda, engaging the tensions between lower and lower-middle-classes.

Presentation Index: K2
Department: Special Education; English as a Second LanguagE
Student Presenter(s): Fonken, Gael

Time: 11:20 a.m.
Project Sponsor(s):
Salk, Janet; Veeder, Rex

Social Skills Training to Teach Abuse Prevention for an Adult with Developmental Disabilities

The purpose of this research is to teach abuse prevention skills to an adult with developmental disabilities. Prior to intervention conditions, the participant repeatedly agreed to go places, give hugs and divulge personal information including social security and phone numbers to strangers. This behavior resulted in the participant being vulnerable to abuse and prevented him from successful community integration and independent social mobility. Three social vignettes were designed to address the three punitive vulnerable scenarios. Persons unknown to the participant agreed to act as strangers and solicited the participant. Following intervention, the participant was able to demonstrate the skills needed to avoid and properly report situations that may result in physical, sexual and financial abuse. Our research has provided the participant with the skills necessary for increased independence in the community, and therefore, a higher quality of life. Results are discussed as being consistent with the goals of applied behavior analysis to effect meaningful improvement in behaviors that are important to the participant in his/her natural environment.

Presentation Index: K3
Department: Community Psychology
Student Presenter(s): Vesel, Shawn

Time: 11:40 a.m.
Project Sponsor(s):
Edrisinha, Chaturi

Female Entrepreneurs in Africa: The Road to Capital Challenged by Inequality

As the dawn of globalization arises upon the twenty-first century, the unification of industrialized and third world countries is inventible. Individual competition for survival is dwindling amidst the powerful control of large corporations depicting the image of poverty and suffering. Within the competition for survival, women will be at the bottom for opportunity and economic advancement on a global scale. A gender hierarchy will dominate the social relationships of women due to a lack of economic opportunities, creating internal conflicts and discrimination among women in the industrial and non-industrial. Therefore, discrimination and exploitation are inventible. Historically, the subordination and denigration of women occurred from stratification of domesticated jobs versus economic jobs, as result women have been overworked, underpaid, and institutionalized to perpetuate the prophecy. The expansion of globalization maximizes the exploitation of females in non-industrial countries, attributing to the global denigration of social equality and achievement among women in both industrial and non-industrial countries. This paper briefly discusses effects of globalization on gender stratification of women entrepreneurs in African: discussing the positive and negative from feminist perspective, with three diverse case studies on female entrepreneurs in Zimbabwe, South Africa, and Kenya. The root of gender inequality for female entrepreneurs lies at the belly of historical and cultural values. These three women stories highlight the road to capital is challenged by inequality.

Presentation Index: K4
Department: Women's Studies
Student Presenter(s): Mason, Keesha

Time: 12:00 p.m.
Project Sponsor(s):
Mboko, Swithina

Modeling White Pine Respose to Herbivory and Transplanting

The manipulation of ecosystems has been a pursuit of mankind for thousands of years. The goals of this manipulation have been numerous and ever-changing, and recently restoration has emerged as a new reason for ecosystem manipulation. Ecologists have worked to develop our understanding of many ecological processes such as community assemblages, ecological succession and species specific roles in a healthy ecosystem. With the emergence of restoration as a new goal and our expanding knowledge of ecosystems came a new scientific enterprise, restoration ecology. The complexity of the interplay between the various components of any ecosystem and our limited knowledge of pre-alteration conditions assures the difficulty of most restoration efforts. However, given the general scientific consensus that human activity has degraded many of our natural ecosystems it can be argued that restoration efforts are both practically and morally imperative. Here, I describe the rationale for and goals of one restoration effort, propose a rigorous, quantitative evaluation of its methods and a plan to offer recommendations for its future course.

Presentation Index: M1
Time: 2:00 p.m.
Department: Biological Sciences
Project Sponsor(s):
Student Presenter(s): Dryden, Nick
Cook, William

On Homomorphisms of Finitely Generated Abelian Groups and the Associated Rings

Two fundamental notions in abstract algebra are groups and rings. Cyclic groups, which are algebraically isomorphic to the group of integers or the groups of integers modulo n, are the building blocks of all finitely generated Abelian groups. These cyclic groups, which are also rings, are valuable tools which enable the study of more complicated groups and rings. In this presentation, we will provide and demonstrate our efficient method of explicitly finding all group and ring homomorphisms from the group of integers modulo m to the group of integers modulo n. Our solution not only gives the number of group and ring homomorphisms; but, more importantly, it shows the algebraic structures of these sets of homomorphisms. Furthermore, we show what these homomorphisms actually are and how to find them all. We also extend these results to group and ring homomorphisms of finitely generated Abelian groups and the associated rings. Our methods utilize the Fundamental Theorem of Cyclic Groups, the Chinese Remainder Theorem, matrices, and discrete mathematics. Our work is useful and enlightening for introductory abstract algebra students, as they frequently encounter specific questions on homomorphisms. Our approach streamlines the solution process so that many specific questions can be solved in a uniform manner, and it reveals deeper properties which are often unrealized when working on specific problems. The extraction of such underlying properties is highly desirable and naturally aids the study of related and more complex problems at both undergraduate and graduate levels.

Presentation Index: M2
Time: 2:20 p.m.
Department: Mathematics
Project Sponsor(s):
Student Presenter(s): Elich, Hallie
Huang, Danrun

Lightning Detection Using Instrumentation

Lightning detection has many practical purposes for meteorologists in both the fields of research and personal safety. In an attempt to remotely detect a lightning discharge I designed and built a lightning detector. The lightning detector measures the induced electromotive force (emf) caused by fluxes in the electromagnetic field from a lightning discharge. Once built, the lightning detector was tested to calculate the maximum range at which a lightning discharge could be detected. From the tests the lightning detector was calculated to have a maximum working range of [9.1, 11.7] miles. The successful test of the lightning detector proves that through induction lightning can be detected remotely.

Presentation Index: M3
Time: 2:40 p.m.
Department: Earth and Atmospheric Sciences
Project Sponsor(s):
Student Presenter(s): Stovern, Michael
Kubesh, Rodney

The Third Dimension of the Wind

Within meteorology the vertical component of the wind has been calculated or estimated but not actually measured due to the lack of proper instrumentation. This presents challenges especially when dealing with air aloft, where wind is not bound by the ground and can move vertically as well as horizontally. Using an original design that contains four force meters I have developed a device that will give the third dimension of the wind. The four load cells are connected to a metal frame at four corners. Wires and springs then connect the meters to a central ball which will be exposed to the wind. The force of the gusts will push on the suspended ball thus pulling on the load cells will change the voltage within the instrument. A signal is then sent to a computer that will determine the direction, velocity, and azimuth angle of the wind, thus giving an output in all three dimensions. Results of wind tunnel comparison with standard instruments will be discussed.

Presentation Index: M4
Time: 3:00 p.m.
Department: Earth and Atmospheric Sciences
Project Sponsor(s):
Student Presenter(s): Malin, Charlene
Kubesh, Rodney

Fuzzy Logic and Fuzzy Intervals

The traditional binary system of logic uses only two values, true and false, which can be represented as 1 and 0 respectively. Paradoxes can arise from the use of binary logic. The specific paradox that will be dealt with here is the Liar's Paradox, which can be set up as follows: sentence S1 says that sentence S2 is false, and S¬2 says that S¬1 is true. This leads to contradicting truth values for S1. Differing from binary logic is fuzzy logic, which instead uses the continuum of all values between 0 and 1. Using fuzzy interval theory, which allows for a statement to have a truth interval [a,b] within this continuum as opposed to a single value, a solution to the Liar's Paradox can be found. This presentation will deal with that solution.

Presentation Index: N1
Department: Mathematics
Student Presenter(s): Braith, Justin

Time: 2:00 p.m.
Project Sponsor(s):
Walk, Stephen

4-Nonylphenol Binding to Glass as a Possible Toxicity Mechanism in Diatoms, an Important Aquatic Producer

4-Nonylphenol (4-NP) is a ubiquitous estrogen mimic found in many aquatic environments. It is produced and used in large quantities as commercial surfactants to facilitate the mixing of lipophilic compounds with water. Due to its high use, the compound is often detected in wastewater effluents in low ìg/L concentrations. Previous research shows that sensitivity to 4-NP is not universal across aquatic primary producers. Freshwater algae diatoms have consistently shown a greater sensitivity to 4-NP then other members of the aquatic primary production community, including green and red algae. Clearly there is some feature of diatom physiology that induces a greater sensitivity to this chemical than is seen in other algal groups. Diatoms are characterized by a siliceous frustule that surrounds the bulk of the cell, and through which the cell interacts with its environment. The hypothesis put forth is that 4-NP binds to this glass frustule of the diatom, interfering with the extracellular matrix, and the diatoms ability to interact with its environment, ultimately culminating in cell mortality. The goal of this project is to identify if 4-NP does indeed bind to glass and to what degree. This confirmation would provide a mechanism for the pattern of its greater impact on diatoms when compared to other aquatic primary producers. This is a particularly important process to understand, as diatoms are a vital component in all aquatic ecosystems. Aside from the loss of the diatom as a food source, the binding raises concerns for a potential bioaccumulation pathway to higher aquatic trophic levels.

Presentation Index: N2
Department: Biological Sciences
Student Presenter(s): Stephanek, Josh

Time: 2:20 p.m.
Project Sponsor(s):
Julius, Matthew

Amending Our Morals

Throughout history, political and policy advocacy groups have attempted to impose moral standards on the American people by amending the U.S. Constitution. By and large, these efforts have met with limited success. In fact, with the exception of the 18th Amendment (Prohibition), the constitutional amending process has been used successfully only to address the federal government's structure, power, and level of involvement in citizens' private lives.

Despite this fact, there is still no shortage of proposed amendments that seek to regulate moral behavior. Voters in the 2006 election, for example, were asked to consider an astonishing 200 ballot initiatives in their states. The most controversial initiatives included limiting access to abortions and defining marriage as between one man and one woman. These ballot measures represent the latest attempts by reformers to legislate "moral" behavior by amendment. The mere fact that there are so many such initiatives should prompt the nation to question the legitimacy of this form of liberty-limiting legislation. Indeed, we should learn from our past mistakes: the 18th and 21st Amendments demonstrate why citizens should think critically before voting for morality-based constitutional proposals. Our experience with Prohibition offers important lessons regarding the detrimental societal effects of such legislation. These lessons are both timely and relevant to current efforts to impose moral standards on "we the people" by amending our Constitution.

Presentation Index: N3
Department: Political Science
Student Presenter(s): Thompson, Rose

Time: 2:40 p.m.
Project Sponsor(s):
Uradnik, Kathy

High Speed Optical Data Link

This project is a two semester design of an optical data link with 25 MHz bandwidth which is designed for use with high speed internet applications. The digital signal is converted to a 2 VPP signal using OFDM methods. To accomplish this, a BEL 0804-5000-03 Powerline Module is used in conjunction with an ASIX AX88178 Ethernet controller. The design utilizes both a transmitter and receiver used to pass a 2 VPP analog signal through the air a distance of 10 feet. The transmitter is based on a design commonly used for fiber-optic communication. It utilizes two transconductance amplifiers to convert the voltage signal to a current. The current is biased and used to drive an LED. The receiver is comprised of a series of amplifiers used to receive the signal from a photodiode. The receiver uses an automatic gain control amplifier to adjust the gain of the circuit for various distances between the transmitter and receiver.

Presentation Index: N4
Department: Electrical and Computer Engineering
Student Presenter(s): Zimmerman, James; LeClaire, James; Mikkelsen, Brent

Time: 3:00 p.m.
Project Sponsor(s):
Vogt, Timothy

Abstracts

Session O **Economics** **North Glacier**

Has Democracy Led to Economic Growth in Africa?: A Case Study of Sixteen Countries in West Africa

Has democracy led to economic growth in the countries of West Africa? Historically, West African countries have demonstrated much political instability. These instabilities have resulted in the weakening of the economic growth of this region. This paper considers whether or not democracy has a stimulus effect on economic growth in West Africa, examining the correlation between the different regimes types (democratic vs. authoritarian) in West Africa and growth. In other words, does democracy promote and foster economic growth or is democracy an obstacle to economic development? This study uses data from a sample of sixteen West African countries comparing the pre-democracy era with recent periods of democracy to answer this question.

Presentation Index: O1
Department: Economics
Student Presenter(s): Keita, Mory

Time: 2:00 p.m.
Project Sponsor(s):
Grossman, Philip

Planes, Trains and Automobiles: The Economic Effects of Transportation Systems

The National Interstate Highway System is the most expansive and fastest form of civilian automobile transportation in the United States and comprises a significant portion of Federal and State government transportation spending. The Interstate System links major cities, centers of economic activity, throughout the United States, but how does economic activity involve the Interstate System. Does the Interstate System disperse or centralize economic benefits? Using data obtained from Minnesota's 87 counties and econometric techniques, this research examines whether local access to the Interstate System corresponds to higher levels of economic activity as measured by median household income. This research also addresses the effect of differences in region and industrial-composition associated with the Interstate System. This line of research contributes to the understanding of how massive transportation infrastructure relates to the geographical distribution of income and economic development.

Presentation Index: O2
Department: Economics
Student Presenter(s): Helland, Robert

Time: 2:20 p.m.
Project Sponsor(s):
Grossman, Philip

Characteristics of Minnesota Gamblers

Who gambles, what are the characteristics of those who play different games, and are there any systematic differences in gamblers across the different games? This study looks at the gambling tendencies of a sample of Minnesota residents. It investigates the characteristics of people who gamble and compares characteristics across different types of gambling: social bets, horse races, sports bets, slot machines, card games in general, Blackjack, Texas Holdem, bingo, raffle tickets, dice, pull tabs, the MN Lottery, and casinos. The characteristics considered are age, income, gender, education level, and various opinions about gambling. The data used was collected for the MN State Lottery by the SCSU Survey in 2005. Over 2000 MN residents were interviewed. The method of analysis used is Probit Regression.

Presentation Index: O3
Department: Economics
Student Presenter(s): Loehlein, Michael

Time: 2:40 p.m.
Project Sponsor(s):
Grossman, Philip

Factors Affecting the Number of Annual Deportations From the United States to Mexico

Each year the United States deports a large number of illegal aliens. The number deported fluctuates from one year to the next. This paper looks at various demand and supply-side factors that could explain this variation in deportations from one year to the next. It is hypothesized that the INS responds to both demand and supply-side pressures in its enforcement of United States immigration laws. On the supply side there is little data of the number of illegal's in the country so we proxy for this by using wage gap difference and the state of the economy for Mexico. As the wage gap increases and the state of economy decreases, more illegal migration takes place. We also look at the United States economy, as our economy does better, more illegals migrate. The demand side argues that more political pressure deports more illegal's with factors such as the political party in power. Other demand factors are the Unemployment rate in the US and dollars spent on the INS both having positive effects on deportations.

Presentation Index: O4
Department: Economics
Student Presenter(s): Newell, Mike

Time: 3:00 p.m.
Project Sponsor(s):
Grossman, Philip

Session P **Management** **South Glacier**

History of Business Organizations

The paper focuses on the development of business and commerce through history. Many historians cite the Magna Carta as the launching pad of modern commerce and individual property rights. The development of trade guilds and merchants are likewise important to the development of commerce. A dispute exists over the state of commerce in the modern age, its ethics, effects and meaning as well as where commerce is headed in the future.

Presentation Index: P1
Department: Management
Student Presenter(s): Saxton, Elliott

Time: 2:00 p.m.
Project Sponsor(s):
Polacco, Alex

Women in Global Entrepreneurship

Women entrepreneurs in the Midwest area face unique challenges, but they also have many opportunities in the increasingly diverse marketplace today. This panel discussion, conducted by SCSU women entrepreneurs, will give students the opportunity to discover how those women have successfully overcome their challenges, taken advantage of their opportunities and are realizing the dream of owning their own business.

Presentation Index: P2
Department: Management
Student Presenter(s): M'Banga, Shandra

Time: 2:20 p.m.
Project Sponsor(s):
Polacco, Alex

St. Cloud State University Advising Program

Advising at St. Cloud State University appears to be a problem with both faculty and students. To understand what the root causes of the problems really were, a team of MGMT 467 students did a survey of both faculty and students in Fall 2007. A new team reviewed the study and expanded the root cause analysis. In filling out the survey, students' were asked their grade status, major and if they have changed majors in the past. Faculty members also thought that departments were under staffed. The panel discussion expands upon the findings and elicits recommendations for alleviating the problem.

Presentation Index: P3
Department: Management
Student Presenter(s): Boser, Brett; Klaverkamp, Peter

Time: 2:40 p.m.
Project Sponsor(s):
Polacco, Alex

Session R **English** **Granite**

Learning to Write in English: An Analysis of ESL Students in the Writing Center

This presentation will examine ESL students at St. Cloud State University's Write Place. Four years ago, ESL students made up approximately 17% of the writing center's cliental. Due to St. Cloud State University's well-respected ESL program, along with the growing number of international students and refugee population, that number has more than doubled to approximately 40%. As St. Cloud State University's ESL program grows, the role of the writing center becomes increasingly important. Multicultural Student Services has provided a grant to the Write Place, which allows for in-depth data collection and analysis of the frequency of non-native speakers utilizing the writing center. The presentation will introduce the data collected thus far concerning the demographics, various disciplines, and writing issues for ESL cliental, as well as offer suggestions for future tutor training and education.

Presentation Index: R1
Department: English
Student Presenter(s): Martin, Kari

Time: 2:00 p.m.
Project Sponsor(s):
Mohrbacher, Carol

Lloyd Alexander's, The Chronicles of Prydain, as Arthurian Literature

From its depictions of King Arthur, the Round Table and Lancelot, along with and his adulterous love affair with Guinevere, Arthurian literature has captured the imaginations of readers for centuries. Lloyd Alexander continued that tradition when he wrote The Chronicles of Prydain, a set of children's stories published from 1964-1968. Some names and plot elements in the series have already been shown by scholars to share some of the same Welsh origins as Arthurian literature. Yet the books are not generally classified as Arthurian literature, because they do not contain the major elements most often found in those texts. In this project I will start by arguing that thematic elements in Alexander's novels are closely linked to Arthurian tradition. I will also seek to explain what it means to have Arthurian literature that does not contain King Arthur or his Round Table. Finally, I will examine how Alexander alters many of the core concepts of Arthurian Literature to better reflect the time in which he wrote.

Presentation Index: R2
Department: English
Student Presenter(s): Heimermann, Mark

Time: 2:20 p.m.
Project Sponsor(s):
Davis, Glenn

Session R **English** **Granite**

Saying Goodbye: An Examination of the Leave-Taking Act

The importance of conversational closings is examined. The prior research into the leave-taking act, including research into syntax, pragmatics and sociolinguistics is presented to provide a framework for this study. The frameworks, introduced by both Schegloff & Sacks (1969) and Wolfram & Schilling-Estes (2006), are compared. This research deals primarily with proper leave-taking techniques, and specifically is an investigation into the speech acts used during the leave-taking act. The leave-taking act consists of a passing phrase, some type of speech act as a leave-taking routine and possibly an adjacency pair. The concepts and effects of adjacency pairs and repetition throughout the leave-taking act are noted. Finally the social implications of the leave-taking act are investigated along with suggestions for future research into this linguistic phenomenon. This study encourages more empirical research so that the norms of a conversation closing in American English can be better understood.

Presentation Index: R3
Time: 2:40 p.m.
Department: English
Project Sponsor(s):
Student Presenter(s): Muhlenkort, Amy
Ross, Suzanne

Tutoring Strategies for Developmental Writers

This presentation will examine the roles a tutor can play in the education of developmental writers. A five-week case study examining the relationships between three tutors and six small groups of developmental writers will be presented and analyzed to show the effectiveness of various teaching and tutoring techniques. These techniques will focus on improving the student as a writer, not improving the piece of writing itself. Strategies focused on assisting developmental writers in one-on-one tutoring, small-group tutoring and in a classroom setting will be discussed. Also, sample handouts and plans for mini-lessons covering grammar, punctuation and other writing issues will be provided.

Presentation Index: R4
Time: 3:00 p.m.
Department: English
Project Sponsor(s):
Student Presenter(s): Pickens, Alexandra; Hanson, Ryan; Holstrom-Johnson, Susan
Mohrbacher, Carol

Session S **Aviation** **Oak**

Geothermal Heating of Airport Runways

Keeping snow and ice from building up on airport runways and taxiways is an essential part of airport maintenance/operations worldwide and requires a large investment of time and money in equipment and operational control, especially in colder climates. Current methods for removing ice and snow from airport movement surfaces consist of spraying large quantities of anti-ice chemicals on the ground and deploying a great number of snowplowing vehicles. Both the chemicals and snowplowing vehicles have adverse effects on the environment as they contribute to pollution. During poor weather conditions, keeping runways open can be a challenge as snowplow crews cannot keep up with the precipitation, causing airport closures, delays and safety concerns. Ice buildup on runways has been proven to contribute to accidents involving runway runoffs. Heating runways with geothermal heat can prevent the buildup of ice and snow on runways and once installed, such a system could pay for itself in as little as 2-5 years. Geothermal heat has been used to melt ice and snow off roads, sidewalks, bridges and other paved surfaces for years in locations around the world. The design is simple, pipes are cut into the pavement that receive a flow of warm liquids, either from direct use geothermal water, where available, or through the use of heat exchanger systems or even hot runoff liquids from local industry or power plants . The most ideal locations to utilize geothermal heat are in areas where high-temperature water wells can be drilled for direct use. Such locations can be found through much of the western half of the United States.

Presentation Index: S1
Time: 2:00 p.m.
Department: Aviation
Project Sponsor(s):
Student Presenter(s): Bjornsson, Robert; Thewlis, Patrick
Aceves, Robert

Session S **Aviation** **Oak**

Ground Surveillance Radar System

The outcome of this project is to save human lives, save time and efficiently in the aviation industry. The Federal Aviation Administration (FAA) has identified ground incursions as a top priority to reduce the frequency severity and rate of incursions by implementing infrastructure to decrease prevalence of human error. Our team is conducting qualitative research in the infrastructures in place already and improvements that can be made to minimize risk at hotspots the Federal Aviation Administration has identified. The team is enrolled in the Federal Aviation Administration design competition for universities. The team's research, based on literature review of current systems, will be the basis for a research design project once complete will be presented to airport industry experts for strength weakness opportunity and threats (SWOT) analysis. This new system, once implemented with an economical surveillance radar system, will relay real-time airport activity to ground controllers.

Presentation Index: S2
Time: 2:20 p.m.
Department: AviatioN
Project Sponsor(s):
Student Presenter(s): Simon, John; Heimann, Blake
Aceves, Robert

Automated Airport Taxi Assistance and Guidance System

Our senior capstone research course will be a first-hand engagement in real-life aviation applications. Our research is aimed at identifying solutions to runway incursions and hotspots, then developing a "Progressive Automated Taxi System." Primary research will be obtained through quantitative literature review, journals, advisory circulars, and industry experts such as air traffic controllers, commercial pilots, and software engineers. This system will assist in the advancement and design of a computerized system that ultimately promotes commerce and safety. This automative system will improve efficiency of ground operations at growing airports and ultimately reduce aviation incidents and accidents that could potentially lead to the loss of life, loss of time, and loss of money. Our research and development of an improved system will be submitted to the FAA Design Competition for Universities.

Presentation Index: S3
Time: 2:40 p.m.
Department: Aviation
Project Sponsor(s):
Student Presenter(s): Cooke, Trista; Hase, Joshua; Scallon, Andrew
Aceves, Robert

Session T **All Disciplines** **Ballroom**

Wright County Nursing Presentation

The Public Health Institution in Wright County (PHI) felt there was a lack of knowledge in regards to daycare providers and their prevention of infection control. This topic area is very important in regards to public health, because there is a large population of children enrolled in daycare. Being in such close proximity with other children has increased the possibility of the spreading of infectious diseases. This project is trying to assess the previously mentioned areas of child health in daycare centers. The PIH is trying to find out what additional resources these daycare centers could use to help immunization status, prevention of infectious diseases and how to help support daycare centers. Our project will expand the knowledge the county has regarding infectious diseases in daycare centers. This will help PIH implement supportive measures and offer appropriate resources. With an increasing number of younger individuals in the population, infectious diseases and immunizations are an issue that needs to be addressed in the community assessment.

Presentation Index: T1
Time: 2:00 p.m.
Department: Nursing
Project Sponsor(s):
Student Presenter(s): Studniski, Sarah; Salonek, Angela; Angell, Casey; Galbrecht, Angela; Harms,Charissa; Stockinger, Kate; Orwoll, Katie; Noll, Carly; Christopher, Lexie
Lenz, Brenda; Morrison, Leslie

Synthesizing Vanadium-Flavonoid Complexes that May Show Potential Anti-Diabetic Properties

Diabetes is characterized by inadequate production or utilization of insulin resulting in abnormally high blood sugar (glucose) in the blood and urine. Vanadium is a metal that has been shown to reduce blood glucose levels. Flavonoids are a class of aromatic plant pigments that have also been shown to exhibit anti-diabetic properties. Vanadium on its own has been shown to be toxic, but its toxicity can be decreased by attaching organic ligands like flavonoids. When flavonoids are attached to vanadium it may be possible to have a synergetic effect in the regulation of glucose levels, while also reducing the toxicity of vanadium. A vanadium-chrysin complex was prepared by heating at reflux overnight by addition of vanadyl acetylacetonate, chrysin, and sodium hydroxide to ethanol. Microscopic analysis, IR, NMR and Mass spectrometry indicate the formation of VO(chrysin). IR analysis shows C=O peak shifts from 1653 to 1628cm-1 indicating coordination at C-5. IR also shows peaks at 993 and 984cm-1 -indicating presence of V=O. NMR analysis reveals broad peaks corresponding to chrysin. The broad peaks are attributed to the paramagnetic nature of V(IV). MS spectra show the presence of chrysin in the compound along with other fragments with higher molecular weight. The results from above will be presented along with the results from other techniques including UV/VIS and elemental analysis. This research is valuable because compounds like these could potentially lead to new treatments for diabetes that do not require typical treatments such as insulin injections.

Presentation Index: T2
Department: Chemistry
Student Presenter(s): Wenz, Donald

Time: 2:00 p.m.
Project Sponsor(s):
Mahroof-Tahir, Mohammad

Hormonal Changes From Copulation to Fatherhood in Rats

Infanticide is a behavioral characteristic displayed by both adult male and female rats. In male rats, coital ejaculation has been shown to trigger a neural timing system that postpones infanticide near the time of birth for sired pups. In this study, an attempt to characterize the hormonal fluctuations involved in the copulatory induced-neural timing system in male rats will be made. In addition, hormonal manipulations consistent with the peripheral physiological levels in this neural timing system will be explored in sexually inexperienced male rats. The influence of the resulting copulatory hormones on infanticide will also be examined. Understanding the hormonal fluctuations generated by copulation and their role in parental behavior in rats may provide insight to similar mechanisms in other mammals.

Presentation Index: T3
Department: Biological Sciences
Student Presenter(s): Vocelka, Luke; Grosz, Danielle

Time: 2:00 p.m.
Project Sponsor(s):
Tubbiola, Maureen; Wolff, Jerry

Elder Abuse and Neglect

This review explores the ethical issues and identifies professional guidelines for counselors confronted with dilemmas related to elder abuse and neglect. The paper includes information from professional journals, the American Counseling Association Ethics Code, the American Psychological Association Ethics Code and Minnesota Law. Findings show that elder abuse is a difficult and timely concern, counselors must work to improve attitudes toward elderly, be aware of their own attitudes, report abuse, work to shorten response time following report, and continue to research this significant problem. Counselors who are well prepared to respond to elder abuse will provide advocacy and professional response to elders who have been neglected or abused.

Presentation Index: T4
Department: Community Psychology
Student Presenter(s): Ghosh, Sukanya

Time: 2:00 p.m.
Project Sponsor(s):
Jorgensen, Leeann

Energy in the Wind

Where will our energy come from in 2025? How viable are clean energy sources, such as wind sources, now that fossil fuels are becoming more scarce and their use as energy sources more environmentally and economically unsound? University students are queried about their thoughts on wind power as a viable energy source. Today's pros and cons of wind generated energy are discussed, along with comparisons to other possible, renewable energy sources. Will we find more of our energy in the wind in the future?

Presentation Index: T5
Department: Science
Student Presenter(s): Hall, Bruce

Time: 2:00 p.m.
Project Sponsor(s):
Minger, Mark

Abstracts

Session T **All Disciplines** **Ballroom**

Autonomous Meteorological Aircraft

This project's purpose is to explore the concept and feasibility of autonomous flight with a small-scale platform. The autonomous aircraft will be used to carry weather measuring devices. This will be a significant improvement over current weather measuring techniques. Our craft will give mobility to the devices used in making measurements of air temperature, air pressure, relative humidity, and wind velocity. A "quad-copter" platform was the chosen design for the autonomous aircraft. This design consists of an aluminum frame made up of four arms approximately a foot in length. Each of these arms supports a propeller directly driven by an electric motor. The scope of the project includes the construction of the aircraft along with the implementation of the necessary electrical components.

Presentation Index: T6
Department: Electrical and Computer Engineering
Student Presenter(s): Doheny, Ryan; Stein, Nick; Voegele, Eric

Time: 2:00 p.m.
Project Sponsor(s):
Petzold, Mark

Airport Foreign Object Debris Prevention

The Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) have identified that foreign object debris (FOD) is a hazard at airports. FOD is a monetary drain on the world-wide aviation industry, as well as a major safety hazard to human life. Besides reducing this hazard, our team has proposed a new system, with new procedures, to prevent FOD from entering runway and taxiway areas at class B airports. Through qualitative literature review, along with critical analysis of the proposed design by airport ground operations managers, our team has developed a feasible system using fluid dynamics to prevent FOD at major airports. The end-goal of this design is to reduce the negative effects that FOD has on major airports. Findings will also be summarized and presented at the Federal Aviation Administration Design Competition for Universities.

Presentation Index: T7
Department: Aviation
Student Presenter(s): Arnfelt, Nickolas; Courneya, Jonas; Weiss, Kevin

Time: 2:00 p.m.
Project Sponsor(s):
Aceves, Robert

The Artificial Neuron

One of the most intriguing endeavors of mankind has been to replicate nature and all natural processes. Along with everything else, the human brain has been one of the most researched areas in this perspective. Although we might be far from comprehending it to a measurable standard, neural networks has made admirable leaps in this scenario. Hence, my poster will introduce the fundamental unit of neural networks, the artificial neuron. This neuron builds up into many useful networks which have greatly aided scientists and researchers, world over, in understanding complex data trends and decisive techniques. For a person to understand this neuron, it is vital that the brain's basic functionality be presented. Therefore, my poster will also reflect this comparison and comment on the inspiration which has helped build up the neuron. An important proposition in this field is the back propagation algorithm. It came around at a time when the study of neural networks had been rendered completely dormant and further progress was imperceptible. The key idea of the algorithm is to not only to update and reorganize the networks at the output, as most traditional methods do, but to also penetrate into the networks' inner units and adjust it as close to its input structure as possible. My poster will also illustrate and briefly introduce techniques for approximating functions and provide key examples of the progress made in neural. The goal of the poster is to leave the audience with an awe-inspiring idea of this tremendous field and its potential, as well as to explain the current position and trends for future pursuance.

Presentation Index: T8
Department: Electrical and Computer Engineering
Student Presenter(s): Sajid, Noureen

Time: 2:00 p.m.
Project Sponsor(s):
Zheng, Yi

Geothermal Energy

With the ever increasing energy requirements of the United States, it is imperative that new forms of renewable sources of energy be developed. A promising renewable energy source which could be developed to supply over ten percent of the United States electricity is geothermal energy. In order for geothermal energy to be developed, the government and the private sector must invest in research, development, and exploration of geothermal energy. This is a very important science technology and society issue that needs to be explored in order to insure the United States continues to have a surplus of energy into the future. A survey was given to the 190 students in the spring 2007 Earth and Atmospheric Science 109 class. The survey was used to determine the student's knowledge, beliefs, and sacrifices they would be willing to make in association with geothermal energy and renewable energy sources. The results of the survey revealed Saint Cloud State University students are well aware of what renewable energy resources are, but a slight majority of students are unclear on what and how geothermal energy is obtained. A slight majority of students were not willing to pay more for energy to aid in the development of geothermal energy in the United States. It is clear from the results of the survey that students at Saint Cloud State University are aware of the importance of investing in renewable energy sources, but many students aren't aware of the vast potential of geothermal energy in the United States. If geothermal energy is to be developed into a major energy source of this country, the public needs to be informed and educated by the government and the media about the science, economics, and potential of geothermal energy.

Presentation Index: T9
Department: Biological Sciences
Student Presenter(s): Rockow, Nathan

Time: 2:00 p.m.
Project Sponsor(s):
Simpson, Patricia

Digital Modulation Classification on Software Defined Radio

Modulation is mapping discrete digital information into analog sinusoidal waveform. There are various modulation schemes in digital wireless communications. In the current digital communication system, the transmitter and receiver side predefined the modulation scheme. The software defined radio is radio technology where most, if not all, signal processing is on software domain. This highly reconfigurable radio system can change its frequency as well as modulation scheme. This requires the radio system to be smart enough to recognize a digital modulation scheme based on its receiving signals with out any other external parameters. This research is to develop and implement an automatic digital modulation scheme recognition technique. In this presentation, a brief introduction of digital modulation, current mobile communication, software defined radio system and modulation recognition technique will be discussed.

Presentation Index: T10
Time: 2:00 p.m.
Department: Electrical and Computer Engineering
Project Sponsor(s):
Student Presenter(s): Choi, Sung Yeol
Petzold, Mark

Low Voltage Analog Circuit Design Techniques

The fast growing world prefers the use of compact devices. For a device to be compact, one of the important assumptions is that it should dissipate less power. In order for that to be possible, the circuit should work with less voltage. This is a challenging aspect for a circuit designer. This poster describes the various low voltage design techniques, and discusses the merits and demerits of their operation.

Presentation Index: T11
Time: 2:00 p.m.
Department: Electrical and Computer Engineering
Project Sponsor(s):
Student Presenter(s): Paturi, Naga Sameeraj
Zheng, Yi

PAPR Reduction in OFDM

The basic idea of the multi-access techniques is to divide the available bandwidth among different users. The trick lies with the fact that no user utilizes all the available bandwidth at all the times. Orthogonal Frequency Division Multiplexing (OFDM) is one such technique that utilizes the available bandwidth very efficiently. Here, the basic idea is to transmit the high rate data-stream over a number of low rate sub-carriers to reduce the inter-symbol interference (ISI). As compared with conventional multiplexing techniques OFDM has many advantages like reduced inter-symbol interference, crosstalk & high spectral efficiency but one of the major drawbacks that somewhat restricts the use of OFDM is the high Peak to Average Power Ratio (PAPR). This high PAPR mainly results from the constructive combination of different sinusoidal waveforms at the output of OFDM. The drawback of high PAPR is that it requires the Power Amplifiers at the transmitter side to operate with linear characteristics in this large dynamic range. Due to this the power efficiency of the system is severely affected. So to overcome this disadvantage of OFDM many PAPR reduction techniques have been proposed. Here, I try to summarize some of the important PAPR reduction techniques.

Presentation Index: T12
Time: 2:00 p.m.
Department: Electrical and Computer Engineering
Project Sponsor(s):
Student Presenter(s): Gill, Satinder
Yao, Aiping

Development of Nucleic Acid Aptamer for Neuronal Nicotinic Acetylcholine Receptor Subtype Alpha-4-Beta-2

Ligand gated ion-channel proteins play a major role in signal communication in the brain. A sub-class of these ion channels is neuronal nicotinic acetylcholine receptors (nAchR). When nAchR have mutations, they cause the gated ion channel to stay in an open confirmation allowing the overflow of cations. This overflow causes epileptic seizures. This project looks at the alpha-4-beta-2 subtype of nAchR, amino acid substitutions in this protein are mainly responsible for autosomal dominant nocturnal frontal lobe epilepsy (ADNFLE). By systematic evolution of ligands by exponential enrichment (SELEX), we plan to identify, isolate, and amplify a nucleic acid aptamer for the alpha-4-beta-2 subtype. Our preliminary results show that our procedures for isolation of the alpha-4-beta-2 protein subtype are sufficient, and this is based on the Bradford method and Hartree-Lowry protein assays used for protein quantification.

Presentation Index: T13
Time: 2:00 p.m.
Department: Chemistry
Project Sponsor(s):
Student Presenter(s): Hein, Jason
Ramakrishnan, Latha

An Investigation of the Link Students Make Between Real Life Examples and Particulate Drawings of the Phases of Matter

Students' understanding of particulate level drawings, and their ability to link these drawings to real-life examples, is fundamental to students understanding chemistry. Our study suggests that students have misconceptions regarding the particulate level drawings of the phases of matter and real-life examples of the states of matter. This study will help educators address those misconceptions in their courses. We performed a content analysis of current textbooks. Student surveys offered information about student understanding of the phases of matter, while results from think-aloud protocols provided an in-depth look at students' understanding. Possible correlations between textbook content, surveys and think-aloud results will be discussed. Future research ideas will be discussed as well.

Presentation Index: T14
Time: 2:00 p.m.
Department: Chemistry
Project Sponsor(s):
Student Presenter(s): Hanson, Jessica
Krystyniak, Rebecca

Preparation of Farnesyl Pyrophosphate Analogues: Competitive Inhibitors of Farnesyl Protein Transferase

Currently, many of the drugs used in chemotherapy are toxic. The development of less harmful chemotherapeutic agents is a major goal in cancer research. The RAS protein, when mutated, is responsible for 30% of all human cancers and is an important target in such research. The function of RAS is to act as an on/off switch for cell growth. Mutant RAS behaves as a broken switch, leading to unregulated cell growth and tumor formation. In order for RAS proteins to perform their function, they must first bind with farnesyl pyrophosphate. This reaction is catalyzed by the enzyme farnesyl protein transferase (FPTase). If the RAS protein fails to bind with farnesyl pyrophosphate, it cannot cause unregulated cell growth. Current research focuses on the design of farnesyl pyrophosphate analogues that will serve as competitive inhibitors of FPTase. These analogues, containing aromatic rings, will potentially bind more tightly to the enzyme active site.

Presentation Index: T15
Time: 2:00 p.m.
Department: Chemistry
Project Sponsor(s):
Student Presenter(s): Albrecht, Sarah
Mechelke, Mark

Is it Safe to Drink the Water?: Filtering Algal Toxins in Rural Settings

The health and vitality of freshwater lakes and rivers are of the utmost importance to human populations due to the substantial water consumption and recreational needs. As human activity and demand have increased, the need to conserve and manage the welfare of these freshwater systems has been a topic of concern. In recent years the issues of cyanobacterial blooms and the cyanotoxins produced have called into question the safety of freshwater systems. The water systems of Voyagers National Park allow me to examine a system where fulltime residents, part time residents, and summer visitors utilize the water both domestically and recreationally making it imperative that the toxic potential of the water is known. I have utilized three types of water monitoring techniques used in determining the human health risk of a freshwater system. These include light microscopy to verify cyanobacteria presence and cell density, polymerase chain reaction (PCR) to establish the presence of the gene in microcystin-LR producing cyanobacteria, and enzyme-linked immunosorbant assays (ELISA) to ascertain the toxin concentration of a water sample. However, due to weaknesses of each technique and nature of the toxin, I have concluded that it is safest to always assume that the water is contaminated. Therefore, I examined water filter/purification techniques to determine the most effective in removing microcystin-LR and reducing the associated human health risk. These techniques including sand, activated carbon, paper, ultraviolet photolysis, and boiling are typical and/or potential protection methods utilized by residents and visitors of Voyagers National Park. Further examination of commercially available water filter/purification systems allowed me to test the resilience of each system when used repeatedly.

Presentation Index: T16
Time: 2:00 p.m.
Department: Biological Sciences
Project Sponsor(s):
Student Presenter(s): Lindgren, Rachel
Julius, Matthew

Vanadium-Flavonoid Complexes as Inhibitors of Enzymes Involved in Glucose Metabolism

Diabetes, and its associated health complications, is one of the most prevalent causes of death in the world today. New cases have increased steadily from year to year. Certain vanadium complexes and salts have exhibited promising antidiabetic properties, which has resulted in extensive research on the development of vanadium-based antidiabetic drugs. As a result of these unique properties, two vanadium compounds, vanadyl-3-hydroxyflavone and vanadyl-5-hydroxyflavone, were synthesized. The focus of the research was to examine the vanadium compound's inhibition of â–glucosidase and phosphodiesterase, two enzymes that regulate metabolism of glucose. This was achieved by performing spectrophotometric enzyme assays for the respective enzymes and vanadium complexes. Results indicate that vanadyl-3-hydroxyflavone and vanadyl-5-hydroxyflavone inhibit the above enzymes. It is expected the results from this work will contribute to a better understanding of the fundamental properties of vanadium-flavonoid complexes and a clearer picture of their mode of action in the treatment of diabetes.

Presentation Index: T17
Time: 2:00 p.m.
Department: Chemistry
Project Sponsor(s):
Student Presenter(s): Kleven, Mark
Mahroof-Tahir, Mohammad; Sreerama, Lakshmaiah; Gregory, Dan

The First Annotation of the Phenylalanine, Tyrosine and Tryptophan Biosynthetic Pathways of Ammonifex Degensii

Ammonifex degensii is an obligate anaerobic chemolithoautotrophic (obtains energy from inorganic compounds and carbon from carbon dioxide) bacteria isolated from a volcanic hot spring in East Asia in 1994. Ammonifex is the archetype of a new genus (ammonium maker). Ammonifex degensii is an extremely thermophilic gram negative rod shaped bacterium with optimal growth occurring at 70 degrees C and a pH of 7.5. The genome of ammonifex degensii is 85% complete, funded by the Department of Energy Joint Genome Program. Saint Cloud State University is part of a consortium of institutions that make up the Collaborative Undergraduate Genomic Annotation Team. SCSU has undertaken the responsibility of using comparative genomics to identify the amino acid biosynthetic pathways.Phenylalanine, tyrosine and tryptophan are aromatic amino acids. Because of their complex structure, aromatic amino acids have a complex synthesis pathway. We hypothesize that these amino acids have biosynthetic pathways in ammonifex degensii, and that we will be able to identify the genes responsible for the synthesis of these amino acids using a comparative genomics approach.

Presentation Index: T18
Department: Biological Sciences
Student Presenter(s): Mboko, Wadzanai; Kleven, Mark; Maher, Michael; Jufar, Tewodros

Time: 2:00 p.m.
Project Sponsor(s):
Kvaal, Christopher

Biochemical Analysis of Hydrogen Cyanide (HCN) in Cassava Plant Products

Cassava is a staple food for millions of people living in developing countries in the tropics and mainly Africa. Cassava can grow during drought and in poor nutrient soil. The plant is rich in carbohydrates and protein. The plant also produces hydrogen cyanide (HCN) for its defense and it is present in the parts of the plant consumed as food. HCN causes a number of diseases including death. HCN in Cassava is present as a derivative that disappears over-time. Therefore testing Cassava for HCN before consumptions is very important to prevent its toxicities. There are a number of expensive methods by which one can monitor HCN levels in Cassava, however they are laborious and instrument intensive. Accordingly, we are in the process of developing a simple method for the biochemical analysis of HCN in cassava. The results of this study will be included in our presentation.

Presentation Index: T19
Department: Chemistry
Student Presenter(s): Daynuah, Kokpor

Time: 2:00 p.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

College Performance and Personality

The purpose of this study was to investigate the correlation of personality and college performance. It was hypothesized that students who were high in conscientiousness, low in neuroticism, and high in feminine traits would also have a high college grade point average (GPA). Participants were college undergraduate students who participated in the study for extra credit. It is predicted that there will be a significant positive correlation between conscientiousness and GPA along with femininity and college GPA. Also, there will be a negative correlation between neuroticism and GPA.

Presentation Index: T20
Department: Psychology
Student Presenter(s): Schlegal, Craig

Time: 2:00 p.m.
Project Sponsor(s):
Illies, Jody

Integrated Control of Common Tansy

The continued collaboration between St. Cloud State University and the Minnesota Department of Military Affairs has produced beneficial results for both institutions as well as for the number of SCSU students involved in this long-term collaboration . An agreement signed in 2003 allowed researchers from SCSU to access the two military training sites in order to provide recommendations and to produce a long-term management plan to control the invasive plant species on the training sites. As an ancillary result of this partnership two master thesis have been completed; one, includes the complete mapping of invasive plants at the two military training sites, and a predictive model for the spreading of several invasive plant species; the other, focuses on an integrated management plan of invasive species including biological, mechanical, and chemical control done for the last four years . Recently, the main focus is on common tansy (Tanacetum vulgare), one of the most problematic species at the largest of the two military training installations, Camp Ripley. Common tansy already covers an estimated area of 50 hectares. An ongoing experiment has been designed to test if integrating prescribed burning and chemical herbicide treatment has a greater affect in reducing common tansy than un-integrated treatments of prescribed burning or chemical herbicides alone. The scope of this poster will summarize the results of previous work of the project and the proposal of common tansy integrated control experiment, including preliminary results.

Presentation Index: T21
Department: Biological Sciences
Student Presenter(s): Carlyon, Joseph

Time: 2:00 p.m.
Project Sponsor(s):
Arriagada, Jorge

Dying Green

Death is very scary for most people and is a topic that is difficult for many to discuss. There are many decisions that have to be made when planning for one's funeral. Not only do humans consume resources while they are alive, but once they have passed away humans continue to stake claim to massive amounts of chemicals, precious metals, concrete, land, fossil fuels, and fertilizer. Green burial is the "green" solution to the environmental problems presented by traditional burial. Green burial is simple and ensures the burial site remains as natural as possible. One of the main questions asked in this research project was whether or not there was an environmental consequence of traditional burial. This paper analyzed the responses of a survey given to 100 people. It covered several different demographic groups in order to analyze whether a cultural shift surrounding the environmental impact of traditional burial was taking place. The survey showed that younger people (18-30) are most concerned about the effects of traditional burial on the environment. As with any environmental issue, often it takes a cultural shift in terms of information, attitudes, and beliefs before progress can be made. In this study, it would appear that the shift to green burial may begin with the people between 18 -30 years of age.

Presentation Index: T22
Time: 2:00 p.m.
Department: Environmental and Technological Studies
Project Sponsor(s):
Student Presenter(s): O'Toole, Kelly; Leonard, Rhonda; Lund, Andrew
Bender, Mitch

Should Changes be made in the Emergency Warning System for Severe Weather?

After a tornado hit the city of Rogers, MN in September of 2006, killing a 10 year old girl, many people were concerned whether the current severe weather emergency warning system is adequate to warn people of impending severe weather. Because I live in a rural area of Minnesota that is often hit by severe weather, I wanted to find out what a group of people who live and work in the same area knew, believed and had experienced with the current warning system. I surveyed the administration and teaching staff of the Watertown-Mayer Public Schools, asking the following questions: What do the teaching and administrative staffs of the Watertown-Mayer Public Schools know about severe weather warnings? What experiences do the teaching and administrative staffs of the Watertown-Mayer Public Schools have with severe weather situations? What opinions do the teaching and administrative staffs of the Watertown-Mayer Public Schools have about the current system for warning citizens about severe weather conditions? As a result of my research, I found that a large majority of those polled felt that the emergency warning sirens are effective. Half of the respondents felt that the system needs to be improved or changed to better warn all citizens. An alarming number of respondents reported that they could not hear the sirens from their homes. There was also a significant number of respondents that did not understand the signs and descriptions of severe weather. I concluded that educating our citizens, specifically this group of citizens, on the signs of approaching severe weather and the sources for getting updated information would help in improving the effectiveness of the emergency warning system.

Presentation Index: T23
Time: 2:00 p.m.
Department: Biological Sciences
Project Sponsor(s):
Student Presenter(s): Bjork, Michael
Simpson, Patricia

Paleolimnological Investigation of Lake Ogechie, MN: Inferring Paleoenvironment through Stratigraphic Analysis of Lake Core Sediments

Paleoenvironmental trends are characterized by a multi-parameter investigation of a 389cm sediment core collected from central Minnesota's Lake Ogechie. This core contains nearly a complete record of environmental changes from the final stages of the last glacial maximum (~10,000 years ago) to the present. Analysis of the bottom two-thirds of the core facilitates a baseline of historical environmental conditions, by which contemporary trends in the more recent sediments can be compared. The aim is to identify whether contemporary lake conditions (last 3,000 years) are a product of normal environmental fluctuations or if the impact of indigenous peoples on the ecology on the lake needs to be verified in concert with other preliminary studies. Radiocarbon (14C) dating provides the framework for sediment age and accumulation rates downcore while 210Pb dates allow for better resolution in the more contemporary sediments. Grain-size analysis and magnetic susceptibility corroborate the presence of glacial till in the bottom 25cm of the core apparent in lithology, and further supplement the estimated maximum core age at around 9,500 ya. Sediment geochemistry analysis is achieved through use of a broad spectrum Energy Dispersive X-ray Fluorescence Spectrometer (EDX) attached to a Scanning Electron Microscope (SEM). Changes in elemental composition throughout the core are present and correlate well with historical wet and dry periods evident in the lithography. 18O isotope data supports a highly volatile climate throughout the timeframe of the older sediments (3,000-10,000 ya.), where opposing temperature transitions take place routinely over relatively short periods supporting the intermittant wet/dry periods visible in the lithology. Conversely, climactic influences during the last 3,000 years appear to transition into a cooler, less variable climate, coinciding well with the onset of Lake Ogechie's stable lake phase still present today. This investigation is part of a larger effort being conducted by SCSU's Cultural and Environmental Learning Laboratory (CELL) group.

Presentation Index: T24
Time: 2:00 p.m.
Department: Biological Sciences
Project Sponsor(s):
Student Presenter(s): Hanson, Eric
Julius, Matthew

Avon Hills Conservation Action Plan

The Avon Hills is an area of land that extends throughout four townships in the central Minnesota region. Roughly 100,000 acres in size, the Avon Hills is recognized for its pristine waters, beautiful landscape, and rural nature. Large parcels of undisturbed land with areas of significant biodiversity make the Avon Hills a very unique setting. The Avon Hills Conservation Action Plan was developed to identify target areas (a species or ecosystem of interest) within the designated region and to create a plan for monitoring and protection. The targets were identified as eight unique habitats and/or species that are of the greatest importance and concern in the Avon Hills area. The investigators of this study assembled a team of knowledgeable experts to assist in the development of the project and to provide crucial information. Through meetings and interviews, research and data was collected by the principle investigators and entered into a Microsoft Excel workbook to track the progress and results. The workbook was provided by The Nature Conservancy. The principle investigators of this study, along with the assembly of experts, developed the Avon Hills Conservation Action Plan to assist in the protection of the area, as well as to educate local communities about the importance of the area.

Presentation Index: T25
Department: Environmental and Technological Studies
Student Presenter(s): Hayman, Michael; Fisher, Kala

Time: 2:00 p.m.
Project Sponsor(s):
Bender, Mitch

Comparative Risk Analysis of Abandoned Manure Basins

Utilization of earthen manure basins to store animal wastes is common practice throughout Minnesota due to their effectiveness and relatively cheap construction costs. Manures within these basins are a valuable source of nutrients for crops, however they must be managed appropriately to protect water resources. Some contaminants found within animal manures can pose a potential human or environmental health risk. One area of manure management which has not been thoroughly investigated is the risk posed by manure basins to water resources upon closure. A comparative risk assessment was performed on eight manure basins located in Stearns County. The risk assessment determined the amount and forms of contaminants present, compared risk levels to adjacent agriculture lands, and assessed the overall human or environmental health risks associated with manure basin closure, if any. The U.S. Department of Agriculture's Nitrate Leaching and Environmental Analysis software was used to assess NO3- leaching at the study sites. This data along with other statistical analysis was used to determine the comparative risks abandoned basins have to surrounding land use areas.

Presentation Index: T26
Department: Environmental and Technological Studies
Student Presenter(s): Storlien, Joseph

Time: 2:00 p.m.
Project Sponsor(s):
Bender, Mitch

Saharan Air Layer Vertical Profiles as Observed During NAMMA

The Saharan Air Layer (SAL) is a layer of air and dust that originates in the Saharan Desert and is advected across the Atlantic Ocean. It is generally characterized by warm, dry air and layers of increased dust concentration. It is necessary to understand the SAL because it may play a major role in suppressing tropical cyclone development over the Atlantic Ocean. In order to better understand how the SAL affects tropical cyclone development, the NASA African Monsoon Multidisciplinary Analysis (NAMMA) airborne field campaign, stationed in Cape Verde, collected extensive SAL data during August and September, 2006. In this study, the data set is closely examined in order to characterize the vertical structure of the SAL in terms of thermodynamic structure and dust loading. A comparison of vertical profiles obtained from non-SAL sampling and SAL sampling is conducted to identify the characteristics unique to the SAL. It is found that there is increased temperature and wind speed within the dust layer profiles. The SAL is also investigated as it is transported from the Sahara into the Eastern Atlantic Ocean to better understand how the dust layer height, thickness, and moisture levels change during the transport processes. The relationship between SAL and moisture is closely examined through the correlation between increased dust loading and moisture levels. The areas of increased dust loading are typically found between altitudes of 1 km to 6 km and their thickness ranges from 0.1 km to 2 km. Initial findings from this study show some dust layers contain high levels of moisture. This is contrary to previous understanding of Saharan dust layers.

Presentation Index: T27
Department: Earth and Atmospheric Sciences
Student Presenter(s): Kirstin, Gleicher

Time: 2:00 p.m.
Project Sponsor(s):
Hansen, Anthony

Hydrologic and Hydraulic Analysis of the Upper Rum River System, from the Mouth of the Lake Mille Lacs to the mouth of Lake Ogechie, Kathio State Park, Minnesota

This study intends to determine the relevance of hydrologic and hydraulic components of the upper Rum River system, from Lake Mille Lacs to Buckmore Dam at the outlet of Lake Ogechie, located in Kathio State Park, Minnesota. This study includes both field work and numerical simulations of the system. The field work involves a semi-permanent monitoring program of levels in Lake Ogechie, water flow through the system, the relation and response of Lake Ogechie to changes in Lake Mille Lacs water levels, and the effects of Hwy 10 culvert in the hydraulic behavior at the river as it leaves Mille Lacs Lake. Numerical simulations are used as an aid to the field work and to gain a better understanding of the behavior and response of the system to different inputs and changes imposed by human actions. Since the hydrology of this system is not completely known and understood, this study will be important to future human activities and environmental projects in the area.

Presentation Index: T28
Department: Earth and Atmospheric Sciences
Student Presenter(s): Conboy, Lindsey

Time: 2:00 p.m.
Project Sponsor(s):
Fedele, Juan

The Influence of Self-Esteem and Stress on Performance

This study examines the relationship between self-esteem and trait stress as well as how these factors influence performance in a stressful and non-stressful situation. Undergraduate participants' levels of self-esteem and stress were assessed through self-report scales and their performance on a verbal reasoning task was measured in one of two conditions: stressful and normal. It was hypothesized that individuals with higher self-esteem and individuals with lower levels of stress would perform better in a stressful situation than would individuals with lower self-esteem and higher stress levels. Last, individuals with higher self-esteem would perform better in a normal situation than individuals with lower self-esteem.

Presentation Index: T29
Department: Psychology
Student Presenter(s): Bratsch, Allison

Time: 2:00 p.m.
Project Sponsor(s):
Illies, Jody

Understanding Leadership: The Role of Performance Pressure and Social Intelligence

Social intelligence has been an important factor in leadership research, and the purpose of our study was to further examine that role, in combination with a moderate amount of external performance pressure during a leadership simulation. A limited amount of research has been dedicated to exploring what leadership qualities are most important for the ability to perform well in a leadership situation. Therefore, it is imperative to investigate what role performance pressure and social intelligence play, in order to better understand leader behavior. Participants in this study completed an ill-defined problem-solving activity looking at the interplay between social intelligence, performance pressure and leadership. We expect results to show that participants high in social intelligence would perform best in a leader situation while under moderate external performance pressure.

Presentation Index: T30
Department: Psychology
Student Presenter(s): Basarich, April; Murn, Lindsay

Time: 2:00 p.m.
Project Sponsor(s):
Illies, Jody

SCSU Survey Feeling Thermometer

Our poster will present the “feeling thermometer” results from the Fall 2007 Statewide Survey conducted by the St. Cloud State University Survey. The poster will include the results from the 2007 “feeling thermometer,” as well as longitudinal data collected on certain political leaders. Information regarding the methodology of the survey and the utility of the “feeling thermometer” will also be explored.

Presentation Index: T31
Department: Political Science; Statistics
Student Presenter(s): Hofstad, Luke; Otteson, Rhonda

Time: 2:00 p.m.
Project Sponsor(s):
Frank, Stephen; Robinson, David; Wagner, Steve

Sports Geography

In recent decades, geography as a discipline has undergone many modifications and has expanded its curriculum greatly. There are not any clear boundaries as to what is and what is not considered to be part of the study of geography. Recently, the concept of sports geography, or the geography of sports, has sparked some interest in professional geographers and cartographers. Geographic Information Systems and the World Wide Web have enabled the study and display of sports and athletes on detailed maps which help everyone, mostly avid sports fans, to better understand the geography of sports. This article will analyze a detailed map of every U.S.-born professional athlete who currently plays in the National Football League, National Basketball Association, National Hockey League and Major League Baseball. It will attempt to explain trends and will include a thorough regional analysis of the United States and its athletes.

Presentation Index: T32
Department: Geography
Student Presenter(s): Kanewischer, Dustin

Time: 2:00 p.m.
Project Sponsor(s):
John, Gareth

Isolation and Characterization of Bacillus Cereus from Common Food Products

Bacillus cereus are microorganisms from the family of bacteria Bacillaceae and are found in soil samples throughout the world. The organisms have the ability to form endospores. Spore formation occurs when the organism is living in an unsustainable environment, and the bacterium goes into a resting state. Spores allow the organisms to survive for extended periods where either osmotic pressure or lack of water would kill vegetative cells; for example in food products like honey and rice. In this study, food products were tested for the presence of B. cereus spores using a medium which selected for the growth of this organism and allowed vegetative cells to grow. The organisms were isolated from several brands of honey, rice, soup mixes, and spices. The food product source was streaked on a plate of Bacillus cereus selective agar and allowed to grow. Each colony presenting with characteristic features was then streaked for isolation. Then a number of different tests were performed to confirm the isolation of B. cereus. The organisms were characterized by testing for motility, lecithinase and hemolysin production, and penicillin resistance. This provided a presumptive identification for B. cereus. Future testing of isolates will involve Polymerase Chain Reaction (PCR) to isolate pure DNA from the bacteria, and DNA sequencing of the 16S ribosomal RNA. These tests would not only confirm B. cereus organisms, but could also identify vital genes in the bacterial genome. This research proves that B. cereus organisms are found in common food products consumed by millions of people every day. It is necessary to study B. cereus in order to better understand this organism and its importance as a food contaminant.

Presentation Index: T33
Department: Biological Sciences
Student Presenter(s): Lindfors, Kristen

Time: 2:00 p.m.
Project Sponsor(s):
Schrank, Gordon; Gulrud, Kristin

Abstinence and Moderation Treatment for Alcohol Abuse: Considerations for Counselors

This brief report reviews various research on the topic of alcohol treatment, and aims to educate counselors about special issues in providing treatment to an alcohol abusing client. Opposing theoretical viewpoints (abstinence and moderation) are examined in the context of current research. Because counselors need to relate those viewpoints to the change process for clients, the Transtheoretical Model of Change is outlined to expand understanding about how change occurs. With this knowledge, counselors can better understand how to develop goals for alcohol abusing clients. Ethical considerations that counselors need to consider are highlighted throughout. To be ethically competent, counselors must integrate current knowledge and apply it appropriately to therapeutic interventions.

Presentation Index: T34
Department: Community Psychology
Student Presenter(s): Hansen, Zachary

Time: 2:00 p.m.
Project Sponsor(s):
Jorgensen, Leeann

Coping and Interaction Among Hospice Nurses: An Investigation of the Impact of Spirituality Programs

There is a growing fascination with spirituality and its relationship to the workplace. The proposed research investigates the effect of spirituality programs in relationship to coping and interaction in hospice settings. Twenty-one nurses from 9 hospice locations within the Minneapolis/St. Paul and St. Cloud, Minnesota area will be interviewed using both open-ended questions and those which resemble a more structured format. This concurrent mixed methods study will use an analytical approach to assess interaction and coping ability in the social context from which work activities take place. Data from closed questions will be coded and responses to open-ended questions will be categorized. Results will be made available to inform helping professions of the impact of spiritual related programming.

Presentation Index: T35
Department: Community Psychology
Student Presenter(s): Cammilleri, Dana

Time: 2:00 p.m.
Project Sponsor(s):
Jorgensen, Leeann

Comparison of Metabolic Power Between Seated Elliptical and Recumbent Ergometers at the Same Perceived Exertion

The general population usually uses machines in a gym to maintain fitness and burn extra calories. A study comparing energy expenditure demonstrated a higher metabolic power with treadmill running compared to a cycle ergometer when exercising at the same perceived exertion (Moyna, 2001). If exercise economy or mechanical power were different between a seated elliptical and a recumbent ergometer at the same perceived exertion, metabolic power would differ. PURPOSE: To determine if metabolic (kcal/min) power is different between a seated-elliptical and recumbent cycle with subjects exercising at a perceived exertion of 10-11, neither light nor heavy. METHODS: Ten physically active, college-age subjects were tested on a seated-elliptical and recumbent ergometer. A pre-trial visit familiarized subjects with both devices. Subjects performed at a perceived exertion of 10-11 using a 20 point Borg scale for 10 minutes on both devices. Toward the end of each 10 minute steady state ride, measurements were made to determine the subject's mechanical and metabolic power. Mechanical power was determined by measuring pedal forces, pedal displacement and time, and handle forces on the seated-elliptical device. Metabolic power was measured with a metabolic cart using one minute averages. Subjects rested for10 minutes between exercise trials and test order of the two devices was randomized to eliminate a possible order affect. Power outputs between devices were compared with a paired, two-tailed t-test, and alpha of 0.05 for significance. RESULTS: Metabolic power was ~23% higher (7.0±0.76kcal, 5.7±1.24kcal, $p<0.04$) on the seated-elliptical than recumbent ergometer despite having the same perceived exertion. Mechanical power was also ~22% higher (128±21W, 105±26W, $p<0.002$) on the seated-elliptical ergometer. CONCLUSIONS: Mechanical and metabolic powers were higher on a seated-elliptical at the same perceived exertion (10-11). This suggests that people exercising at the same perceived exertion burn more calories when using a seated-elliptical ergometer compared to a recumbent cycle ergometer.

Presentation Index: T36
Department: Health, Phy Ed, Rec, & Sport Science
Student Presenter(s): Schapman, John

Time: 2:00 p.m.
Project Sponsor(s):
Bacharach, David

Automated Lawn Mowing System

Lawn maintenance is often a time-consuming and physically demanding task that homeowners must either handle themselves or pay a fee to have handled by laborers. This research is targeted at developing a system to remove the requirement of physical work and observation by the homeowner in the maintenance of the typical Minnesota lawn. Options for creating such a system were analyzed based on cost, efficiency, usability and safety among many criteria. It was determined that an electrically powered system would provide the best balance and most flexibility to meet demands. Being that such a system is exposed to sunlight during its operation, it is fitted with solar panels and charged during downtime. Upon completion, the Automated Lawn Care System will provide homeowners with an autonomous solution to general lawn care and maintenance.

Presentation Index: T37
Department: Electrical and Computer Engineering
Student Presenter(s): Baumann, Patrick; Dombrovski, Holly

Time: 2:00 p.m.
Project Sponsor(s):
Yao, Aiping

Signal Integrity Basics

With the explosion of information technology and the arrival of Internet age, people need to be connected all the time through various high-speed digital communication/computing systems. People are more and more relying on the internet to be entertained with music and videos streaming. The cases in point are hugely popular Youtube, Google radio and numerous online movie portals. Applications like Skype, MSN, etc. are providing video conferencing facilities along with the basic chat service. All these require very high speed data transmission. At lower frequencies the signals remain within data characterization and the system performs as designed. But as system speed increases, the radio frequency impacts not only the digital properties, but also the analog effects within the system. The EM radiation degrades the data quality and then the data speed: i.e.- the shortest lines too might suffer from crosstalk; interconnects etc. become source of reflection. In this enormous market for high speed devices, it becomes very necessary to analyze a circuit and provide a layout for minimal signal degradation and reliable operation. Signal Integrity has thus emerged as a branch of technology with high demand. Without these analysis products may fail to perform costing the company dearly. Engineers use software tools like Symbeor, SPECCTRAQuest (Cadence), etc. to simulate the characteristics of a circuit layout. Few of us from the ECE department are striving to develop a similar tool for Force 10 Networks based on numerical methods with the help of MATLAB.

Presentation Index: T38
Department: Electrical and Computer Engineering
Student Presenter(s): Mukherjee, Debashree

Time: 2:00 p.m.
Project Sponsor(s):
Zheng, Yi; Goergen, Joel

VoIP technology

Internet connection is so widespread that almost every corner of the globe is connected through wire or wireless. Voice over Internet Protocol (VoIP) technology takes advantage of this widespread internet connectivity and nature of digital communications. VoIP offers many advantages over traditional Public Switched Telephone Network (PSTN) systems. However, VoIP has its disadvantages, as well. In this presentation, overview of VoIP technology and comparison over PSTN system will be discussed.

Presentation Index: T39
Department: Electrical and Computer Engineering
Student Presenter(s): Liu, Yu

Time: 2:00 p.m.
Project Sponsor(s):
Zheng, Yi

Analyzing Signal Integrity in High Speed Print Circuit Boards

Signal integrity has become an important field of study for high speed computer network devices and radio frequency (RF) circuit design. As communication data transmission approaches rates of Giga bits per second for advanced computer network devices, RF radiation, cross talk, attenuation, reflection and inter-symbol interference become dominating factors limiting the performance of network devices. Industry standards for signal integrity are always touting new methods to increase signal propagation speed. For example, improved signal speed and integrity can be achieved by impedance matching at discontinuities and signal coding to reduce interference. These new methods are obtained by substantial building, testing and re-building of print circuit boards with back drill, stub and padding improvements. Satisfactory results are usually obtained after extensive experimentation, but at a very high cost. This project examines how extensive testing can be done with the right 3D software governed by electromagnetic (EM) equations, with appropriate boundary conditions. The software will be used to obtain simulation results from imported circuit designs. I hypothesize that these simulations will correspond to actual measurements obtained from physical equipment. Thus, the performance of circuits can be improved upon by using analysis results from these simulations. In addition, performing analysis on a physical circuit board with the use of a 3D EM solver minimizes cost of board design and fabrication. The preliminary experimental results supported my first hypothesis and showed that 3D solvers provide in-depth analysis of a circuit board when simulations are appropriately modeled. I intend to show, through experimentation, that extensive practical testing can be replaced with 3D analysis. Thus, the need for test board fabrication will be greatly reduced, making funding available for other research.

Presentation Index: T40
Department: Electrical and Computer Engineering
Student Presenter(s): Nwachukwu, Chudy

Time: 2:00 p.m.
Project Sponsor(s):
Zheng, Yi; Goergen, Joel; Tomaszewski, Pete

Should We Continue to Explore Space?

Ever since Alan Shepard Jr. was first sent up into space, and John F. Kennedy proposed sending a man to the moon, the space program has been under direct scrutiny about whether or not its services are benefiting the public. My poster will present facts about the space program and what has come out of this wonderful adventure. After finding the facts, I used a survey to ask SCSU students what they knew about the space program. I asked the students what the space program has done for the US, why they think it is important and what they would be willing to do to ensure the survival of the space program. From the results, I have complied graphs and conclusions about what these students thought. Some of their responses really surprised me, while others were exactly where I thought they would be. For example, there were many people who were willing to pay a surcharge for products developed by the space program, but even more were not.

Presentation Index: T41
Department: Science
Student Presenter(s): Carlson, Jenna

Time: 2:00 p.m.
Project Sponsor(s):
Minger, Mark

Photon Production in High-Energy Heavy Ion Collisions

Rates of photon production from super-heated subatomic matter formed in high-energy heavy ion collisions are studied. Contributions from boson and fermion particle decays are considered as well as contributions from previously ignored scattering processes. A formula from the literature describing production rates via boson decays is generalized to include chemical potential effects, and a similar formula for fermion decays is developed. In addition, a formula for estimating production rates from strange particle scattering is derived and studied for several reaction channels. We find several important contributions to photon production which are not present in the literature and should be included in future work.

Presentation Index: T42
Department: Physics
Student Presenter(s): Albright, Michael

Time: 2:00 p.m.
Project Sponsor(s):
Haglin, Kevin

Atmospheric Wind Interferometer Characterization

Upper atmospheric wind measurements are valuable in gaining a better understanding of upper atmospheric dynamics. As part of a NASA funded program we are developing a laboratory prototype of a small, rugged optical instrument that may eventually be capable of measuring atmospheric winds from a satellite platform. The instrument contains a Spatial Heterodyne Spectrometer which produces interference fringes. Measuring the phase of these fringes allows us to determine the wind speed. The accuracy of measuring the fringe phase, and therefore the wind speed, is limited by practical difficulties such as thermal drift of the instrument and the finite signal-to-noise ratio of the measured fringe pattern. In this poster we will describe our laboratory set-up for generating interference fringes and tests of how accurately the fringe phase can be measured. We will also compare our phase precision results with a theoretical model.

Presentation Index: T43
Department: Physics
Student Presenter(s): Fuchs, Brody

Time: 2:00 p.m.
Project Sponsor(s):
Harlander, John

Investigations of Temperature Dependence of Charge Carrier Mobilities

While organic semiconductors have started to be used in commercial devices, their full potential will not be realized without further characterization of their charge carrier transport properties. To understand these properties the temperature dependence of the charge carrier mobility needs to be investigated. At low temperatures, charge carriers are not associated with a particular molecule and band-like transport occurs. As temperatures increase, thermal motion perturbs the path of the charge carriers and mobilities decrease. Mobilities also decrease at extremely low temperatures due to the presence of traps. When the thermal energy of the charge carrier is less then the trapping energies the charge carrier mobility falls off sharply. Finally, at higher temperatures the charge carriers become thermally activated and 'jump' from molecule to molecule resulting in a hopping transport mechanism which increases the mobility. In our research, we study temperature dependant mobilities using a time of flight technique in a helium cryostat to gain a better understand of these transport mechanisms.

Presentation Index: T44
Department: Physics
Student Presenter(s): Pundsack, Thomas; Haugen, Neale

Time: 2:00 p.m.
Project Sponsor(s):
Lidberg, Russell

The First Annotation of the Valine, Leucine and Isoleucine Biosynthetic Pathways of Ammonifex Degensii

Ammonifex degensii is an obligate anaerobic chemolithoautotrophic (obtains energy from inorganic compounds and carbon from CO2) bacteria isolated from a volcanic hot spring in East Asia in 1994. Ammonifex is the archetype of a new genus (¡°ammonium maker¡±). Ammonifex degensii is an extremely thermophilic gram negative rod shaped bacterium with optimal growth occurring at 70¢ªC and a pH of 7.5. The genome of Ammonifex degensii is 85% complete, funded by the Department of Energy Joint Genome Program. Saint Cloud State University is part of a consortium of institutions that make up the Collaborative Undergraduate Genomic Annotation Team. SCSU has undertaken the responsibility of using comparative genomics to identify the amino acid biosynthetic pathways. Valine, isoleucine and leucine are three nonpolar aliphatic amino acids. Valine is the smallest of the three, while leucine and isoleucine represent very similar amino acids. We hypothesize that these amino acids have biosynthetic pathways in Ammonifex degensii, and that we will be able to identify the genes responsible for the synthesis of these amino acids using a comparative genomics approach.

Presentation Index: T45
Department: Biological Sciences
Student Presenter(s): Piotrowski, Aaron; Perera, Deshani; Shrestha, Sharad; Gast, Dawn

Time: 2:00 p.m.
Project Sponsor(s):
Kvaal, Christopher

Antiviral Chemotherapeutics from Natural Products: Strategic Design, Designed Synthesis & Characterization of a New Series of Bioactive Triterpenoids

From ancient period, it is well known that Natural Products and their Extracts are widely used for treatment and curing of several common human and animal diseases. Modern research and development in Natural Products Chemistry have shown the bright perspectives of their pre-clinical and clinical use as potential antiviral and antibacterial agents. Recent biological studies of some Triterpene based natural products revealed remarkable biological activity and other valuable pharmacological properties. For instance, Betulinic Acid and Betulin 3-caffeate exhibited strong anti-HIV and anti-Cancer activity in vitro and in vivo, and identified them as a new class of potential anti-cancer and anti-HIV agents with a novel mechanism of antiviral action. The ultimate goal of our multifaceted research project is to study and develop a thorough pathway of strategic design, designed synthesis, modification, characterization and bioactivity evaluation for a new series of highly efficacious triterpenoid based antiviral chemotherapeutics of novel drug action. At a relatively earlier stage, as an integral part of the project, deliberately we will be focused on Betulinic Acid. A novel method for semi-synthesis of Betulinic acid will be discussed. A new pathway for selective Protection and Selective Functionalization of Betulinic Acid will be demonstrated. Strategic Design for Selective Derivatization and Structure-Activity Relation (SAR) will be illustrated. And, several new synthetic methodologies for preparing Betulinic Acid Derivatives will be outlined.

Presentation Index: T46
Department: Chemistry
Student Presenter(s): Shrestha, Sharad; Manandhar, Sonal

Time: 2:00 p.m.
Project Sponsor(s):
Munshi, Kaylan

Anticancer Activity of Ru-Benzimidazol Metal Complexes

One of the mostly widely used inorganic compounds is Cisplatin. Cisplatin-based therapies are used throughout the world to treat testicular and ovarian cancers. The discovery of other metal complexes as anticancer drugs for their use to treat drug resistant tumors and development of alternative therapies has gained importance. In this regard we have developed several ruthenium-benzimidazole compounds and assayed for their anticancer activities. Tested in this study were ligand 3 [2-phenyl benzimidazole] and its corresponding complex RU 3 [(Rucl3(PhBzIH)3]; ligand 6 [1-m-hydroxbenzyl-2-m-hydroxy phenyl benzimidazole] and its corresponding complex RU 9 [RuCl3(m-HPhBBzI)2]; Ligand 7 (1-p-hydroxybenzyl-2-p-hydroxy phenyl benzimidazole] and its corresponding complex RU 8 [RuCl3,(CO)2(p-HphBBzI)2]. Two human breast adenocarcinoma cell lines MCF-7/0 and MCF-7/OttA were used for testing anticancer activities. These ruthenium complexes tested exhibit a range of anticancer activities; LC50 values- 50-150 µM. Ruthenium itself is not toxic to the cells.

Presentation Index: T47
Department: Chemistry
Student Presenter(s): Mahroof, Taqdees

Time: 2:00 p.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

The Role of CDC-4 in the Degradation of PGC-1 and Human Diseases

PGC-1 is a human protein that plays a role in energy metabolism. Misregulation of this protein has been shown to play a role in diabetes, obesity and certain neurological disorders. Two forms of this protein are known, PGC-1á and PGC-1â. We recently demonstrated that another human protein known as CDC-4 targets PGC-1á for degradation by adding ubiquitin to it. This ubiquitylation leads to destruction of the PGC-1á protein and may be linked to some human diseases. Much like PGC-1á, PGC-1 has similar CDC-4 binding sites and physically binds to CDC-4. Here we are testing whether CDC-4 also adds ubiquitin to PGC-1â.

Presentation Index: T48
Department: Biological Sciences
Student Presenter(s): Schwinn, Andrew; Zimdars, Laraine

Time: 2:00 p.m.
Project Sponsor(s):
Olson, Brian

The First Annotation of the Glycine and Serine Biosynthetic Pathways of Ammonifex Degensii

Ammonifex degensii is an obligate anaerobic chemolithoautotrophic (obtains energy from inorganic compounds and carbon from carbon dioxide) bacteria isolated from a volcanic hot spring in East Asia in 1994. Ammonifex is the archetype of a new genus (ammonium maker). Ammonifex degensii is an extremely thermophilic gram negative rod shaped bacterium with optimal growth occurring at 70 degrees C and a pH of 7.5. The genome of ammonifex degensii is 85% complete, funded by the Department of Energy Joint Genome Program. Saint Cloud State University is part of a consortium of institutions that make up the Collaborative Undergraduate Genomic Annotation Team. SCSU has undertaken the responsibility of using comparative genomics to identify the amino acid biosynthetic pathways. Glycine is a nonpolar aliphatic amino acid and is the smallest of the 20 amino acids. Serine is a polar uncharged amino acid that differes from glycine by a hydroxyl group. We hypothesize that these amono acids have biosynthetic pathways in ammonifes degensii, and that we will be able to identify the genes responsible for the synthesis of these amino acids using a comparative genomics approach.

Presentation Index: T49
Department: Biological Sciences
Student Presenter(s): Petersen, David; Paudel, Omkar; Kone, Nabi; Chin, Fei T

Time: 2:00 p.m.
Project Sponsor(s):
Kvaal, Christopher

Identification and Characterization of Aldehyde Dehydrogenase in Fathead Minnow Tissues

Ethylene glycol ethers (EGEs) are monoalkyl or aryl ethers of ethylene glycol and are widely used solvents in industrial and household products. EGEs are metabolized by aldehyde dehydrogenases (ALDHs) to their corresponding acids and it is believed to be the rate determining step in the EGE metabolism. In mammals, the acid metabolites cause various toxicities including carcinogenesis and mutagenesis. EGEs are discharged into waterways with relatively high concentration and aquatic animals such as fathead minnows and frogs are exposed to these chemicals. Our studies show that EGE toxicities are likely to be seen in the above aquatic animals. Both fathead minnows and frogs have been shown to contain ALDHs and they catalyze oxidation of EGE aldehydes. The identity of these ALDHs is currently being investigated using in various tissues of fathead minnows.

Presentation Index: T50
Department: Chemistry
Student Presenter(s): Paudel, Omkar

Time: 2:00 p.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

The First Annotation of the Gluamate and Glutamine Biosynthetic Pathways of Ammonifex Degensii

Ammonifex degensii is an obligate anaerobic chemolithoautotrophic (obtains energy from inorganic compounds and carbon from CO2) bacteria isolated from a volcanic hot spring in East Asia in 1994. Ammonifex is the archetype of a new genus (ammonium maker). Ammonifex degensii is an extremely thermophilic gram negative rod shaped bacterium with optimal growth occurring at 70°C and a pH of 7.5. The genome of Ammonifex degensii is 85% complete, funded by the Department of Energy Joint Genome Program. Saint Cloud State University is part of a consortium of institutions that make up the Collaborative Undergraduate Genomic Annotation Team. SCSU has undertaken the responsibility of using comparative genomics to identify the amino acid biosynthetic pathways. Glutamate is a amino acid with a negatively charged R group. Glutamine has a polar uncharged R group. We hypothesize that these amino acids have biosynthetic pathways in Ammonifex degensii, and that we will be able to identify the genes responsible for the synthesis of these amino acids using a comparative genomics approach.

Presentation Index: T51
Department: Biological Sciences
Student Presenter(s): Pamplona, August

Time: 2:00 p.m.
Project Sponsor(s):
Kvaal, Christopher

Synthesis of Metal Ion Complexes from Bidentate N-Heterocyclic Carbenes

Metal complexes of N-heterocyclic carbenes (NHCs) and their uses has been a popular area of research for organometallic chemists. In this research, a silver metal complex of a bidentate NHC was synthesized and characterized by H1-NMR and IR spectroscopy. Several different sterically hindered ligands were synthesized and then reacted with diethyl zinc, triethyl aluminum, and silver oxide to test for the possibility of metal complexes of bidentate NHCs forming in solution. Attempts at forming zinc and aluminum complexes from bidentate NHCs were unsuccessful possibly resulting from steric hindrance. An NHC containing two bulky substituents showed to be successful in forming a metal complex when reacted with Ag2O. H1-NMR analysis suggests that the silver metal bonds to the NHC ligand at the carbene carbon and the oxygen from an alcohol on one of the substituents forming the bidentate NHC metal complex.

Presentation Index: T52
Department: Chemistry
Student Presenter(s): Sandquist, Nathan

Time: 2:00 p.m.
Project Sponsor(s):
Schaller, Chris

Avoidance of Confrontation Relating to Personality and Gender

The purpose of this study was to see if personality and gender were correlated with avoidance of confrontation. My participants were undergraduate psychology students from St. Cloud State. I had the participants take two different surveys. The first was the Big Five Personality Inventory survey, (John, and Srivastava, 1999) which I was mainly interested in Agreeableness. The second survey was a brief questionnaire looking at different actions to take in four different situations dealing with confrontation. After looking at previous studies, I have found many supporting ideas why people act differently when faced with confrontational situations. According to Dallos (2003), people that have attachment issues are more likely to avoid confrontation. In addition to that, children that have an available parent at most times can deal with threats and distress much better than a child with unavailable parents. Basically, children follow their parent's examples. Before attaining my results, I predicted females would avoid confrontation more than males. I also believed that participants who scored higher on the agreeableness section of the BFI survey would end up avoiding confrontation more. Lastly, I predicted females that scored less on Agreeableness compared to men that score low on Agreeableness would avoid confrontation more.

Presentation Index: T53
Department: Psychology
Student Presenter(s): Mills, Jeff

Time: 2:00 p.m.
Project Sponsor(s):
Illies, Jody

Translating Research in Education: A Paleoclimatology Example

The need for new learning strategies to help students understand ecology and evolution is essential in the secondary education curriculum. The intent of this project is to help students understand evolution in the context of long term ecological and climate models. Diatoms are a particularly useful indicator species of modern and past environments. They have been used to identify the degradation or pollution of an ecosystem and have been the focus of study in this project. A classroom exercise has been developed to help students understand the way in which these indicator taxa are used in paleo-oceanographic studies. Specific learning components of the exercise include a) developing a classification technique for diatoms that is hands-on and visual for students, and b) looking at decisions made by scientists in identifying environmental parameters. These components will help develop broader cognitive skills for the student in context of how science classification is done, and understand the limitations and sources of debate concerning the quality of long term climatic and environmental records.

Presentation Index: T54
Department: Biological Sciences; Earth and Atmospheric Sciences
Student Presenter(s): Hoffer, Jeannette

Time: 2:00 p.m.
Project Sponsor(s):
Julius, Matthew; Pound, Kate

A Comparison of Science and Liberal Arts Majors' Knowledge of Physical Change and Environmental Topics

This study investigated students' abilities to provide scientific explanations about physical change and their environmental knowledge. By doing so, chemistry instructors may be more knowledgeable on the effects of students' logical reasoning versus their academic performance in class. This research will show how important it may be for educators to increase in-class instruction to amplify students' ability to reason at a formal-operational level. Furthermore, this study will stress the necessity of environmental education in the classroom. With the use of the Physical Changes Concept Test (PCCT) (Haidar and Abraham, 1991) and the Classroom Test of Scientific Reasoning (CTSR) (Lawson, 1978) we will attempt to identify any correlation between students' knowledge of chemical concepts and their scientific reasoning skills. These instruments were given to two groups of college students from two courses at a public university. The first group consisted of 43 students enrolled in a second-semester general chemistry course. The second group consisted of 11 students enrolled in a chemistry course normally taken by non-science majors to fulfill a general education science requirement. The survey results show a statistically significant correlation between students' thinking skills and their PCCT scores. Finally, an evaluation was done on the correlation between the CTSR scores and the students' ability to correctly answer questions on an environmental questionnaire (Michail, Stamou, and Stamou, 2006). There was no significant correlation between the CTSR scores and the environmental questionnaire scores. Suggestions for future studies will be presented.

Presentation Index: T55
Department: Chemistry
Student Presenter(s): Brandriet, Alexandra

Time: 2:00 p.m.
Project Sponsor(s):
Krystyniak, Rebecca

Hydrologic and Hydraulic Analysis of the Upper Rum River System from Buckmore Dam to Lake Onamia Kathio State Park, Northwest of Onamia, Minnesota

The analysis of the Upper Rum River system is multifold. Not only is the study of scientific interest, but it is of a socio-economical concern for the native Ojibwe tribe who harvest wild rice from the lakes in the system. Recently, the grain has ceased growth in comparison to historical yields which is believed to be caused by fluctuating hydraulic conditions in the system. The research is an essential building block for any future human intervention that will take place in the region. The solved inquiry of the project is to calculate and model of the amount of water, the rate at which it travels and the direction and mechanics of how it flows through the system. This will be apparent by the collections of field data and inputs into computer models to simulate actual field conditions. Importantly, the fluctuations in surface elevation and lake depths will be targeted as a monitored parameter. This data is useful in that it can be widely used amongst other disciplinary fields; not only this project. Conclusively, the findings of the research makes for a well defined and needed piece of science and information for further analyses in the region.

Presentation Index: T56
Department: Earth and Atmospheric Sciences
Student Presenter(s): Wojciechowski, Travis

Time: 2:00 p.m.
Project Sponsor(s):
Fedele, Juan

Synthesis and Characterization of Naringin Flavonoid with Vanadium Complexes

Flavonoids are a class of secondary metabolites commonly found in plants and are commonly known for their antioxidant activity. Vanadium, when found in the body, displays antidiabetic properties but is known to be toxic. Research has shown however that when synthesized with a flavonoid, vanadium retains its antidiabetic properties while possessing less toxicity than it would normally have. Ideally, a vanadium-flavonoid complex could yield a pill form pharmaceutical for the treatment of diabetes. The purpose of this research is, given a flavonoid, to determine a mechanism to form a vanadium-flavonoid complex and subsequent classification to determine whether the desired product was formed. When product of this synthesis was observed, IR spectroscopy revealed peaks in the OH region, CO region and VO region, giving support that a vanadium-flavonoid complex was formed. Further study of the produced compounds was administered by method of both NMR and UV-vis spectroscopy. These methods require the sample to be in solution which is important as drugs are usually administered in solution state.

Presentation Index: T57
Department: Chemistry
Student Presenter(s): Willing, Alexander

Time: 2:00 p.m.
Project Sponsor(s):
Mahroof-Tahir, Mohammad

Teaching Leisure Activities to Individuals with Autism

Autism significantly impairs areas of social interaction, communication and individual's exhibit restricted and repetitive behavior. These individuals tend to have difficulty in typical everyday interactions. With deficits in social skills, engaging in appropriate social interactions with staff and peers can be very difficult. It is therefore, necessary to teach appropriate social skills. Doing so may enhance the quality of life for these individuals. For example, a leisure activity, such as using a digital camera to take photographs requires interaction with multiple persons. In this study we taught an adult with Autism to use a digital camera to put together a photo album. This required that the individual learn not only to operate the camera, but interact with staff to retrieve the camera, ask permission if he wanted to take a photo of a person, and finally get help with processing the photos. A task analysis was used to teach each step of the activity. Experimental control was demonstrated in a multiple baseline design and evaluated taking photographs across three social vignettes, staff, peers and groups. Results and implications for future research are discussed.

Presentation Index: T58
Department: Community Psychology
Student Presenter(s): Vesel, Shawn; Meyer, William; Knutson, Lacy; Doyle, Lyndsay; Smith,Chelsey; Wesenberg, John; Johanson, Cassandra

Time: 2:00 p.m.
Project Sponsor(s):
Edrisinha, Chaturi

Oxidation of Ethylene Glycol Ethers by Class 3 Aldehyde Dehydrogenase

Ethylene glycol ethers (EGEs) are commonly used as organic solvents in a multitude of consumer and commercial products due to their favorable solvent properties. The EGEs produced in the largest quantities in the United States are ethylene glycol butyl ether and its acetate, diethylene glycol butyl ether and its acetate and the methyl, ethyl and butyl glycol ethers. Previous studies show that EGEs cause delayed encephalopathy, metabolic acidosis, hemolysis, hemoglobinuria, decreased WBC, hypocellular bone marrow, renal tubular degeneration and necrosis as well as esophageal and stomach tumors in animal models. Aldehyde dehydrogenases catalyze oxidation of EGEs to their corresponding acids and the acids formed are responsible for the toxicities of EGEs. Accordingly, the purpose of this study is to investigate the role of class 3 aldehyde dehydrogenase (ALDH 3A1) in the oxidation of certain EGE aldehydes. Human ALDH3A1 was purified from a human cDNA clone overexpressing the enzyme in E. Coli, using reactive blue 2-sepharose liquid chromatography. Enzymological studies are on-going.

Presentation Index: T59
Department: Chemistry
Student Presenter(s): Ong, Ta Re

Time: 2:00 p.m.
Project Sponsor(s):
Sreerama, Lakshmaiah

The First Annotation of the Arginine and Proline Biosynthetic Pathways of Ammonifex Degensii

Ammonifex degensii is an obligate anaerobic chemolithoautotrophic (obtains energy from inorganic compounds and carbon from carbon dioxide) bacteria isolated from a volcanic hot spring in East Asia in 1994. Ammonifex is the archetype of a new genus (ammonium maker). Ammonifex degensii is an extremely thermophilic gram negative rod shaped bacterium with optimal growth occurring at 70 degrees C and a pH of 7.5. The genome of ammonifex degensii is 85% complete, funded by the Department of Energy Joint Genome Program. Saint Cloud State University is part of a consortium of institutions that make up the Collaborative Undergraduate Genomic Annotation Team. SCSU has undertaken the responsibility of using comparative genomics to identify the amino acid biosynthetic pathways. Proline and arginine are polar uncharged amino acids. Proline is of particular interest due to its unusual chemical structure for an amino acid. We hypothesize that these amino acids have biosynthetic pathways in ammonifex degensii, and that we will be able to identify the genes responsible for the synthesis of these amino acids using a comparative genomics approach.

Presentation Index: T60
Department: Biological Sciences
Student Presenter(s): Ong, Ta Re; Lennemann, Nick; Navara, Stephanie; Rajbhandari, Labchan

Time: 2:00 p.m.
Project Sponsor(s):
Kvaal, Christopher

Session U **Social Sciences II** **North Glacier**

How Does Per-Pupil Spending Affect Graduation Rates?

This paper considers the topic of how to advance the graduation rates of today's children. It has been proven that those with a high school diploma earn higher wages and face lower unemployment than those without. Ways to increase child education has always been a foremost political topic, this and education spending. This paper intends to see how that very spending affects the graduation rate of Americas High School students and to see if those graduation rates come at the expense of education quality in the form test scores. Socioeconomic variables such as income, poverty levels, teacher's wages, and unemployment will also be explored to see just how they affect the graduation levels of today's youth.

Presentation Index: U1
Department: Economics
Student Presenter(s): Chris, Gliadon

Time: 3:30 p.m.
Project Sponsor(s):
Grossman, Philip

173d Airborne Brigade

Social resistance to the Vietnam War influenced beliefs and behaviors around the country. History has shown this aspect presenting the protests and rallies of the era. What are not represented are the communities around the country that stood in support of the men and women of the U.S. Military. Rochester, Minnesota was one of these communities, and backed their support with the adoption of the 173d Airborne Brigade.

Presentation Index: U2
Department: History
Student Presenter(s): Canfield, Bryan

Time: 3:50 p.m.
Project Sponsor(s):
Galler, Robert

New York Times Talks

Endeavoring to create an enriching experience for students inside and outside the classroom, colleges and university all over the country provide extracurricular opportunities to students. The outcomes of these programs and opportunities in many cases are to create future leaders and well rounded members of society. The Social Change Model of Leadership Development (SCMLD) explains leadership development through a multi-level (individual, group, and community) competency (seven C's) process model. One such competency is Controversy with Civility, which relates to the future leader's ability to hear differing opinions and air these different opinions in a civil and respectful manner. The New York Times (NYT) Talks are part of the Husky L.E.A.D. program at St Cloud State University. These talks are a collaboration of The American Democracy Project, The New York Times, The Volunteer Connection, and many faculty members on this campus. These talks encourage students to explore readership, current events, and inspire open dialog and debate about the issues of today. An outcome of this project is that attendees will improve in the competency of Controversy with Civility. This study predicts that attendees of the NYT Talks will score higher than non-attendees. In addition, there will be a positive correlation between the number of Talks attended and higher competency scores. A set of randomly selected students and a sample of former attendees of the NYT Talks will be given an electronic survey containing a competency assessment, basic demographic material (including age and year in school), and extracurricular student involvement. The researcher then compares competency scores of New York Times Talks attendees with non-attendees across the competency of Controversy with Civility. Implications for program assessment will be discussed.

Presentation Index: U3
Department: Psychology; College Experience
Student Presenter(s): Corbett, Benjamin

Time: 4:10 p.m.
Project Sponsor(s):
Valdes, Leslie; Umberger, Stuart

Session V **Communication Studies** **Lady's Slipper**

Meaning Beyond Words: Nonverbal Communication Research

The study of nonverbal communication can involve such varied areas as our comfort level with touch in friendship, the perception of another's body, the meanings of tattos and variables (such as smiling and proximity) influencing the sum of money tipped to a server. Four research projects conducted in an advanced level noncommunication class illustrate the breadth and signficance of nonverbal communication in our everyday lives.

Presentation Index: V1
Department: Communication Studies
Student Presenter(s): Gohner, Trevor; Baso, Andrew; Brown, Tara; Krava, Elizabeth; Babinski,Rebecca

Time: 3:30 p.m.
Project Sponsor(s):
Rehling, Diana

Bald Eagles as Contaminant Bioindicators

Bald eagles are upper-trophic level predators that accumulate environmental contaminants, and thus act as sentinels of ecosystem health. Eagles are subject to a diversity of contaminants: mercury from coal-fired power plants and mining operations, lead from gunshot and fishing tackle, organic pesticides from farming, and unknown toxins from coal-bed methane production. In high concentrations, these contaminants negatively affect eagle reproduction, behavior, and survival. During the winter of 2005-2006, the Montana Raptor Conservation Center reported the deaths of six bald eagles, all of which had elevated levels of mercury in their blood. Staff at the rehabilitation center questioned if mercury was an emerging problem in Montana. I determined the presence and level of contaminants from blood and feather samples collected from adult and nestling bald eagles in southern Montana and northern Wyoming in 2007. These samples were analyzed for heavy metals, trace elements, and organic pesticides. Preliminary results from nestling bald eagles sampled in 2007 indicate nestlings in Montana have low levels of toxins, but some nestlings from Wyoming have elevated mercury levels. Adult bald eagles captured and submitted for rehabilitation from 2005-2007 also had elevated levels of mercury and lead in their blood. I will collect additional samples from south-central Montana nestlings in 2008. I hope to assist bald eagle management by identifying areas of high contamination, negative effects on bald eagles, and potential effects on other species.

Presentation Index: W1
Department: Biological Sciences
Student Presenter(s): Carlson, Jason

Time: 3:30 p.m.
Project Sponsor(s):
Restani, Marco

SCSU FSAE Project

St. Cloud State University's Formula SAE team is a non-profit organization comprised of students dedicated to designing, building and testing a race car. This is done by applying practical engineering skills and knowledge to be competitive in the Formula SAE competition and provide national exposure for the team's sponsors and St. Cloud State University.

Presentation Index: W2
Department: Mechanical and Manufacturing Engineering
Student Presenter(s): Haney, Phillip; Smith, Austin; Salzl, Scott; Miller, Daniel

Time: 3:50 p.m.
Project Sponsor(s):
Miller, Kenneth

Manure Storage Basin Abandonment Alternatives and Water Quality Improvement

Manure storage basins are a common way for farm operators to store manure prior to field application throughout much of the Midwest. With the declining number of farm operations in Minnesota, there becomes an increasing number of abandoned manure storage basins. Landowners face a large financial disincentive to close abandoned manure storage basins. Regulatory requirements for closure have a lower priority than providing working operations with regulatory and environmental protection assistance. However, the potential exists for these basins to affect groundwater quality over time. This study was conducted to develop a low-cost effective abandonment procedure to ensure landowner participation. In the Manure Storage Basin Abandonment Alternatives in the Upper Mississippi River Basin project, procedures include 1) removal of manure from the manure storage basin while contaminated soil is left in place and 2) vegetating the soil with aggressive plant species such as reed canarygrass (Phalaris arundinacea). The Nitrate Leaching & Environmental Analysis software package and statistical analysis will be used to determine potential comparative risks the manure storage basins pose to human or environmental health. The resulting bioremediation within each basin should lower contaminant levels of nutrients and pathogens enough that the basins will no longer cause potential human or environmental threat. The converted basins offer additional benefits as a source of forage or wetland habitat. The goal is to develop effective manure storage basin abandonment alternative that will be lower cost to the producer and reduce contaminants to an acceptable level.

Presentation Index: W3
Department: Environmental and Technological Studies
Student Presenter(s): Storlien, Joseph

Time: 4:10 p.m.
Project Sponsor(s):
Bender, Mitch

The Paradox of Paradise: A Study of Setting in the Works of Sinclair Lewis

Both in his own personal life as well as in his fiction, Sinclair Lewis struggled with his surroundings. Settings in his novels often took on a life of their own. Whether it was the rustic country, the buzzing city or the convenient suburb, Lewis commented and criticized each setting. These observations very much reflected Lewis' own views based on his varied residences, including his hometown of Sauk Centre, Minnesota. Though Lewis acutely attacked each setting equally and fairly, one fallacy lies in the fact that rarely did he state which setting he preferred. Yet Lewis was in an interesting position – that of a social critic from the Midwest, which gave him the advantage of reaching a large number of potential readers. His appeal was not limited to just the "cultured" East Coast literary crowd, but also to those who grew up in similar environments, such as Sauk Centre. Through his stinging satires, Lewis was able to effectively expose the underbelly of America, and helped to revolutionize the tradition of American literature.

Presentation Index: W4
Department: History
Student Presenter(s): Ries, Andrew

Time: 4:30 p.m.
Project Sponsor(s):
Lewis, Richard; Glade, Betsy

Session W **Paper Presentation Competition IV** **South Voyageurs**

The Effects of Singular and Mixture Exposures of Estrogens on a Model Aquatic Invertebrate Daphnia Magna

Natural and synthetic estrogens are known to be present in the waters of many lakes and river ecosystems. Many of these environments contain invertebrates, such as Daphnia magna, which contribute to the trophic cascade of the aquatic ecosystem as primary consumers. Neonate daphnids (brood parents <24 hrs) were individually exposed to three environmentally relevant concentrations of ethinylestradiol; 0.1 ng/L, 2.5 ng/L and 10 ng/L, for 21 days (n=10 per treatment). Neonates were collected from each beaker and counted daily. A picture of each neonate was taken and survival was determined based on heartbeat. Developmental abnormalities and sex determination were assessed using a digital camera and dissecting scope. Published 50% mortality rates (LC50) for 17-beta-estradiol (E2) and ethinylestradiol (EE2) were 2.97 mg/L and 5.7 mg/L respectively. We confirmed LC50 for both compounds using the daphnia cultures in the St. Cloud State University Aquatic Toxicology Laboratory to ensure similar sensitivity of our daphnia cultures. A twenty-one day exposure to EE2 singularly at three environmentally relevant concentrations did not result in increased mortality or incident rates of embryonic developmental abnormalities. There was a positive correlation between the concentration of EE2 and fecundity (ie. average number of offspring). The average number of offspring per daphnid from the EE2 high treatment was over twice that of the control. Results from additional singular exposures to estrone, 17-beta-estradiol, and an environmental estrogen mixture will be presented at the conference.

Presentation Index: W5
Department: Biological Sciences
Student Presenter(s): Cole, Amanda

Time: 4:50 p.m.
Project Sponsor(s):
Schoenfuss, Heiko

Session X **Science and Engineering III** **North Voyageurs**

The Development of an Instrumental Actinometer

Chemical actinometers have been used to monitor the photodecomposition of compounds for many years. Today, with the advent of new technology, a push for an instrumental method of monitoring the photo-activity of compounds has been introduced. However, today's measurement devices are not completely reliable and can be damaged by over exposure to the sun. Investigating the use of a solar panel, coupled with spreadsheet software might allow for a simple, low cost method for monitoring the photodecomposition of a compound. In addition, the solar panel is less likely to degrade when exposed to environmental levels of photo-irradiation. Integrating the voltage readings over time, collected using the solar panel, showed a strong correlation to the photodecomposition of the actinometers, with a high average correlation value. Such a correlation value suggests that the measurement of the voltage-time area (VTA) using a solar panel might be a viable option for the determination of the half-life or quantum yield of a compound.

Presentation Index: X1
Department: Chemistry
Student Presenter(s): Lahr, Richard

Time: 3:30 p.m.
Project Sponsor(s):
Ross, Michael

Taratogenic Effects of Oxovanadium Complexes (Possible Anti-Cancer Compounds) on Xenopus Laevis Development

Transition metal complexes of have been shown to have many biological effects, including anti-cancer and anti-diabetic properties. Cisplatin, a platinum complex, is currently being used as an effective alternative cancer treatment, but has toxic side effects. Complexes of other metals are currently being investigated for anti-cancer and anti-diabetic activities, including the vanadium complex, Vanadocene, which has shown some potential anti-tumor properties. The primary focus of this study was to investigate the taratogenic effects of three new oxovanadium complexes whose biological and biochemical effects are not fully known: VO(dbm)2 (dbm = dibenzoylmethane), VO(pbd)2 (pbd = benzoylacetone), and VO(tmh)2 (tmh = 2,2,6,6-tetramethyl-3,5-heptanedione). Xenopus laevis (African clawed frog) embryos were used in this study as a vertebrate model for embryonic development to observe any teratogenic effects of the vanadium complexes and the ligands of those complexes. Embryos of Xenopus laevis were exposed to each oxovandaium compound, the ligands only of each compound, and VOSO4 during the early stages of development. Embryos were exposed to each compound (0.1 - 10 µM) for a minimum of 96 hours. The embryos were closely monitored for signs of developmental defects. Embryos exposed to VO(dbm)2 showed the highest levels of teratogenic effects, with developmental problems and mortality appearing in concentrations as low as 1 µM. Those exposed to VO(pbd)2 and VO(tmh)2 primarily showed teratogenic effects at concentrations of 10 µM. The anti-cancer properties of the oxovanadium complexes VO(tmh)2 and VO(hd)2 (hd = heptadione) were investigated using human breast cancer cells. The cells were treated with various concentrations (0.1 - 1 mM) of the complexes and their effectiveness was determined via the calculation of cell surviving factions. VO(tmh)2 showed a greater level of effectiveness at relatively low concentrations.

Presentation Index: X2
Department: Chemistry; Biological Sciences
Student Presenter(s): Piotrowski, Aaron

Time: 3:50 p.m.
Project Sponsor(s):
Mahroof-Tahir, Mohammad;
Sreerama, Lakshmaiah; Schuh, Timothy

Session X **Science and Engineering III** **North Voyageurs**

Method Development for Quantification of Ibuprofen in Surface Water by Liquid-Liquid Microextraction/GCMS

Liquid-liquid micro extraction combined with gas chromatography mass spectrometry has been applied to quantification of dilute aqueous solutions of ibuprofen. This method is based on the solubility difference of ibuprofen in water vs. an organic solvent. The optimal solvent was determined to be octane which was spiked with dodecane as an internal standard. This experiment was performed using 2mL of a 10ppm ibuprofen in water solution. The extraction was found to be most efficient using an aqueous phase that has been saturated in sodium chloride. One micro liter of organic phase was used with a stirring speed of 712 revolutions per minute. An exposure time of fifteen minutes was determined to be optimal in order to obtain adequate peak areas in a reasonable time.

Presentation Index: X3
Time: 4:10 p.m.
Department: Chemistry
Project Sponsor(s):
Student Presenter(s): Gulbranson, Daniel
Jeannot, Michael

Session Y **Special Education** **South Glacier**

The Uses and Implications of the Term "Retarded" on YouTube

The meaning and context of the word “retarded” has changed from a label used to identify individuals with intellectual disabilities to derogatory slang implying a person is stupid or dumb. The use of the word has become part of popular culture in this country. When I entered the term “retarded,” using a basic search on the video sharing site YouTube, over forty thousand videos were identified. This paper explored the use of the term “retarded” on YouTube, in an attempt to ascertain how the expression is being used. I compiled a list of the first four hundred of these videos sorted by “relevance” on the YouTube website. This list of videos was reduced by choosing only videos with the word “retarded” in the title, videos posted on the website for three months or longer and videos viewed over one thousand times. I then randomly selected one hundred videos. A second researcher and I watched each video and took notes on the way the word “retarded” was used in the videos and accompanying text. We then coded our notes and identified recurrent themes. These themes related to how the word “retarded” was used, and fell into the following categories: to criticize or put down a person, to “make fun of” a person or thing, to educate and to “have fun.”

Presentation Index: Y1
Time: 3:30 p.m.
Department: Special Education
Project Sponsor(s):
Student Presenter(s): Johanson, Brandy
Wilkins, Julia

Do Institutions of Higher Education in Minnesota Prepare Future Special Education Teachers to Deal with Terminally Ill Students and Student Death?

There are many professions in which people must deal with terminal illness and death on a regular basis, for example doctors, nurses, nursing home staff and emergency medical technicians. Special education teaching fits into this category, particularly for teachers who work with students who are medically fragile or who have health-related disabilities. A person choosing to work with children who have these conditions may or may not have been given adequate information and training in their special education teacher preparation programs to effectively deal with a terminally ill student or the death of a student. Special education teachers need the ability to deal with student death, on both a professional and a personal level and have the skills to help themselves, their students and other staff members through the grieving process. Special education teachers are not as likely to experience death on a regular basis as some medical professions do, but teachers that work with children who have terminal illnesses could use the information provided in the systematic educational approach that thanatology provides to increase their ability to effectively manage themselves and the people in their classrooms in relation to dying and death. Research has been conducted to determine if adequate training has been given to professionals in the medical field to effectively deal with terminal illness and death but little research has been done to assess persons in the field of special education on the topic of preparation to deal with terminal illness and death. This paper will explore the preparation Minnesota special education teachers are given in their college preparation programs with regards to dealing with terminal illness and death of a student in their classroom.

Presentation Index: Y2
Time: 3:50 p.m.
Department: Special Education
Project Sponsor(s):
Student Presenter(s): Saufley, Nancy
Wilkins, Julia

Session Y | **Special Education** | **South Glacier**

Transition Planning

The Individuals with Disabilities Education Act (IDEA) mandates transition planning for special education students, to ensure their smooth transition from school to adult roles. Areas that may be addressed during the transition planning process include post-secondary education or vocational training, employment, independent living, community participation and recreation/leisure. This session will focus on transition services that have proven successful in preparing students with disabilities for employment. We will address the needs of students in all disability areas, with specific focus on measures that could improve the post-school success of students with Emotional and Behavioral Disorders.

Presentation Index: Y3
Department: Special Education
Student Presenter(s): Janssen, Melissa; Klever, Heather; Barth, Britta; Grunewald, Jennifer; Haider,Cindee

Time: 4:10 p.m.
Project Sponsor(s):
Wilkins, Julia

Session Z | **Ethnic Studies** | **Oak**

Latino Immigration Issues in Central Minnesota

A Minnesota state demographer recently noted that in terms of the growth of Latino populations, the potential outlook of the entire state in 10 years will be similar to the Central Minnesota town of Willmar. Latinos currently comprise 25% of Willmar's population, and for many other areas and towns in Central Minnesota the future is already here. The tremendous growth of the Latino population in Minnesota has been largely fueled by immigration. This panel of student investigators will present their research on Latino immigrant issues in Central Minnesota. The following topics will be addressed by the presenters: An examination of the current laws and services that are available (and applicable) for the protection of battered immigrant women; Examining the extent of need among undocumented students for out-of-state tuition fee-waivers to attend SCSU or any other institution of higher education; Latino immigrant perception of discrimination by service providers; The extent of Spanish language loss among Latino immigrant families; Examining the insufficient and inadequate housing that is faced by a growing population of Latino immigrants; Assessing barriers and obstacles facing Latino immigrants in higher education.

Presentation Index: Z1
Department: Ethnic Studies
Student Presenter(s): Chavarria, Hector; Gomez, Angelica; Jacobs, Megan; Hernandez, Evelyn; Ochoa,Walter; Smith, John

Time: 3:30 p.m.
Project Sponsor(s):
Casanova, Stephen

Session ZA | **Behavioral Science** | **Granite**

The Status of the Kurdish Language in the Middle East

Although the Kurdish language is one of the top languages of the world in terms of the number of speakers, it is among the most repressed. The Kurdish language belongs to the western sub-group of the Iranian languages, which themselves belong to the Indo-Iranian branch of the Indo-European language family. The speech community is divided among five neighboring countries (Iran, Iraq, Syria, Turkey, Armenia), and dispersed in a vast Diaspora throughout the world. Today, Kurdish is an official language in Iraq, while it is banned in Syria, where it is forbidden to publish material in Kurdish. A few years ago, the Turkish government placed severe restrictions on the use of Kurdish, prohibiting the language in education and broadcast media. In Iran, though it is used in some local media and newspapers, it is forbidden in schools. In my paper, I will talk in detail about the status of the Kurdish language in Syria, Iraq, Iran and Turkey. Moreover, I did a survey on the attitude of Arabs in the USA towards Kurdish and the Kurds in general. I also included one Turkish student. In summary, I found that the attitude towards the Kurdish language was not as negative as I expected, and all participants would not discriminate a Kurd in the job market. I could not find any correlation between country and attitude except the Turkish citizen who had a very negative attitude. There was one correlation: those who felt that Arabic was threatened opposed a bilingual education for Kurds. The limitation of the study was the fact that I only interviewed educated people, and Arab Americans were surely influenced by "American" values such as tolerance and equality.

Presentation Index: ZA1
Department: English
Student Presenter(s): Naheel, Rihab

Time: 3:30 p.m.
Project Sponsor(s):
Koffi, Ettien

Session ZA **Behavioral Science** **Granite**

Children of Color Identity

The proposed study will examine the upbringing of adopted children of color being raised by parents of a different race and ethnic background and also how the media affects their racial and ethnic identity. At each stage of development, racial and ethnic identity formation plays a critical role in helping a child develop a healthy sense of self and collective belonging. Children of color in foster care are often placed in homes with families of different racial and/or ethnic backgrounds, thus they face unique challenges in the process of ethnic identity formation. Even before they can talk, children begin to notice differences (physical)—in skin color, eye shape, language, hair, etc. between them and their families. Influences on their identity are their own adopted parent's family ideals of ethnicity as well as the influence of outside factors such as the media. Beginning while they are young, children absorb information about biases and stereotypes from their families (especially their parents) and the media. The research results will stem from a focus group of adopted children of color that were adopted by parents of a different race and ethnic background. The findings will be a personal look into understanding how children who are raised by people from a different racial background can be impacted by media and the surrounding environment, affecting children's psychological wellbeing.

Presentation Index: ZA2
Department: Women's Studies
Student Presenter(s): Figueroa, Alexis; Johnson, Terri

Time: 3:50 p.m.
Project Sponsor(s):
Berila, Elizabeth

Airport Runway Incursions Research

Runway incursions have caused serious accidents, including the most serious aviation accident in history in terms of loss of life. A runway incursion is defined by the FAA as "any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take off of aircraft". The FAA has identified that the issue of runway incursions is one of the most significant safety issues in aviation today. Runway status lighting (RWSL) is a system that is being tested successfully at several major Class B airports. RWSL requires airport surveillance radar to operate, and is therefore impossible at non-radar Class D airports. A tower-controlled RWSL (TC-RWSL) system would be a practical solution for preventing certain runway incursions at non-radar Class D airports. TC-RWSL works by illuminating red lights at taxiway/runway intersections when a runway is in use, in order to prevent other traffic from entering the runway. TC-RWSL could be supplemented by inexpensive motion sensors placed at taxiway/runway intersections. TC-RWSL would be an effective, practical step towards reducing the number of runway incursions that occur at Class D airports. In addition to the Student Research Colloquium, the team findings will also be submitted to the Federal Aviation Administration for Universities.

Presentation Index: ZA3
Department: Aviation
Student Presenter(s): Jacobson, Shane; Krygowski, Nick; Koch, Ryan; Sigette, Jeremy

Time: 4:10 p.m.
Project Sponsor(s):
Aceves, Robert

Session ZB **Emerging Trends in Science** **Mississippi**

Peeling the Quark Onion with a Trillion Degree Furnace

Owing to the Pauli Exclusion Principle (a fundamental statement in quantum mechanics), electrons, quarks and all fermions have an inflexible avoidance of one another when squeezed into nearly the same state. That is, they cannot exist in the same quantum state- ever! Instead, these fermions will jump into higher energy states even though that requires more energy. If the higher-energy states are filled, they must reach even higher until they find a vacant state. Under the right conditions, this phenomenon introduces an outward pressure called degeneracy pressure. Degeneracy pressure is the reason that neutron and white dwarf stars do not collapse, but are instead stable against strong gravitational forces. We calculate the degeneracy pressure in a hot fireball of quarks and gluons. For temperatures in the range of 0.18 GeV, degeneracy pressure would be about 4 GeV/fm^3. These values translate over to roughly 2 trillion Kelvin and 10^32 pounds per square inch, or 10^31 atm. Our results indicate that degeneracy pressure may have significant and observable effects in experiments that are being carried out at heavy-ion colliders (atom smashers) around the world. In particular, the produced particles in high-energy heavy-ion collisions escape the reaction zone with impressively high velocities. This research project has resulted in a possible explanation for the observed behavior.

Presentation Index: ZB1
Department: Physics
Student Presenter(s): Swanson, Joshua; Horvat, Stephen

Time: 3:30 p.m.
Project Sponsor(s):
Haglin, Kevin

Session ZB **Emerging Trends in Science** **Mississippi**

Harmful Effects of Nano Tubes on the Environment and Organisms Bodies

The evolution of technology is being reflected in the science of nanoscale manufacturing/engineering processes. A very promising area indeed. Nanotechnology finds applications in both the industrial world and the biological fields (including the medical and the agricultural sectors) by utilizing small fiber tubes 1/50 000th of the size of a human hair. They can be fundamentally carbon, mineral or DNA-based. The major portion of the manufactured tubes is carbon-based and they resemble pencil lead in composition. The question is how a living organism handles those tubes after injection. If they resemble graphite, then our body cannot digest it. We will attempt to explore this question. This presentation based on literature review of journal as recent as 2008 will focus on the advances the scientific community has made, particularly on the synthesis of the carbon nanotubes, their novelty usage in possible drug delivery system and promising HIV-1 vaccines, as well as the negative physiological effects it can have on tissues and more particularly lungs and the respiratory tract in both humans and animals.

Presentation Index: ZB2
Department: Chemistry
Student Presenter(s): Pickrell, Charles; Nang, Quincy; Meyer, Andrew

Time: 3:50 p.m.
Project Sponsor(s):
Sadrai, Mahin

Session ZC **Education** **Granite**

The Experiences of Students with Disabilities in a United States Public Higher Education Institution

This study examined the experiences students with disabilities encounter in their interactions with faculty members and adaptive service providers, within a public higher education institution. Also investigated was how these encounters affect the students with disabilities in attaining their educational goals. The theoretical framework for this study was the learning theory. Three basic assumptions were applied. First, stereotypes of disability affect the performance of students with disabilities. Second, positive and negative behaviors and actions of faculty members and service providers affect performance. Third, disability barriers are compounded by negative encounters. In-depth interviews were administered to a small but diverse group of students with disabilities. Data were analyzed by searching for narrative themes. The results suggested that students with disabilities experienced positive and negative behaviors and actions when interacting with faculty members and adaptive service providers. These experiences affected their ability to succeed. Negative experiences resulted in reduced self-esteem, lower grades, and the need to retake classes. Positive experiences lead to increased self-confidence, feelings of acceptance and greater learning.

Presentation Index: ZC1
Department: Human Relations and Multicultural Education
Student Presenter(s): Holtan, Lisa

Time: 5:00 p.m.
Project Sponsor(s):
Andrzejewski, Julie

Pragmatic Rationality within the Prisoner's Dilemma

The Prisoner's Dilemma is a classic problem encountered in Game and Decision Theory. Any solution to the Prisoner's Dilemma will have far reaching implications in economics, evolutionary theory, ethics and foreign relations, to name only a few disciplines. In this paper, I present the problem and implications of the Prisoner's Dilemma. After I present the problem, I present two solutions to the Prisoner's Dilemma: The Egoists and the Altruists solution. I argue against the Egoist solution, while defending the Altruists solution to the Prisoner's Dilemma.

Presentation Index: ZC2
Department: Philosophy
Student Presenter(s): Coss, David

Time: 5:20 p.m.
Project Sponsor(s):
Shaffer, Michael

The Significance and Implementation of Vocabulary Instruction

Vocabulary instruction is an essential and indispensable branch of English and Language Arts. It is home to the phenomenon of word acquisition, in addition to extensive research regarding how humans grasp words and language, why they grasp it and how educators can maximize the tools available to them to assist students in learning and using vocabulary. In this paper, I examine a number of critical studies central to vocabulary instruction aimed at adolescent learners. The studies that are examined concern vocabulary acquisition, the role of context in learning new words, and the effectiveness of varying vocabulary teaching strategies. These studies have been conducted to help demystify vocabulary acquisition. The benefits of having an extensive vocabulary are invaluable, as discussed in the examined studies and in this paper.

Presentation Index: ZC3
Department: English
Student Presenter(s): Schwankl, Amber

Time: 5:40 p.m.
Project Sponsor(s):
Philippot, Raymond

Session ZC **Education** **Granite**

Reading Literature: A Viable Way to Teach Composition

The overall purpose for my research is to establish a theory that supports the practical application that I create in my Masters Thesis. I want to enter into the current debate and hope to add some viable evidence to promote the integration of literature into a First Year Composition course. Reading literature should be enjoyable as well as educational. I want to highlight what has been effective from other studies as well as what students believe is beneficial. I will provide personal success stories that may help motivate instructors to include a variety of literature in the most beneficial way to promote a combined study of reading and writing. This study supports my own teaching method by proving the effectiveness of combining the study of literature with the instruction of writing. I hope to prove that teachers must go beyond the instruction of specialized lessons to a sort of modeling the kind of professional writing students are being asked to perform.

Presentation Index: ZC4
Time: 6:00 p.m.
Department: English
Project Sponsor(s):
Student Presenter(s): Rasmussen, Stacy
Dillman, Richard

Session ZD **Science and Engineering IV** **North Voyageurs**

Electrolux Transport/Leveling Device

The Electrolux Home Products, Inc. Freezer Division is undergoing a redesign phase to meet market demands in an effort to gain market share. Currently, an optional riser kit can be purchased which attaches to the bottom of the cabinet. This riser functions as a leveling apparatus, transport mechanism, and a stable base when installed. The current riser kit has a robust structural design. It has four leveling mechanisms (one in each corner), each capable of up to one (1) inch of travel. The back is adjusted by means of a screw/rod assembly that can be operated from the front of the riser. The front has two static rollers in each corner next to which a leveling screw is mounted. These front leveling screws are also responsible for restricting the rolling/sliding of the cabinet assembly when installed. The new line of cabinets being implemented will have an increase in the overall height. Therefore, the riser kit needs a lower profile to accommodate this change in cabinet height. When addressing possible solutions to the project, several aspects were considered. These included design configuration, manufacturing and assembly costs, material selection, design functionality, testing/failure analysis, and safety. Keeping these elements in mind, several designs were formulated. The designs that displayed the most potential were then prototyped and further analyzed. The presentation documents the steps to address the redesign of the transport/leveling device.

Presentation Index: ZD1
Time: 5:00 p.m.
Department: Mechanical and Manufacturing Engineering
Project Sponsor(s):
Student Presenter(s): Greku, Tedd; Maves, Adam; Landherr, Adam
Bekkala, Andrew

Study on the Stretching Problem of Film Cutting

Shrink wrapping is a commonly used process in the packaging of cartons, books, beverage cans, large appliances, pallet loads, etc. In most cases, this process is performed by automated equipment. A thin shrinkable film is cut to the desired size and placed on or around the products before they are sent through a heat tunnel or oven for wrapping. The cutter in the shrink wrapper is designed to cut plastic films to variable sizes and keep pace with the production speed of the product. In most cases, the cutter consists of a rotating serrated knife which passes through a supporting shear deck of matching tooth pitch. The film is driven by a single set of nip rollers. When this type of cutter is used, the cutting process yields several defects created at the leading edge of the film. These defects include scratch marks, V-edge, and fringes. These imperfections are not aesthetically pleasing, which is an issue for many customers. Moreover, the fringes occasionally cause the film to become jammed at the outlet of the cutter. This study focuses on developing a method for minimizing or eliminating these defects. A kinematic and kinetic analysis of the cutting process was performed to find the causes of these imperfections. An analysis on the geometry of the cutting blade and shear deck was done to understand the development of the defects. In addition, mechanical behavior of the film material (LDPE, HDPE, and LLDPE) was considered to test flexible versus rigid body mechanics on the analysis of film shearing. Major and minor design solutions are suggested and tested for the optimization of the cutting process for the elimination/reduction of these defects.

Presentation Index: ZD2
Time: 5:20 p.m.
Department: Mechanical and Manufacturing Engineering
Project Sponsor(s):
Student Presenter(s): Tamariz, Raphael; Prom, Daniel; Pérez, David
Byun, Jeongmin

Session ZD **Science and Engineering IV** **North Voyageurs**

Mechanical and Manufacturing Design Projects for Vascular Solutions, Inc

Ethylene glycol ethers (EGEs) especially 2-ethoxyethanol and 2-butoxyethanol (BE) are excellent solvents. Accordingly they are used in many industrial and commercial products. Upon human use these solvents are discharged into waterways. Given the use and discharge of EGEs, both humans as well as aquatic animals are exposed to EGEs. Exposure to EGEs results in various toxicities including encephalopathy, hemolysis, and metabolic acidosis in humans. In addition to these toxicities, carcinogenesis and mutagenesis is also observed in animal models. Actual concentrations of EGEs in waste water discharges are not clearly established accordingly, the objectives of this research project is to develop methods to determine the presence of butoxyethanol (BE), one of the most common EGEs used, and its possible metabolites butoxyacetaldehyde (BAL), and butoxyacetic acid (BAA) in waste water sample. We are currently standardizing a gas chromatography mass spectrometry method for this purpose and are in the process of developing a high performance liquid chromatography method.

Presentation Index: ZD3
Department: Mechanical and Manufacturing Engineering
Student Presenter(s): Yang, Phillip; Lim, James; Yee, Jong-Shan

Time: 5:40 p.m.
Project Sponsor(s):
Baliga, Bantwal

Session ZE **Social Sciences II** **North Glacier**

State Mandates and Health Care

Every state in the US has different laws mandating that certain services, or benefits be provided by the employer's healthcare plan. Mandate laws range from statutes that require health plans to cover services by particular types of providers, requirements to cover specific diagnostic or treatment services or laws to extend benefits to certain populations. While providing more access to services, the increasing number of laws mandating healthcare plans causes prices for employers to insure their workers to increase significantly. There has been concern whether all the mandates will be too costly and effect how many people are insured. This paper considers the relationship between the amount spent on healthcare in each state and state mandates. The main issue is the large and growing amount of money being spent on healthcare, the potential budget busting effect this growth could possibly have, and the role state mandates play in creating and perpetuating this problem. Two types of analysis are done, one testing the effect of the more costly mandates (as defined by benefits costing more than one percent of estimated cost) on the amount spent on healthcare, and the second testing whether how many mandates a state has affects the level of healthcare spending.

Presentation Index: ZE1
Department: Economics
Student Presenter(s): Bargabus, Kathryn

Time: 5:00 p.m.
Project Sponsor(s):
Grossman, Philip

The Colonial Legacy in Africa

A significant amount of challenges facing the African continent today are in large part, a direct effect of the colonial experience brought upon the African peoples by the European powers. There are many historical factors which have greatly impacted the continent. This presentation seeks to examine the causes and consequences of colonialism in Africa in order to provide a better understanding of contemporary Africa. The presentation concludes by suggesting ways in which Africa, Europe, and the entire global community could collectively share the responsibility of finding ways to construct a promising future for the African continent and its peoples.

Presentation Index: ZE2
Department: Political Science;
Student Presenter(s): Franzen, Angela; Winscher, Damon; Kanenza, Benita

Time: 5:20 p.m.
Project Sponsor(s):
Nyendu, Morgan

Student Presenter Index

Gomez, Angelica	3:30 p.m.	Oak
Greku, Tedd	5:00 p.m.	North Voyageurs
Grosz, Danielle	2:00 p.m.	Ballroom
Grunewald, Jennifer	4:10 p.m.	South Glacier
Gulbranson, Daniel	4:10 p.m.	North Voyageurs
Gulden, Brennen	11:40 a.m.	North Voyageurs
Haider, Cindee	4:10 p.m.	South Glacier
Haider, Elizabeth	9:00 a.m.	Ballroom
Hall, Bruce	2:00 p.m.	Ballroom
Haney, Holly	9:00 a.m.	Ballroom
Haney, Phillip	9:00 a.m.	Ballroom
Haney, Phillip	3:50 p.m.	South Voyageurs
Hannigan, Leeah	9:00 a.m.	Ballroom
Hansen, Zachary	2:00 p.m.	Ballroom
Hanson, Eric	2:00 p.m.	Ballroom
Hanson, Jessica	2:00 p.m.	Ballroom
Hanson, Ryan	3:00 p.m.	Granite
Harms, Charissa	2:00 p.m.	Ballroom
Harrison, Katherine	9:00 a.m.	Ballroom
Hase, Joshua	2:40 p.m.	Oak
Haugen, Neale	2:00 p.m.	Ballroom
Hayman, Michael	2:00 p.m.	Ballroom
Hehling, Jenna	9:00 a.m.	Ballroom
Hehling, Jessica	9:00 a.m.	Ballroom
Heimann, Blake	2:20 p.m.	Oak
Heimermann, Mark	2:20 p.m.	Granite
Hein, Jason	2:00 p.m.	Ballroom
Helland, Robert	2:20 p.m.	North Glacier
Helm, Renee	11:00 a.m.	Granite
Hendrickson, Katie	9:00 a.m.	Ballroom
Henning, Phillip	9:00 a.m.	Ballroom
Hernandez, Evelyn	3:30 p.m.	Oak
Hillstrom, Jackie	9:00 a.m.	Ballroom
Hilsgen, Heather	9:00 a.m.	Ballroom
Hixson, Jessica	9:00 a.m.	Ballroom
Hoffer, Jeannette	2:00 p.m.	Ballroom
Hofstad, Luke	11:00 a.m.	Granite
Hofstad, Luke	2:00 p.m.	Ballroom
Holste, Tor	9:00 a.m.	Ballroom
Holstrom-Johnson, Susan	3:00 p.m.	Granite
Holtan, Lisa	5:00 p.m.	Granite
Horvat, Stephen	3:30 p.m.	Mississippi
Hulkonen, Rachel	9:00 a.m.	Ballroom
Jacobs, Megan	3:30 p.m.	Oak
Jacobsen, Lisa	9:00 a.m.	Ballroom
Jacobson, Shane	4:10 p.m.	Granite
Janke, Naomi	9:00 a.m.	Ballroom
Janssen, Melissa	4:10 p.m.	South Glacier
Johanson, Brandy	3:30 p.m.	South Glacier
Johanson, Cassandra	9:00 a.m.	Ballroom
Johanson, Cassandra	2:00 p.m.	Ballroom
Johnson, Eric	11:20 a.m.	North Glacier
Johnson, Sara	9:00 a.m.	Ballroom
Johnson, Terri	3:50 p.m.	Granite
Jordan, Edward	11:00 a.m.	North Voyageurs
Jufar, Tewodros	2:00 p.m.	Ballroom
Jungels, Michelle	9:00 a.m.	Ballroom
Kane, Rahul	10:30 a.m.	North Glacier
Kanenza, Benita	5:20 p.m.	North Glacier
Kanewischer, Dustin	2:00 p.m.	Ballroom
Keita, Mory	2:00 p.m.	North Glacier
Kemp, Abby	10:30 a.m.	North Voyageurs
Kirstin, Gleicher	2:00 p.m.	Ballroom
Klaverkamp, Peter	2:40 p.m.	South Glacier
Kleven, Mark	2:00 p.m.	Ballroom
Kleven, Mark	2:00 p.m.	Ballroom
Klever, Heather	4:10 p.m.	South Glacier
Klint, Karl	11:30 a.m.	South Voyageurs
Knutson, Katie	9:00 a.m.	Ballroom
Knutson, Lacy	9:00 a.m.	Ballroom
Knutson, Lacy	2:00 p.m.	Ballroom
Koch, Ryan	4:10 p.m.	Granite
Kohman, Josh	9:50 a.m.	North Voyageurs
Koitzsch, Kendra	9:00 a.m.	Ballroom
Kone, Nabi	2:00 p.m.	Ballroom
Krava, Elizabeth	3:30 p.m.	Lady's Slipper
Krehic, Damir	9:00 a.m.	Ballroom
Krygowski, Nick	4:10 p.m.	Granite
Lahr, Richard	3:30 p.m.	North Voyageurs
Laliberte, David	9:50 a.m.	South Voyageurs
Lamb, Kate	9:00 a.m.	Ballroom
Lamser, Stephanie	9:00 a.m.	Ballroom
Landherr, Adam	5:00 p.m.	North Voyageurs
Langlois, Renee	9:00 a.m.	Ballroom
Larson, Jaclyn	12:00 p.m.	South Glacier
Larson, Justin	9:00 a.m.	Ballroom
LeClaire, James	3:00 p.m.	South Voyageurs
Leet, Jason	9:00 a.m.	Ballroom
Lennemann, Nick	9:00 a.m.	Ballroom
Lennemann, Nick	2:00 p.m.	Ballroom
Leonard, Rhonda	2:00 p.m.	Ballroom
Lepkowski, Christine	10:30 a.m.	South Voyageurs
Leuze, Jacklyn	9:00 a.m.	Ballroom
Libbesmeier, Jill	9:00 a.m.	Ballroom
Lim, James	5:40 p.m.	North Voyageurs
Lindberg, Eric	12:00 p.m.	North Glacier
Lindfors, Kristen	2:00 p.m.	Ballroom
Lindgren, Rachel	2:00 p.m.	Ballroom

Liu, Yu	2:00 p.m.	Ballroom
Loehlein, Michael	11:00 a.m.	Granite
Loehlein, Michael	2:40 p.m.	North Glacier
Loes, Tim	11:10 a.m.	South Voyageurs
Lund, Andrew	2:00 p.m.	Ballroom
Lynch, Trevor	11:00 a.m.	Granite
Maas, Kori	9:00 a.m.	Ballroom
Magnan, Brandon	9:00 a.m.	Ballroom
Maher, Michael	2:00 p.m.	Ballroom
Mahroof, Taqdees	2:00 p.m.	Ballroom
Malin, Charlene	3:00 p.m.	North Voyageurs
Manandhar, Sonal	2:00 p.m.	Ballroom
Mankowski, Joshua	9:00 a.m.	Ballroom
Mareini, Fatuma	9:00 a.m.	Ballroom
Marong, Kemo	9:00 a.m.	Ballroom
Martin, Kari	2:00 p.m.	Granite
Mason, Keesha	12:00 p.m.	Lady's Slipper
Maves, Adam	5:00 p.m.	North Voyageurs
M'Banga, Shandra	2:20 p.m.	South Glacier
Mboko, Wadzanai	9:00 a.m.	Ballroom
Mboko, Wadzanai	2:00 p.m.	Ballroom
McCarthy, Fay	9:00 a.m.	Ballroom
McGee, Meghan	10:10 a.m.	South Voyageurs
Mendonsa, Riyan	9:00 a.m.	Ballroom
Meyer, Andrew	3:50 p.m.	Mississippi
Meyer, Kyle	11:40 a.m.	South Glacier
Meyer, William	9:00 a.m.	Ballroom
Meyer, William	2:00 p.m.	Ballroom
Mikkelsen, Brent	3:00 p.m.	South Voyageurs
Miller, Daniel	3:50 p.m.	South Voyageurs
Miller, Ingrid	9:00 a.m.	Ballroom
Miller, Jon	12:00 p.m.	South Glacier
Mills, Jeff	2:00 p.m.	Ballroom
Mlodzik, Kevin	9:00 a.m.	Ballroom
Molin, Kelly	9:00 a.m.	Ballroom
Moore, Ryan	9:00 a.m.	Ballroom
Morgan, Tiffany	9:00 a.m.	Ballroom
Muhlenkort, Amy	2:40 p.m.	Granite
Mukherjee, Debashree	2:00 p.m.	Ballroom
Mukherjee, Debashree	2:00 p.m.	Ballroom
Murn, Lindsay	2:00 p.m.	Ballroom
Mususu, Muchima	9:00 a.m.	Ballroom
Nadeau, Daniel	9:00 a.m.	Ballroom
Naheel, Rihab	3:30 p.m.	Granite
Nakamura, Shinobu	11:00 a.m.	Lady's Slipper
Nang, Quincy	3:50 p.m.	Mississippi
Nasir, Taqi	11:20 a.m.	South Glacier
Navara, Stephanie	2:00 p.m.	Ballroom
Nelson, Heidi	11:00 a.m.	Granite
Nemkul, Niza	9:00 a.m.	Ballroom
Nemkul, Niza	12:10 p.m.	South Voyageurs
Newell, Mike	3:00 p.m.	North Glacier
Noll, Carly	2:00 p.m.	Ballroom
Nwachukwu, Chudy	2:00 p.m.	Ballroom
Nwachukwu, Chudy	2:00 p.m.	Ballroom
Ochoa, Walter	3:30 p.m.	Oak
Ogbon, Enite	9:00 a.m.	Ballroom
Ohman, Chris	9:30 a.m.	North Glacier
Olson, Marin	9:00 a.m.	Ballroom
Onadiran, Akimdeen	9:00 a.m.	Ballroom
O'Neal, Kris	9:00 a.m.	Ballroom
Ong, Ta Re	2:00 p.m.	Ballroom
Ong, Ta Re	2:00 p.m.	Ballroom
Orwoll, Katie	2:00 p.m.	Ballroom
O'Toole, Kelly	2:00 p.m.	Ballroom
Otteson, Rhonda	11:00 a.m.	Granite
Otteson, Rhonda	2:00 p.m.	Ballroom
Overfield, Rachel	9:00 a.m.	Ballroom
Paez, Carlos	9:30 a.m.	South Glacier
Paffrath, Lyndsey	9:00 a.m.	Ballroom
Pamplona, August	2:00 p.m.	Ballroom
Paturi, Naga Sameeraj	2:00 p.m.	Ballroom
Paudel, Omkar	2:00 p.m.	Ballroom
Paudel, Omkar	2:00 p.m.	Ballroom
Perera, Deshani	9:00 a.m.	Ballroom
Perera, Deshani	12:10 p.m.	South Voyageurs
Perera, Deshani	2:00 p.m.	Ballroom
Perez, Nichole	9:00 a.m.	Ballroom
Pérez, David	5:20 p.m.	North Voyageurs
Peters, Becky	9:00 a.m.	Ballroom
Petersen, David	10:10 a.m.	North Glacier
Petersen, David	2:00 p.m.	Ballroom
Pickens, Alexandra	3:00 p.m.	Granite
Pickrell, Charles	3:50 p.m.	Mississippi
Piotrowski, Aaron	2:00 p.m.	Ballroom
Piotrowski, Aaron	3:50 p.m.	North Voyageurs
Pittman, Sarah	9:00 a.m.	Ballroom
Pradhananga, Amit	11:50 a.m.	South Voyageurs
Prom, Daniel	5:20 p.m.	North Voyageurs
Pundsack, Thomas	2:00 p.m.	Ballroom
Rai, Jyoti	11:20 a.m.	North Voyageurs
Rajbhandari, Labchan	2:00 p.m.	Ballroom
Rajbhandari, Prince	9:00 a.m.	Ballroom
Rana, Deepak	11:20 a.m.	South Glacier
Rasmussen, Stacy	6:00 p.m.	Granite
Reberg, Alexander	9:50 a.m.	North Glacier
Rejman, Ranee	9:00 a.m.	Ballroom
Rhuby, Andrea	9:00 a.m.	Ballroom

Ries, Andrew	4:30 p.m.	South Voyageurs
Rochat, Nicole	9:00 a.m.	Ballroom
Rockow, Nathan	2:00 p.m.	Ballroom
Rue, Laura	9:00 a.m.	Ballroom
Saari, Angela	9:00 a.m.	Ballroom
Sajid, Noureen	2:00 p.m.	Ballroom
Salonek, Angela	2:00 p.m.	Ballroom
Salzl, Scott	3:50 p.m.	South Voyageurs
Sandquist, Nathan	2:00 p.m.	Ballroom
Sanftner, Heather	9:00 a.m.	Ballroom
Sanoski, Brian	9:00 a.m.	Ballroom
Sappurissakul, Sutee	9:00 a.m.	Ballroom
Saufley, Nancy	3:50 p.m.	South Glacier
Saxton, Elliott	2:00 p.m.	South Glacier
Saxton, Kelsey	9:00 a.m.	Ballroom
Scallon, Andrew	2:40 p.m.	Oak
Schapman, John	2:00 p.m.	Ballroom
Schlegal, Craig	2:00 p.m.	Ballroom
Schrofe, Ryan	9:00 a.m.	Ballroom
Schwankl, Amber	5:40 p.m.	Granite
Schwinn, Andrew	2:00 p.m.	Ballroom
Schwitzer, Megan	9:00 a.m.	Ballroom
Sharma, Anshu	9:00 a.m.	Ballroom
Shelton, Lisa	9:00 a.m.	Ballroom
Shelton, Lisa	9:00 a.m.	Ballroom
Shelton, Lisa	11:40 a.m.	North Voyageurs
Shepard, Brandon	12:00 p.m.	North Glacier
Shrestha, Binaya	9:00 a.m.	Ballroom
Shrestha, Sharad	9:00 a.m.	Ballroom
Shrestha, Sharad	12:10 p.m.	South Voyageurs
Shrestha, Sharad	2:00 p.m.	Ballroom
Shrestha, Sharad	2:00 p.m.	Ballroom
Sigette, Jeremy	4:10 p.m.	Granite
Simon, John	2:20 p.m.	Oak
Singh, Kunwar	9:00 a.m.	Ballroom
Smelter, Amber	9:00 a.m.	Ballroom
Smith, Austin	3:50 p.m.	South Voyageurs
Smith, Chelsey	9:00 a.m.	Ballroom
Smith, Chelsey	9:00 a.m.	Ballroom
Smith, Chelsey	2:00 p.m.	Ballroom
Smith, Cory	9:00 a.m.	Ballroom
Smith, John	3:30 p.m.	Oak
Smith, Sarah	11:40 a.m.	North Glacier
Spanier, Hannah	9:00 a.m.	Ballroom
Stafne, Joe	9:00 a.m.	Ballroom
Starz, Kimberly	9:00 a.m.	Ballroom
Steckelberg, John	9:00 a.m.	Ballroom
Stein, Nick	2:00 p.m.	Ballroom
Stephanek, Josh	2:20 p.m.	South Voyageurs
Stockinger, Kate	2:00 p.m.	Ballroom
Storlien, Joseph	2:00 p.m.	Ballroom
Storlien, Joseph	4:10 p.m.	South Voyageurs
Stovern, Michael	2:40 p.m.	North Voyageurs
Studniski, Sarah	2:00 p.m.	Ballroom
Suzuki, Motohisa	9:00 a.m.	Ballroom
Swanson, Jennessa	9:00 a.m.	Ballroom
Swanson, Joshua	3:30 p.m.	Mississippi
Swanson, Megan	9:00 a.m.	Ballroom
Tamariz, Lyncol	9:30 a.m.	South Glacier
Tamariz, Raphael	5:20 p.m.	North Voyageurs
Tatge, Zach	9:00 a.m.	Ballroom
Thapa, Birat	11:00 a.m.	Granite
Theis, Angie	9:00 a.m.	Ballroom
Thewlis, Patrick	2:00 p.m.	Oak
Thompson, Rose	2:40 p.m.	South Voyageurs
Thorsten, Rena	9:00 a.m.	Ballroom
Timp-Pilon, Michele	9:30 a.m.	North Voyageurs
Tollefson, Susan	9:00 a.m.	Ballroom
Toomey, Jesse	9:00 a.m.	Ballroom
Tsan, Fei Chin	9:00 a.m.	Ballroom
Tsan, Fei chin	12:10 p.m.	South Voyageurs
Vandenheuvel, Laura	9:00 a.m.	Ballroom
Vesel, Shawn	9:00 a.m.	Ballroom
Vesel, Shawn	11:40 a.m.	Lady's Slipper
Vesel, Shawn	2:00 p.m.	Ballroom
Vetsch, Jenna	9:00 a.m.	Ballroom
Vocelka, Luke	2:00 p.m.	Ballroom
Voegele, Eric	2:00 p.m.	Ballroom
Wagner, LaRissa	9:00 a.m.	Ballroom
Weiss, Kevin	2:00 p.m.	Ballroom
Welle, Laurel	9:00 a.m.	Ballroom
Wenz, Donald	2:00 p.m.	Ballroom
Wesenberg, John	9:00 a.m.	Ballroom
Wesenberg, John	2:00 p.m.	Ballroom
Westling, Heather	9:00 a.m.	Ballroom
White, Ashley	9:00 a.m.	Ballroom
Willing, Alexander	2:00 p.m.	Ballroom
Winscher, Damon	5:20 p.m.	North Glacier
Wixon, Erik	9:00 a.m.	Ballroom
Wojciechowski, Travis	2:00 p.m.	Ballroom
Yang, Joua	9:00 a.m.	Ballroom
Yang, Phillip	5:40 p.m.	North Voyageurs
Yee, Jong-Shan	5:40 p.m.	North Voyageurs
Zimdars, Laraine	2:00 p.m.	Ballroom
Zimmerman, James	3:00 p.m.	South Voyageurs

Research Sponsor Index

Sponsor Name	Department	Presentation Index	Time	Room
Aceves, Robert	Aviation	S1	2:00 p.m.	Oak
		S2	2:20 p.m.	Oak
		S3	2:40 p.m.	Oak
		T7	2:00 p.m.	Ballroom
		ZA3	4:10 p.m.	Granite
Andrzejewski, Julie	Human Relations and Multicultural Education	ZC1	5:00 p.m.	Granite
Arriagada, Jorge	Biological Sciences	T21	2:00 p.m.	Ballroom
Bacharach, David	Health, Physical Education, Recreation & Sport Science	A49	9:00 a.m.	Ballroom
		T36	2:00 p.m.	Ballroom
Baliga, Bantwal	Mechanical and Manufacturing Engineering	ZD3	5:40 p.m.	North Voyageurs
Bekkala, Andrew	Mechanical and Manufacturing Engineering	ZD1	5:00 p.m.	North Voyageurs
Bender, Mitch	Environmental and Technological Studies	A4	9:00 a.m.	Ballroom
		A33	9:00 a.m.	Ballroom
		A34	9:00 a.m.	Ballroom
		G3	11:50 a.m.	South Voyageurs
		T22	2:00 p.m.	Ballroom
		T25	2:00 p.m.	Ballroom
		T26	2:00 p.m.	Ballroom
		W3	4:10 p.m.	South Voyageurs
Berila, Elizabeth	Women's Studies	ZA2	3:50 p.m.	Granite
Blinnikov, Mikhail	Geography	A38	9:00 a.m.	Ballroom
Buswell, Brenda	Psychology	H3	11:40 a.m.	North Voyageurs
Byun, Jeongmin	Mechanical and Manufacturing Engineering	E1	9:30 a.m.	South Glacier
		ZD2	5:20 p.m.	North Voyageurs
Casanova, Stephen	Ethnic Studies	Z1	3:30 p.m.	Oak
Cetkovic-Cvrlje, Marina	Biological Sciences	A25	9:00 a.m.	Ballroom
		A26	9:00 a.m.	Ballroom
		A27	9:00 a.m.	Ballroom
		A56	9:00 a.m.	Ballroom
		G4	12:10 p.m.	South Voyageurs
Cook, William	Biological Sciences	M1	2:00 p.m.	North Voyageurs
Covey, Steve	Mechanical and Manufacturing Engineering	J3	11:40 a.m.	South Glacier
		J4	12:00 p.m.	South Glacier
Davis, Glenn	English	R2	2:20 p.m.	Granite

Sponsor Name	Department	Presentation Index	Time	Room
DeBruycker, Jo	Nursing Science	A16	9:00 a.m.	Ballroom
Dillman, Richard	English	ZC4	6:00 p.m.	Granite
Dvorak, Michael	Chemistry	A35	9:00 a.m.	Ballroom
Edrisinha, Chaturi	Community Psychology	A19	9:00 a.m.	Ballroom
		A20	9:00 a.m.	Ballroom
		K3	11:40 a.m.	Lady's Slipper
		T58	2:00 p.m.	Ballroom
Fedele, Juan	Earth and Atmospheric Sciences	T28	2:00 p.m.	Ballroom
		T56	2:00 p.m.	Ballroom
Fox, Catherine	English	A12	9:00 a.m.	Ballroom
Frank, Stephen	Political Science	F1	11:00 a.m.	Granite
		T31	2:00 p.m.	Ballroom
Freilinger, Rebecca	Ethnic Studies	A12	9:00 a.m.	Ballroom
Galler, Robert	History	B2	9:50 a.m.	South Voyageurs
		U2	3:50 p.m.	North Glacier
Gazal, Oladele	Biological Sciences	A32	9:00 a.m.	Ballroom
		A48	9:00 a.m.	Ballroom
Glade, Betsy	History	W4	4:30 p.m.	South Voyageurs
Glazos, Michael	Electrical and Computer Engineering	A42	9:00 a.m.	Ballroom
		A43	9:00 a.m.	Ballroom
Goergen, Joel	Electrical and Computer Engineering	T38	2:00 p.m.	Ballroom
		T40	2:00 p.m.	Ballroom
Gregory, Daniel	Chemistry	C1	9:30 a.m.	North Glacier
		C3	10:10 a.m.	North Glacier
		T17	2:00 p.m.	Ballroom
Grossman, Philip	Economics	H1	11:00 a.m.	North Voyageurs
		H2	11:20 a.m.	North Voyageurs
		O1	2:00 p.m.	North Glacier
		O2	2:20 p.m.	North Glacier
		O3	2:40 p.m.	North Glacier
		O4	3:00 p.m.	North Glacier
		U1	3:30 p.m.	North Glacier
		ZE1	5:00 p.m.	North Glacier
Gulrud, Kristin	Biological Sciences	T33	2:00 p.m.	Ballroom
Haglin, Kevin	Physics	T42	2:00 p.m.	Ballroom
		ZB1	3:30 p.m.	Mississippi

Sponsor Name	Department	Presentation Index	Time	Room
Hansen, Anthony	Earth and Atmospheric Sciences	T27	2:00 p.m.	Ballroom
Harlander, John	Physics	T43	2:00 p.m.	Ballroom
Heiman, James	English	G2	11:30 a.m.	South Voyageurs
Herath, Jayantha	Computer Science	E2	9:50 a.m.	South Glacier
Holmen, John	Environmental and Technological Studies	B1	9:30 a.m.	South Voyageurs
Hou, Ling	Electrical and Computer Engineering	J2	11:20 a.m.	South Glacier
Huang, Danrun	Mathematics	M2	2:20 p.m.	North Voyageurs
Illies, Jody	Psychology	A6	9:00 a.m.	Ballroom
		A8	9:00 a.m.	Ballroom
		A47	9:00 a.m.	Ballroom
		T20	2:00 p.m.	Ballroom
		T29	2:00 p.m.	Ballroom
		T30	2:00 p.m.	Ballroom
		T53	2:00 p.m.	Ballroom
Imbra, Christine	Higher Education Administration	B4	10:30 a.m.	South Voyageurs
Jacobson, Bruce	Biological Sciences	J2	11:20 a.m.	South Glacier
Jeannot, Michael	Chemistry	X3	4:10 p.m.	North Voyageurs
John, Gareth	Geography	A2	9:00 a.m.	Ballroom
		A5	9:00 a.m.	Ballroom
		A22	9:00 a.m.	Ballroom
		A37	9:00 a.m.	Ballroom
		A53	9:00 a.m.	Ballroom
		T32	2:00 p.m.	Ballroom
Jorgensen , Leeann	Community Psychology	T4	2:00 p.m.	Ballroom
		T34	2:00 p.m.	Ballroom
		T35	2:00 p.m.	Ballroom
Julius, Matthew	Biological Sciences	N2	2:20 p.m.	South Voyageurs
		T16	2:00 p.m.	Ballroom
		T24	2:00 p.m.	Ballroom
		T54	2:00 p.m.	Ballroom
Kim, Choon	English as a Second Language	K1	11:00 a.m.	Lady's Slipper
Koffi, Ettien	English	ZA1	3:30 p.m.	Granite
Kramer, Jennifer	Communication Studies	D4	10:30 a.m.	North Voyageurs

Sponsor Name	Department	Presentation Index	Time	Room
Krystyniak, Rebecca	Chemistry	A28	9:00 a.m.	Ballroom
		T14	2:00 p.m.	Ballroom
		T55	2:00 p.m.	Ballroom
Kubesh, Rodney	Earth and Atmospheric Sciences	M3	2:40 p.m.	North Voyageurs
		M4	3:00 p.m.	North Voyageurs
Kvaal, Christopher	Biological Sciences	A21	9:00 a.m.	Ballroom
		C2	9:50 a.m.	North Glacier
		C4	10:30 a.m.	North Glacier
		T18	2:00 p.m.	Ballroom
		T45	2:00 p.m.	Ballroom
		T49	2:00 p.m.	Ballroom
		T51	2:00 p.m.	Ballroom
		T60	2:00 p.m.	Ballroom
Lenz, Brenda	Nursing Science	A13	9:00 a.m.	Ballroom
		A14	9:00 a.m.	Ballroom
		A15	9:00 a.m.	Ballroom
		A16	9:00 a.m.	Ballroom
		T1	2:00 p.m.	Ballroom
Lewis, Richard	History	W4	4:30 p.m.	South Voyageurs
Lidberg, Russell	Physics	A35	9:00 a.m.	Ballroom
		A41	9:00 a.m.	Ballroom
		T44	2:00 p.m.	Ballroom
Mahroof-Tahir, Mohammad	Chemistry	A31	9:00 a.m.	Ballroom
		A46	9:00 a.m.	Ballroom
		T2	2:00 p.m.	Ballroom
		T17	2:00 p.m.	Ballroom
		T57	2:00 p.m.	Ballroom
		X2	3:50 p.m.	North Voyageurs
Mboko, Swithina	Management	K4	12:00 p.m.	Lady's Slipper
Mechelke, Mark	Chemistry	J1	11:00 a.m.	South Glacier
		T15	2:00 p.m.	Ballroom
Miller, Kenneth	Mechanical and Manufacturing Engineering	W2	3:50 p.m.	South Voyageurs
Minger, Mark	Biological Sciences	T5	2:00 p.m.	Ballroom
		T41	2:00 p.m.	Ballroom
Mohrbacher, Carol	English	D1	9:30 a.m.	North Voyageurs
		R1	2:00 p.m.	Granite
		R4	3:00 p.m.	Granite
Morrison-Sandberg, Leslie	Nursing Science	A13	9:00 a.m.	Ballroom
		A17	9:00 a.m.	Ballroom
		T1	2:00 p.m.	Ballroom

Sponsor Name	Department	Presentation Index	Time	Room
Munshi, Kaylan	Chemistry	T46	2:00 p.m.	Ballroom
Nastrom, Greg	Earth and Atmospheric Sciences	A36	9:00 a.m.	Ballroom
Nuccetelli, Susana	Philosophy	D2	9:50 a.m.	North Voyageurs
		I1	11:00 a.m.	North Glacier
		I2	11:20 a.m.	North Glacier
		I3	11:40 a.m.	North Glacier
		I4	12:00 p.m.	North Glacier
Nyendu, Morgan	Political Science	ZE2	5:20 p.m.	North Glacier
Olson, Brian	Biological Sciences	A60	9:00 a.m.	Ballroom
		T48	2:00 p.m.	Ballroom
Ore, Tracy	Sociology	A12	9:00 a.m.	Ballroom
Pekarek, Alfred	Earth and Atmospheric Sciences	A9	9:00 a.m.	Ballroom
		A39	9:00 a.m.	Ballroom
Petzold, Mark	Electrical and Computer Engineering	T6	2:00 p.m.	Ballroom
		T10	2:00 p.m.	Ballroom
Philippot, Raymond	English	ZC3	5:40 p.m.	Granite
Polacco, Alex	Management	P1	2:00 p.m.	South Glacier
		P2	2:20 p.m.	South Glacier
		P3	2:40 p.m.	South Glacier
Pound, Kate	Earth and Atmospheric Sciences	T54	2:00 p.m.	Ballroom
Ramakrishnan, Latha	Chemistry	A58	9:00 a.m.	Ballroom
		T13	2:00 p.m.	Ballroom
Rangamani, Grama	Communication Sciences and Disorders	A45	9:00 a.m.	Ballroom
Rehling, Diana	Communication Studies	V1	3:30 p.m.	Lady's Slipper
Restani, Marco	Biological Sciences	W1	3:30 p.m.	South Voyageurs
Richason, Benjamin	Geography	A38	9:00 a.m.	Ballroom
Robinson, David	Statistics	F1	11:00 a.m.	Granite
		T31	2:00 p.m.	Ballroom
Robinson, James	English	D3	10:10 a.m.	North Voyageurs
		K1	11:00 a.m.	Lady's Slipper
Rose, Chuck	Environmental and Technological Studies	A4	9:00 a.m.	Ballroom
Ross, Michael	Chemistry	X1	3:30 p.m.	North Voyageurs

Sponsor Name	Department	Presentation Index	Time	Room
Ross, Suzanne	English	R3	2:40 p.m.	Granite
Sadrai, Mahin	Chemistry	ZB2	3:50 p.m.	Mississippi
Salk, Janet	Special Education	K2	11:20 a.m.	Lady's Slipper
Sather, Laura	Statistics	A56	9:00 a.m.	Ballroom
Schaller, Chris	Chemistry	T52	2:00 p.m.	Ballroom
Schmidt, Mark	Business Computer Information Systems	E3	10:10 a.m.	South Glacier
Schoenfuss, Heiko	Biological Sciences	B3	10:10 a.m.	South Voyageurs
		G1	11:10 a.m.	South Voyageurs
		W5	4:50 p.m.	South Voyageurs
Schrank, Gordon	Biological Sciences	T33	2:00 p.m.	Ballroom
Schuh, Timothy	Biological Sciences	C3	10:10 a.m.	North Glacier
		X2	3:50 p.m.	North Voyageurs
Seifert, John	Health, Physical Education, Recreation and Sport Science	A49	9:00 a.m.	Ballroom
Shaffer , Michael	Philosophy	ZC2	5:20 p.m.	Granite
Simpson, Patricia	Biological Sciences	A7	9:00 a.m.	Ballroom
		A10	9:00 a.m.	Ballroom
		A18	9:00 a.m.	Ballroom
		T9	2:00 p.m.	Ballroom
		T23	2:00 p.m.	Ballroom
Sreerama, Lakshmaiah	Chemistry	A23	9:00 a.m.	Ballroom
		A29	9:00 a.m.	Ballroom
		A30	9:00 a.m.	Ballroom
		A57	9:00 a.m.	Ballroom
		A59	9:00 a.m.	Ballroom
		C3	10:10 a.m.	North Glacier
		T17	2:00 p.m.	Ballroom
		T19	2:00 p.m.	Ballroom
		T47	2:00 p.m.	Ballroom
		T50	2:00 p.m.	Ballroom
		T59	2:00 p.m.	Ballroom
		X2	3:50 p.m.	North Voyageurs
Tomaszewski, Pete	Electrical and Computer Engineering	T40	2:00 p.m.	Ballroom
Tubbiola, Maureen	Biological Sciences	T3	2:00 p.m.	Ballroom
Umberger, Stuart	College Experience	U3	4:10 p.m.	North Glacier
Uradnik, Kathy	Political Science	N3	2:40 p.m.	South Voyageurs

Sponsor Name	Department	Presentation Index	Time	Room
Valdes, Leslie	Psychology	A1	9:00 a.m.	Ballroom
		A3	9:00 a.m.	Ballroom
		A24	9:00 a.m.	Ballroom
		H3	11:40 a.m.	North Voyageurs
		U3	4:10 p.m.	North Glacier
Veeder, Rex	English as a Second Language	K2	11:20 a.m.	Lady's Slipper
Voelz, Neal	Biological Sciences	A44	9:00 a.m.	Ballroom
Vogt, Timothy	Electrical and Computer Engineering	A11	9:00 a.m.	Ballroom
		A41	9:00 a.m.	Ballroom
		N4	3:00 p.m.	South Voyageurs
Wagner, Steven	Political Science	F1	11:00 a.m.	Granite
		T31	2:00 p.m.	Ballroom
Walk, Stephen	Mathematics	N1	2:00 p.m.	South Voyageurs
Warner, Susan	Nursing Science	A14	9:00 a.m.	Ballroom
Weisman, Robert	Earth and Atmospheric Sciences	A40	9:00 a.m.	Ballroom
Whites, Margery	Communication Sciences and Disorders	A50	9:00 a.m.	Ballroom
		A51	9:00 a.m.	Ballroom
		A52	9:00 a.m.	Ballroom
		A54	9:00 a.m.	Ballroom
		A55	9:00 a.m.	Ballroom
Wilkins, Julia	Special Education	Y1	3:30 p.m.	South Glacier
		Y2	3:50 p.m.	South Glacier
		Y3	4:10 p.m.	South Glacier
Wolff, Jerry	Biological Sciences	T3	2:00 p.m.	Ballroom
Yao, Aiping	Electrical and Computer Engineering	T12	2:00 p.m.	Ballroom
		T37	2:00 p.m.	Ballroom
Zelenak, Mary	Nursing Science	A15	9:00 a.m.	Ballroom
Zheng, Yi	Electrical and Computer Engineering	T8	2:00 p.m.	Ballroom
		T11	2:00 p.m.	Ballroom
		T38	2:00 p.m.	Ballroom
		T39	2:00 p.m.	Ballroom
		T40	2:00 p.m.	Ballroom

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- Dr. Balsy Kasi, Professor, Department of Environmental and Technological Studies
- Stuart Umberger, Assistant Director, Center for Student Organizations and Leadership Development
- Dr. Leslie Valdes, Associate Professor, Department of Psychology
- Irene Voth, Information Officer, Applied Research and Development Center, College of Science and Engineering

Poster Presentation Judges

- Dr. Balsy Kasi, Professor, Department of Environmental and Technological Studies
- Dr. Dennis Nunes, Dean, School of Graduate Studies
- Amy Schultz, Geropsychologist from OPAL Institute, Oregon Passionate Aging and Living
- Dr. Julia Wilkins, Assistant Professor, Department of Special Education

Paper Presentation Judges

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- Dr. Phil Godding, Interim Associate Dean, College of Social Sciences
- Jodi Kuznia, Director of Grants and Contracts, Office of Sponsored Programs

Registration Desk

- Mitch Bender, Ph.D., Associate Professor, Graduate Coordinator, Environmental and Technological Studies
- Linda Donnay, Director of Grants and Contracts, Office of Sponsored Programs
- Denẻe Janda, Instructor, Department of Communication Studies
- Betty Lommel, Office Assistant, Department of Biology
- Jo McMullen-Boyer, Station Manager KVSC 88.1FM, Adjunct Instructor, Mass Communications
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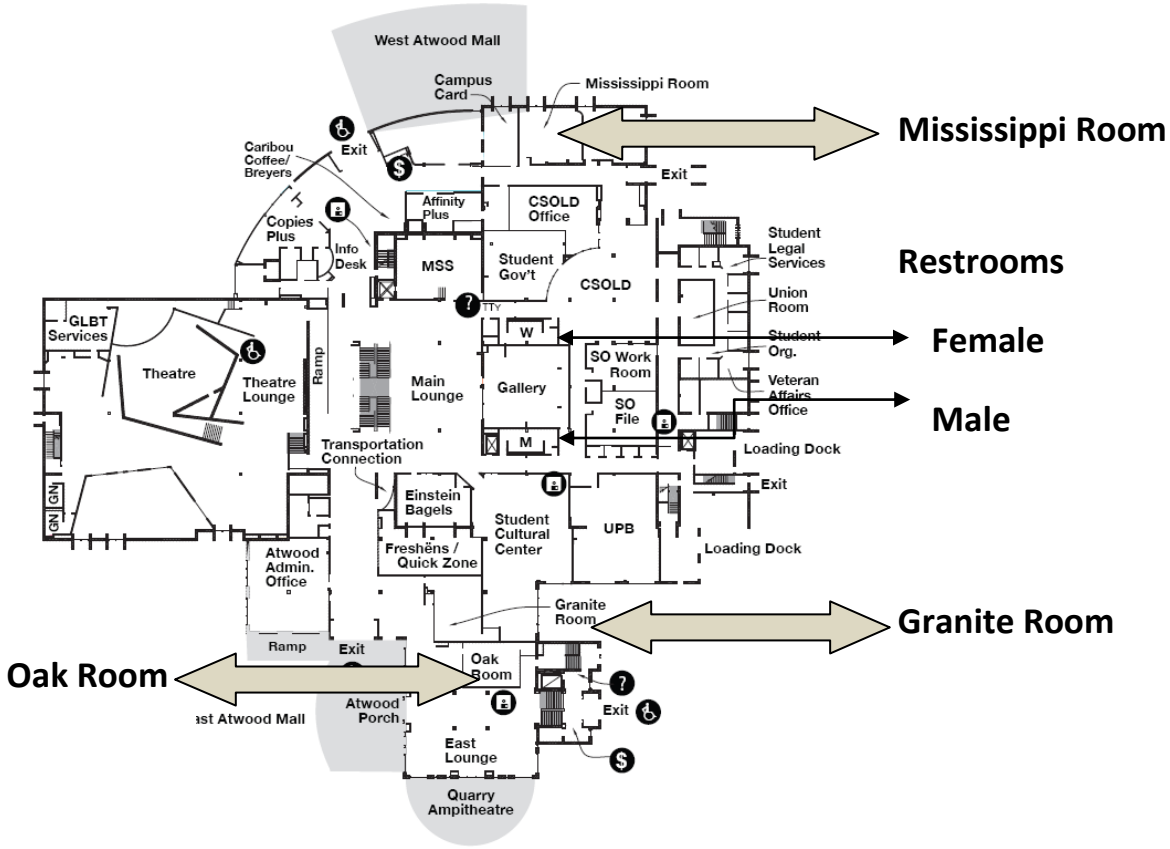
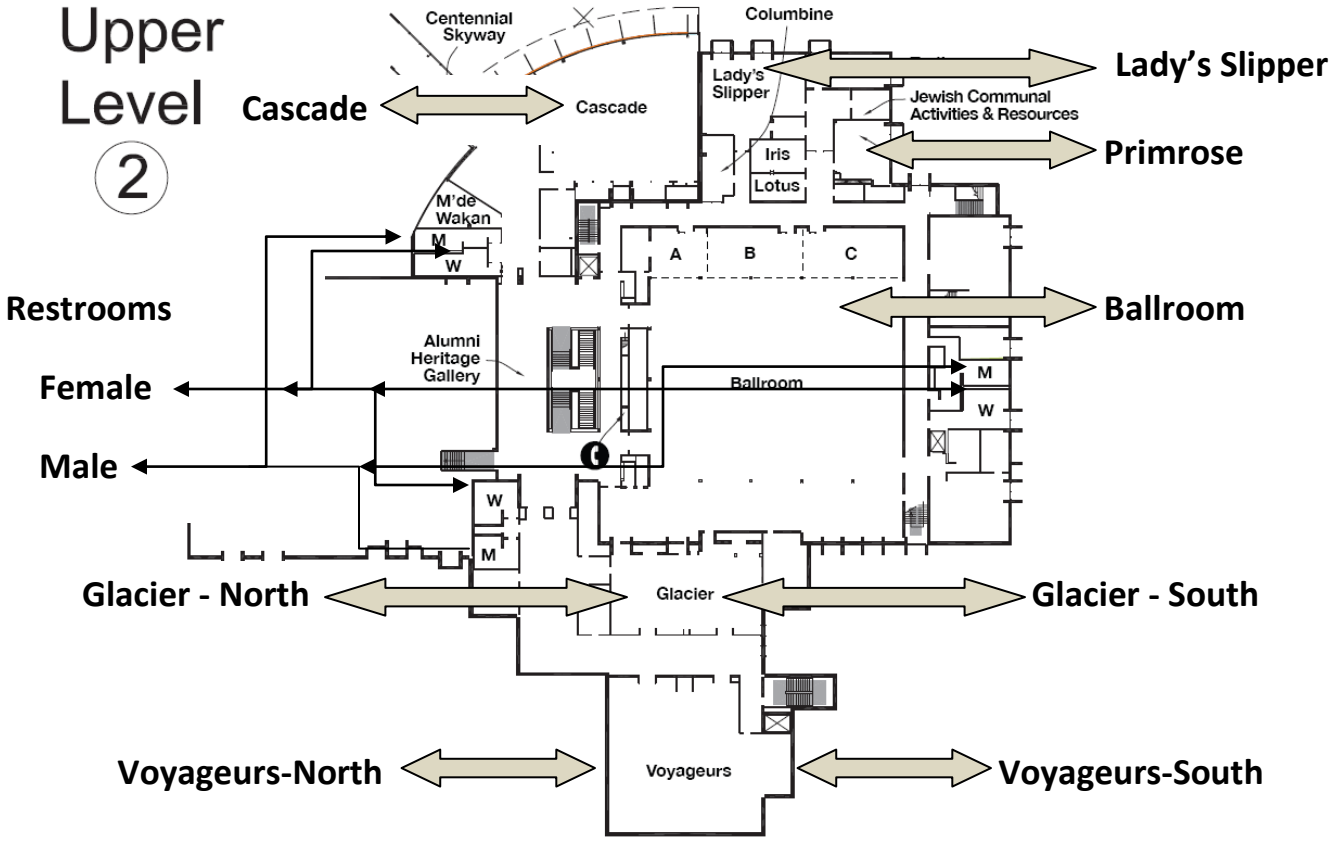
Floor Plan for Atwood Memorial Center

Main Level 1



Upper Level 2



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