Celebration of Student Research, Creative Works and Academic Service Learning

Presentations: April 17, 2008 in the LRC from 9:00 a.m. until 3:00 p.m.

Sponsored by the Office of Academic Affairs and the College of Graduate Studies

Northern Michigan University
An EO Institution
13th Annual Celebration of Student Research, Creative Works & Academic Service Learning
Northern Michigan University

April 17, 2008, marks the thirteenth annual symposium of student presentations entitled "Celebration of Student Research, Creative Works & Academic Service Learning." The celebration is from 9:00 a.m. to 3:00 p.m. Oral presentations and Poster presentations will be in the LRC Rooms 109 and 111-I. This event provides our students an excellent opportunity to gain experience in presenting their own work and will highlight, for the entire university community, the student/faculty mentoring of which we are so proud. Both undergraduate and graduate students have been invited to present the results of their independent scholarly and creative work.

This celebration is sponsored by the Offices of Academic Affairs and Graduate Studies.

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2008 Northern Michigan University
TLC Student Awards

These awards recognize innovative uses of the laptop in the academic environment by students

Technological Sophistication

Michael S. Beckett: School of Art & Design
Donald Bickley: School of Education
Brian Kurcz, Ben Humpula, and Kyle Mattson: Group Project, Department of Engineering Technology

Learning Improvement

Elizabeth Gasperich: Department of Communications and Performance Studies
Jason Gregersen: Department of Mathematics
PROGRAM

April 17, 2008

LRC 109

9:00 Opening Session: Dr. Susan Koch, Provost & Vice President of Academic Affairs, will introduce President Leslie Wong

9:30 Elizabeth Gasperich: TLC-Public Service Announcement, Department of Communications and Performance Studies, Faculty Advisor: Dr. Mark Shevy

9:45 Donald Bickley: TLC-NMU’s Island of Biome in Virtual World Second Life, School of Education, Faculty Advisor: Dr. Carolyn Lowe

10:00 Michael Beckett: TLC-Coursework in Digital Photography, Department of Art & Design, Faculty Advisor: Dr. Stephan Larson

10:15 Jodi L. Tervo: Elite Sit-Ski Athletes Training and Performance, Department of Health Physical Education & Recreation, Faculty Advisor: Dr. Randal Jensen

10:30 Jenny Anderson: Hydrotaxis in Corn Sankes, Department of Biology, Faculty Advisor: Dr. Brent Graves


11:00 Alicia McCauley: Time’s Up: A call for student action, Alicia McCauley, Department of International Studies, Faculty Advisor: Dr. Mohey Mowafy

11:15 Carla Serfas: Seasonal and Hormonal Effects on Growth in Coaster Brook Trout Biology Department, Rachel Holman, Lindsey Watch, Jesse Karner, Faculty Advisor: Dr. Jill Leonard

11:30 Michael D. Farber: A Preliminary Survey of Endoparasites from American Martens (Martes americana) from the Upper Peninsula of Michigan, Department of Biology, Faculty Advisor: Dr. Jackie Bird

11:45 Trisha Sippel: The Effect of Glycosylation on HER2 presentation by antigen presenting cells, Department of Biology, Faculty Advisor: Dr. Robert Winn

12:00 Amanda Bishop: Snake Hydrotaxy: DS Research, , Undergraduate Student, Department of Biology, Faculty Advisor: Dr. Brent Graves

12:15 Courtney Whitfield: Research on Digital Piracy, Department of Economics, Faculty Advisor: Dr. Tawni Ferrarini
12:30 **Brian McMillan**: The Stone of Judith: A Prose Poem, English Department

12:45 **Torrey R. Dupras and Abigail Starich**: Gamma Ray Spectroscopy Analysis of Soil Samples in Marquette County, Michigan for Cs-137 and Bi-214 using Multi-Peak Fitting, Physics Department, Faculty Advisor: Dr. William Tireman

1:00 **Danielle Drewiske and Justin Raska**: South Africa: It's Not Just Animals Department of Criminal Justice, Faculty Advisor: Dr. Bob Hanson

1:15 **Jeff Thomas**: Ending Hunger in Marquette County Through Non-Governmental Food Assistance Programs: Three Approaches, Civic Communication, Faculty Advisor: Dr. Mohey Mowafy

1:30 **Kathy Stenlund**: The irony of food production, School of Education, Faculty Advisor: Dr. Mohey Mowafy

1:45 **Jennifer J. Yeatts**: The Problem of Poetic Translation: A Discussion of Motives & Meanings, Department of English, Faculty Advisor: Dr. Russ Prather

2:00 **Shinya Abe and P. L. Malin**: Joint Angle Changes With Varied Foot Positioning in Rock Climbing, Department of Health, Physical Education, and Recreation, Faculty Advisors: Dr. Randall Jensen and Dr. Phil Watts.

2:15 **Lisa Geoffrion**: Healthy At Every Size: Obesity, Health and Culture, Department of Health, Physical Education and Recreation, Faculty Advisor: Dr. Mohey Mowafy

2:30 **Joshua Ewalt**: Victims "in" and Protectors "of" Appalachia: A Frame Analysis of "Missing Mountains: We Went to the Mountaintop, but it Wasn't There." Department of Communication and Performance Studies, Faculty Advisor: Dr. James Cantrill

2:45 **Nicole Weber**: Growing up on a Salad Bar Beef and Pastured Poultry Farm Applying Joel Salatin Farming Techniques: A Review, Department of Health, Physical Education, and Recreation, Faculty Advisor: Dr. Mohey Mowafy

3:00 **Katie L. Anderson and Jerrold L. Belant**: Avian Response to Human Trail Use in Pictured Rocks National Lakeshore, Department of Biology, Faculty Advisor: Dr. John Bruggink
9:30  Danielle M. Hernandez: Lipid Analysis of Citrullus colocynthis Oilseeds  
Department of Chemistry, Faculty Advisor: Dr. Frankie McCormick

9:45  Steven J. Miller and Steven Puroll: Group Mental Rotation Performance as a Function of Problem Presentation Mode, Department of Psychology, Faculty Advisor: Dr. Sheila Burns and Dr. Charles Leith

10:00  David Viau, Benjamin DePew, and Sean Dobberstein: Parameter Identification in a Model of the Human Liver, Department of Mathematics and Computer Science, Faculty Advisor: Dr. Akhtar A. Khan

10:15  (open)

10:30  Elijah Gardiner and Star Murray: Video Piracy Public Service Announcements  
Department of Communication and Performance Studies, Faculty Advisor: Dr. Dwight Brady

10:45  Erin Alpers: Increasing Breast Cancer Awareness in the African American Community through Education, Department of Health, Physical Education and Recreation, Faculty Advisor: Dr. Patricia Hogan

11:00  Mary-Kay W. Belant: "I-76 East of Akron and Kent" and "Hot" thesis essays  
English Department, Faculty Advisor: Dr. Rondald Johnson

11:15  Kimberly E. Hallfrisch: Benefits of Service Learning: UP 200 race as a business management education tool, College of Business, Faculty Advisor: Dr. Gary Stark and Dr. Carol Steinhaus

11:30  Jason Gregersen: TLC Using screen to capture and video technology to create .avi files for other students to use in their learning, Department of Mathematics, Faculty Advisor: Dr. David Buhl

11:45  Yuka Sano: Clause Nine of Japan’s Constitution  
Department of History, Faculty Advisor: Dr. Bill Mihalopoulos

12:00  Beth Webb: A Forensic Analysis for the Presence of Arsenic  
Department of Biology, Faculty Advisor: Dr. John Ejnik

12:15  Bryan Wurzer: Sustainable Campus Landscape by Planning Practicum: A Demonstration Plan, Department of Geography, Faculty Advisor: Dr. Steve DeGoosh

12:30  Mike Lerch and Phillip Britton: Price Fixation: How Media Set the Oil Agenda  
Communications and Performance Studies, Faculty Advisor: Dr. Dwight Brady
12:45 **Jen VanDragt:** Revolutionary China: The Three Gorges Dam and the Chinese Government, Department of Geography and Department of History, Faculty Advisor: Dr. Bill Mihalopolous

1:00 **Stephanie Boyer, Jeff Wagner, Jamie Johnson:** 3rd International IT Student Seminar: "Life Behind the Scenes at a Laptop University" and Web 2.0 tools, Using a Wiki, College of Business, Faculty Advisor: Sandra Poindexter

1:15 **Luis Gomez, Cody Smith, Kevin Lowe, Tyler Czarnopis, Jackie Lange, Jeron Schmidt, and Jamie Waters:** Learning While Doing: An Academic Service Learning Experience with the "China v. USOEC" Competition, Communications & Performance Studies, Faculty Advisors: Charles F. Ganzert and Wally Niebauer

1:30 **Sarah Hutchins:** First Grade Literature Packs: An Academic Service Learning Project, ED 311/316 Class, Faculty Advisor: Dr. N. Suzanne Standerford

1:45 **Brenda M. Carobine:** Increasing Self-Esteem In Adolescent Girls Department of Health, Physical Education, and Recreation, Faculty Advisor: Dr. Patricia Hogan

2:00 **Lindsay Schrader:** "The Doorbell Rang" presented by Students of ED 311: A Readers Theater Production, School of Education, Faculty Advisor: Sue Szczepanski

2:15 **Thomas Rich:** The Trust of Marcus Baxter: Flash Fiction Department of English, Faculty Advisor: Dr. Ray Ventre
**Joint Angle Changes with Varied Foot Positioning in Rock Climbing**

Shinya Abe and P. L. Malin, Undergraduate Students, Department of Health, Physical Education, and Recreation. Faculty Advisors: Dr. Randall Jensen and Dr. Phil Watts.

Rock climbing requires performers to move their mass vertically through a series of complex movements. The climbers position their bodies differently to optimize their performances. Since very few researches have studied the kinematics of rock climbing, our aim for this study was to examine and compare the joint angles of the body during a rock climb using two different foot positions. Eleven subjects climbed on an indoor climbing wall twice using two foot positioning techniques: 1) Inside edge = where the inside of the shoe was used for contact on the wall; and 2) Toe-in = where the front part of the shoe was used for contact on the wall. Reflective markers were placed on the subject’s body to identify the major joint angles; the elbow, shoulder, hip, knee, and ankle. 3D kinematic analysis found differences (p <0.05) for Maximum angles between the foot positions for all joints except the elbow. There were no significant differences (p >0.05) in the Minimal joint angles between the two foot positions. Results indicate that climbers change their maximum joint angles in order to adjust to different foot positions, optimizing their performances.

**Increasing Breast Cancer Awareness in the African American Community through Education**

E.N. Alpers, Undergraduate Student, Department of Health, Physical Education and Recreation, Faculty Advisor: Dr. Patricia Hogan

This project was created in HL 367, Program Planning and Evaluation. Individually, we were to develop a mission, plan an evidence based program, and evaluate its validity and reliability. My program was based on the "Click It or Ticket" social marketing campaign. Based on peer reviewed articles and the research I did, I formed my program in a way that would be valid and effective. I developed a social marketing campaign to increase awareness about breast cancer within the African American community. The main message of the program was: "She Got It. She Beat It. You Can Too." I created a Public Service Announcement and an informational poster for the campaign. Upon the completion of the project, I presented a PowerPoint presentation to the class highlighting the steps taken to complete the project.

**Hydrotaxis in Corn Snakes**

Jenny Anderson, Graduate Student, Department of Biology, Faculty Advisor: Dr. Brent Graves

Corn Snakes (Elape guttata guttata) were studied to determine if chemosensory abilities are used to orient themselves toward drinking water. There has been no previous research on this topic to our knowledge. Preliminary trials were done to quantify how many days a Corn Snake can go without water before it is motivated to seek water. Corn snakes are ectothermic and have low metabolic rates, which allow them to go several weeks without water and months without food. Snakes were deprived of water for 2,4,6,8 and 10 days and randomly tested six times each. Latency to drink after ”X” number of days was recorded and then analyzed with ANOVA. Analysis results showed that seven days deprived of water was ample time to induce
snakes to seek water. Snakes were then deprived of water for seven days and chemosensory abilities were tested to see if they could in fact detect water by chemoreception. Each snake was put in a Y-maze and presented with two of four stimuli: distilled water, pond water, air or grass. Each snake was tested six times with a different combination of stimuli. Two small fans provided air flow down the maze so the snake could pick up scent molecules by chemoreception. The results suggest that Corn Snakes were unable to detect water by chemoreception. However, this does not necessarily rule out that they cannot smell water. In future studies, different stimuli and more variation within trials may be helpful to determine the ability of snake chemoreception.

Avian Response to Human Trail Use in Pictured Rocks National Lakeshore
Katie L. Anderson, Jerrold L. Belant, Graduate Student, Department of Biology, Faculty Advisor: Dr. John Bruggink

Many protected or preserved wild areas are managed for both wildlife habitat and human recreational activity. This dual use of forested lands has created concern about how recreational activity may impact wildlife. Birds are of particular concern, as their reproduction, survival, and habitat use respond to human activity. We examined forest bird response to human activity on trails in Pictured Rocks National Lakeshore, Michigan. Avian community characteristics (diversity, evenness, distance from trail, and richness) were derived from line transect bird counts, which we conducted weekly on 11 trail transects in a northern hardwood forest from late May to early August in 2006 and 2007. We quantified human activity along transects with infrared trail monitors and used regression to test for relationships between bird communities and human activity.

Our preliminary results suggest that trail use impacts bird species and species richness. For example, black-throated blue warblers and red-eyed vireos were found at greater distances from the trails with high human activity. Conversely, American robins did not appear to move away with increased human activity. Our initial results indicate that current visitor use of Pictured Rocks may be adversely impacting birds, although continued monitoring is recommended.

"I-76 East of Akron and Kent" and "Hot" thesis essays
Mary-Kay W. Belant, M.F.A. candidate, English Department, Faculty Advisor: Dr. Rondald Johnson

"I-76" is grounded in the story of my trip to help my dad during his final week of radiation therapy for cancer this past fall. Along the way, I stopped to assist at the scene of a single-car accident. The essay treats issues related to illness, death, and the preciousness of time. "Hot" is a separate, but related, essay. It narrates another trip to visit my father (this time during his recovery and with my college-aged son as companion). As in "I-76," illness and end-of-life issues are addressed. In this essay, the emphasis is on my own (female) biological process of aging.
Snake Hydrotaxy: DS Research
Amanda Bishop, Undergraduate Student, Department of Biology,
Faculty Advisor: Dr. Brent Graves

Since January 2007 Jenny Anderson and myself have been conducting directed study research (enrolled in BI 498) in the lab of Dr. Brent Graves. There is a great deal of folk wisdom suggesting that various animals can find their way to water using their sense of smell. We wanted to determine whether corn snakes (Elaphe guttata guttata) could do this.

Our first experiment was determining how long snakes of this species would need to be deprived of water to become behaviorally motivated to drink.

With the results that snakes are motivated to drink after seven days, we started the second part of our project by placing snakes in a Y-maze with different stimuli. Results showed the snakes in our experiment did not show statistically significant ability to orient themselves toward water, but as with all science this does not prove that they cannot.

Overall our experiemnt did ascertain that snakes of our size range and species were motivated to drink after seven days of water deprivation, but provided no significant data suggesting that snakes are actually able to 'smell' water.

3rd International IT Student Seminar: "Life Behind the Scenes at a Laptop University" and Web 2.0 tools, Using a Wiki
Stephanie Boyer, Jeff Wagner, Jamie Johnson, Undergraduate Students, College of Business, Faculty Advisor: Sandra Poindexter

March 3-7, Stephanie Boyer, Jeff Wagner, and Jamie Johnson were selected to represent Northern Michigan University at the 3rd International IT Student Seminar in Madrid, Spain. We presented on “Life Behind the Scenes at a Laptop University” and chose to do our workshop on the use of Web 2.0 tools, using a Wiki.

For the presentation, we presented on how NMU implemented the laptop program. We discussed platforms that were used, different software, advantages, disadvantages, and the helpdesk usage. For the workshop, the students connected to the TLC laptop through a web browser using the laptop’s IP address. The students were given several tasks to complete for their wiki pages. During the workshop we covered several topics including basic formatting of text, redirecting pages, and linking.

The students concluded that this workshop gave them a very positive experience into the beginning stages of a Web2.0 Wiki. The TLC laptop served as a learning tool for thirty international students. Upon the conclusion of our workshop, it was voted that the content that was entered into the TLC laptop’s Wiki would be used and linked to previous pages for future seminars.
Increasing Self-Esteem in Adolescent Girls
Brenda M. Carobine, Undergraduate Student, Department of Health, Physical Education, and Recreation, Faculty Advisor: Dr. Patricia Hogan

In the teaching profession, it is vital that teachers assess students' needs, set goals and objectives, develop a plan to meet the needs, implement the plan, and evaluate whether the need was met. Increasing self-esteem in adolescent girls is one such need that should be addressed especially during middle school and high school. This project discusses the global need for an increase in self-esteem in adolescent girls and the ways in which the girls' self-esteem can be tested. It also includes a program that could be implemented to address the need and ways to evaluate whether the program was effective.

Parameter Identification in a Model of the Human Liver
Sean Dobberstein, Benjamin DePew, and David Viau, Undergraduate Students, Department of Mathematics and Computer Science, Faculty Advisor: Dr. Akhtar A. Khan

An effective mathematical modeling of the human liver is of paramount importance for diagnostic purposes. Therefore, a lot of research efforts have been made to give a mathematical model that can describe the functioning of the human liver. In this work we focus on a simplified model investigated by Lenka Celechovska in her Ph.D. thesis in 2004. It turns out that the system of differential equations that conveniently models the functioning of the human liver involves three unknown parameters. To complete the model, the main task then is to identify these model parameters. The classical approach for solving these kinds of mathematical problems is the so-called quasi-linearization technique. Unfortunately, when the quasi-linearization approach is applied to the human liver model, the identified parameters could admit negative values, which is in contrast to the physical meaning of the parameters. In this work, we propose to use the numerical optimization techniques to solve the above mentioned parameter identification problem. Besides ensuring that the parameters remain positive, there are several other advantages of our approach which will be discussed in the talk.

South Africa: It’s Not Just Animals
Danielle Drewiske and Justin Raska, Undergraduate Students, Department of Criminal Justice, Faculty Advisor: Dr. Bob Hanson

We will give a presentation, using PowerPoint, based on experiences from our class trip in March 2008 to Pretoria, South Africa. This presentation will illustrate the experiences we had and how they differed from what we, and other students, expected before going to South Africa. These experiences will be based on culture, stereotypes, internationalization, and humanity. By participating in the trip we were able to transform the information we learned in class, into insight. What was learned on the trip could never be taught in a classroom.
Gamma Ray Spectroscopy Analysis of Soil Samples in Marquette County, Michigan for Cs-137 and Bi-214 using Multi-Peak Fitting
Torrey R. Dupras, Abigail Starich, Undergraduate Student, Physics Department, Faculty Advisor: Dr. William Tireman

Soil samples were collected and analyzed for naturally occurring radioactive materials (NORMs) from Eastern Marquette County in Michigan's Upper Peninsula. The goal was to determine if fly ash from two coal-fired power plants located in Marquette County are contributing to the level of NORMs in the soil. A 2-in by 2-in NaI detector was used to obtain the gamma ray spectrum from each sample and multi-peak fitting was used to decompose the small, overlapping gamma ray peaks of the man-made 137Cs (662 keV) and the naturally occurring 214Bi (609 keV) from topsoil samples. The measured activities of these two isotopes in the topsoil and 214Bi in the sub-soil over the sampling area will be presented along with conclusions about their respective distribution in the search area.

Victims "in" and Protectors "of" Appalachia: A Frame Analysis of "Missing Mountains: We Went to the Mountaintop, but it Wasn't There"
Joshua Ewalt, Undergraduate Student, Department of Communication and Performance Studies, Faculty Advisor: Dr. James Cantrill

This paper examines the role played by two cognitive frames through which audiences approach discourse related to the practice of “mountaintop removal” in Appalachia. A brief review of Appalachian coal mining history is followed by an introduction to a pair of perceptual lenses—the “Appalachian Justice” and “Grounded Faith” frames—that are reflected in the language advocates may employ, placing their identities into the physical and social context of a particular landscape. This analytic approach is then used to examine a text crafted by Appalachian environmental activists opposed to mountaintop removal practices so as to illuminate potential problems in how environmental communication may be processed when conflicting frames are present in discourse.

A Preliminary Survey of Endoparasites from American Martens (Martes Americana) from the Upper Peninsula of Michigan
Michael D. Farber, Undergraduate Student, Department of Biology, Faculty Advisor: Dr. Jackie Bird

During the 2002-2004 trapping seasons, 359 American martens were submitted to the Michigan Department of Natural Resources. The major organ systems (GI tract, lungs, kidney, heart, liver, and spleen) of 329 martens for which there were complete capture records (age, sex, date and site of capture) were donated to NMU’s biology department for parasitological analysis. From this group, 74 martens were sampled. Organs were grossly examined for whole parasites. Gut contents were subjected to flotation and sedimentation analyses. Three genera of nematodes (Dioctophyme renale, Physaloptera sp., a trichurid tentatively identified as Capillaria sp.), one trematode genus (Alaria sp.), and one cestode order (Pseudophyllidea) were identified. Prevalences of parasite infection were compared over years, between sexes, and among age groups.
Video Piracy Public Service Announcements
Elijah Gardiner and Star Murray, Undergraduate Student, Department of Communication and Performance Studies, Faculty Advisor: Dr. Dwight Brady

Earlier this semester, the advanced field production class in the department of Communication and Performance Studies (BC 473-F) created two sixty second television public service announcements. Both PSAs address the topic of illegal downloading of movies. The presentation will cover the methods used to create and refine the messages and also detail the steps taken during the shooting and editing of the PSAs. Both PSAs will be displayed at the end of the presentation. Both spots will be used by students in the department of Economics as part of a campus campaign to raise awareness of this issue.

Healthy at Every Size: Obesity, Health and Culture
Lisa Geoffrion, Undergraduate Student, Department of Health, Physical Education and Recreation, Faculty Advisor: Dr. Mohey Mowafy

The health risks of obesity have been trumpeted loud and clear: diabetes, cardiovascular disease and high blood pressure are all strongly linked to obesity. Is there a difference between looking healthy and being healthy? Western culture tells us: One can never be too rich or too thin. But the human body does not come in one cookie-cutter shape. Just as there are a range of body heights, there are a range of natural body weights. The predisposition to store different amounts of body fat is part of who we are. Our culture sends us the message that body fat is unhealthy and ugly; any fat person should feel ashamed of their moral weakness and obvious lack of self respect.

HAES, or Healthy at Every Size, is a world-wide movement that affirms that human beings are not plastic Barbie doll cut-outs, that humans come in a range of colors, heights, and shapes, and that health is much more than a BMI number. The audience will come away from the presentation knowing that health is not a number and not a contest; health is loving who you are, loving life, and living life to the fullest.
Learning While Doing: An Academic Service Learning Experience with the "China vs. USOEC" Competition
Luis Gomez, Cody Smith, Kevin Lowe, Tyler Czarnopis, Jackie Lange, Jeron Schmidt, and Jamie Waters, Graduate Students, Communications & Performance Studies, Faculty Advisors: Charles F. Ganzert and Wally Niebauer

In October 2007, the Chinese Olympic team of boxers and wrestlers came to Marquette to compete with our USOEC athletes. This unique event, called "China v. USOEC," was organized by the NMU Olympic Education Center with the assistance of Public Relations and Entertainment & Sports Promotion students in the Communication & Performance Studies Department.

In addition, this competition was webcast around the globe with Media Production students serving as announcers. The student announcers were assisted, in turn, by US athletes who served as color commentators. The webcasts also included feature stores produced by Advanced Audio Production students. These webcasts won a Sports Announcing Award from the Michigan Association of Broadcasters.

This international competition became a significant hands-on experience that offered students an opportunity to practice what they had studied in class and assist a number of organizations as well.

The presentation features students describing their work and discussing what they learned while working with world-class athletes from two countries. The session will also include DVD segments from the webcast and still photographs in a slide show.

Benefits of Service Learning: UP 200 Race as a Business Management Education Tool
Kimberly E. Hallfrisch, Undergraduate, College of Business, Faculty Advisor: Dr. Gary Stark and Dr. Carol Steinhaus

Business management education teaches management theory and tools to use in applying management theory but does not truly allow students to apply this theory. Service learning classes allow students to be exposed to real world problems and to apply theory to these situations. Working with the community allows a connection to the real world and allows theory to be applied in a unique manner that is irreplicable in the classroom. Classroom theory is a necessity to provide a valid service learning experience but the service learning brings this theory to a new level.

Lipid Analysis of Citrullus Colocynthis Oilseeds
Danielle M. Hernandez, Undergraduate Research, Department of Chemistry, Faculty Advisor: Dr. Frankie McCormick

The extraction of lipids from Citrullus colocynthis oilseeds (authority: (Linn) Schrad) commonly called Werewere, infrared spectroscopy (IR) of the oil, gas chromatography analysis of the fatty acid methyl esters (FAME), and oil quality tests determined the fatty acid composition of the oil. Oilseeds were blended, oil was extracted through soxhlet extraction and IR was analyzed for key functional groups that confirmed an unsaturated ester. Values
were calculated significant in understanding the lipid composition and purity of the oil with techniques including having found the unsaponifiable matter, saponifiable matter, saponification value, iodine value, and free fatty acid content. It was demonstrated that the seeds of Citrullus colocynthis are a pure source of saturated fats. Transesterification and gas chromatography of the FAME allowed for identification of the mixture of Stearic and Oleic Acids greater than that of Palmitic Acid which comprises the oil. Its implications in the Ghanaian culture contribute to understanding the Citrullus colocynthis seeds nutritional significance in relation to health with its use in many local Ghanaian dishes. Although it is not proven that saturated fats are unhealthy, consumption of dishes and soups prepared from or with these seeds comes with health risks.

First Grade Literature Packs: An Academic Service Learning Project
Sarah Hutchins, ED 311/316 Class, School of Education,
Faculty Advisor: Dr. N. Suzanne Standerford

As teacher candidates in our first block of education methods we were given an opportunity to participate in an Academic Service Learning project. We met and decided we will provide a set of book packs for Mrs. Holly Muscoe's first grade class at Aspen Ridge Elementary school. The literature packs are for the children to be able to bring books home and experience literature in different realms outside the classroom.

We have chosen the materials the packs will contain. In small groups we discussed book choices, what materials to provide, activities to do, and the packs these items will be contained in. The books were picked specifically with the first grade students in mind; the books picked span different genre and various authors and illustrators. The packs also include art materials and other take home projects for the children to experience literature at home.

Once the literature packs go to Mrs. Muscoe's class they will be checked out on a rotating schedule. The students will have a week to explore the materials at home. Through this we hope to help these children build a lifelong bond with literature.

American Chemical Society Spring Meeting in Review
Matthew J. Kortes, Undergraduate Student, Department of Biology,
Faculty Advisor: Dr. Osvaldo J. Lopez

Physical and chemical techniques allow for a quantitative explanation of biological phenomena. These techniques will facilitate further understanding of biology and allow for the development of directly targeted therapies. Cytokines represent a particularly useful and lucrative area of research; further understanding of their underlying mechanisms present novel therapeutic opportunities. Recently, Biogen reported that BAFF, a cytokine implicated in Systemic Lupus Erythematosus and Multiple Sclerosis, has unique multiple structures with different abilities. Single particle tracking is a physical technique that elucidates receptor function without X-ray crystallography and utilizes quantum-dots (q-dots). Q-dots present an array of biological applications. Q-dots are being investigated as an intraoperative fluorophore in cancers such as esophageal carcinoma. Herein I report on research presented at the American Chemical Society Spring Meeting (New Orleans; April 6th-10th) with applications to the fields of molecular, medical and microbial biology.
Price Fixation: How Media Set the Oil Agenda
Mike Lerch, Phillip Britton, Undergraduate Students, Communications and
Performance Studies, Faculty Advisor: Dr. Dwight Brady

Our presentation/poster will consist of the results of a content study focusing on how media frame the topic of oil. Our hypothesis was that media focused exclusively on the price of oil/gasoline while neglecting information about long term supply. We studied CNN transcripts and NY Times articles, and found that our hypothesis was correct.

Changes in Joint Angles with Differed Foot Placement in Rock Climbing
Paris L. Malin., Undergraduate Student, Department of Health, Physical Education,
Faculty Advisor: Dr. Randall Jensen

Reliability is how well a test remains consistent over repeated tests of the same subject under identical conditions. It is necessary to allow comparison of measurements from one time to another. There has been little research examining the reliability of movement analysis in rock climbing. Therefore, the aim for our study was to observe the reliability of joint angle movements in rock climbing. Ten subjects performed two trials each of two climbing moves on an indoor climbing wall. Reflective markers were placed on the joint angles for the elbow, shoulder, hip, knee, and ankle. We examined two different foot placements; 1) Inside edge = where the inside edge of the foot made contact with the wall; and 2) Toe-in = where the front part of the foot contacted the wall. Movements were digitized using Peak Motus 8.5 kinematic analysis software. There were significant differences (p <0.05) between the trials for the max and min ankle angle, but none of the other joint angles differed (p > 0.05). The Intraclass Correlation Coefficient (ICC) was higher than r = .80 for all measurements. The study found that minimum, maximum, and average joint angles were consistent during the repeated rock climbing movement.

Time’s Up: A Call for Student Action
Alicia McCauley, Undergraduate Student, Department of International Studies,
Faculty Advisor: Dr. Mohey Mowafy

This is a call to action for the Northern Michigan University student body and the student bodies of every university. Political apathy has gripped the nation and it is up to our generation to set the example for following and previous generations. An overwhelming feeling of hopelessness has inundated the American population and has created a general sentiment of apathy among voters. We are at a critical junction in this country and we must take our country back. This presentation will detail the options that students have for involvement in primary and presidential elections, as well as the fate we may all face if we remain complacent bystanders.
The Stone of Judith: A Prose Poem
Brian McMillan, Graduate Student, English Department

This prose poem is 423 words long, and is written after the style of the King James Version of the Bible. It was inspired by the Cain and Abel story in Genesis, as well as Virginia Woolf's "A Room of One's Own," in which she imagines that Shakespeare had a sister named Judith.

Group Mental Rotation Performance as a Function of Problem Presentation Mode
Steven J. Miller, Graduate Student, and Steven Puroll, Undergraduate Student, Department of Psychology, Faculty Advisor: Dr. Sheila Burns and Dr. Charles Leith

Mental Rotation has been measured on both computerized and paper-and-pencil tasks. Sex differences (males outperforming females) in performance are found in both tasks, but are larger on the paper-and-pencil test. One difference between the two tasks is that individual comparison items are presented one at a time on the computer and five at a time on the most popular paper-and-pencil task. This research investigates whether presenting paper-and-pencil items one at a time will reduce sex differences on the paper-and-pencil task. Two hundred undergraduate introductory psychology students were run in groups on either the five-per-page or one-per-page version of a short Vandenberg Mental Rotation Test. The results showed increased performance for both genders on the one-per-page compared to the five-per-page version. However, the performance gap between the genders was not decreased.

"The Doorbell Rang" Presented by Students of ED 311: A Readers Theater Production
Undergraduate Students, Department of Education, Faculty Advisor: Sue Szczepanski

Superior Hills Elementary School hosts a Family Adventure Night every winter to showcase the fun and excitement of reading and writing. Students in ED 316, Elementary Reading Instruction, wrote and directed a reader's theater based around the children's book "The Doorbell Rang" by Pat Hutchins. They created a script to go along with the book and performed for over 150 k.-3rd grade students, parents and faculty. The story was about dividing a plateful of cookies evenly between the people present. The group took the books idea a step further by integrating math and had students interact with the play by dividing their own set of cookies along with the play. Students really seemed to learn the concept of division while having a lot of fun. This experience taught our class another great way to get students thinking and learning through a different form of instruction.

The Trust of Marcus Baxter: Flash Fiction
Thomas Rich, Undergraduate, Department of English, Faculty Advisor: Dr. Ray Ventre

"The Trust of Marcus Baxter" is the story of an amnesic man trapped in an endless routine high in the tunnels of a strange mountain range. The reason for his amnesia, the purpose of his presence there, and the nature of his memories are all explored against the backdrop of a great thunderstorm.
Clause Nine of Japan’s Constitution
Yuka Sano, Undergraduate Student, Department of History, Faculty Advisor: Dr. Bill Mihalopoulos

The presentation explores Clause Nine, also known as the "peace clause," of Japan's Constitution in the light of ongoing debate about whether or not it should be changed. This discussion between Japanese pacifists and the people who want to militarize the country is also part of the issue within Japan's nationalism, which also has a huge impact on the U.S.-Japan relationship, Japan's contribution to the world's peace and stability, and the U.S. policy in East Asia. Japan's issue with Clause Nine is how they can successfully become truly independent without making the same mistakes it had experienced over half a century ago. In this presentation, I would like to introduce the background of this issue and both sides of the argument and their justification with reviewing the two books which were written by Japanese.

Seasonal and Hormonal Effects on Growth in Coaster Brook Trout
Carla Serfas, Graduate Student, Biology Department, Rachel Holman, Lindsey Watch, Jesse Karner, Faculty Advisor: Dr. Jill Leonard

We compared populations (3 coasters, 1 stream resident) of Lake Superior brook trout (age 1) over time to determine if they differed in growth parameters or levels of thyroid hormones. A coaster is a brook trout that spends all or part of its time in a large lake. In Lake Superior coasters were once abundant; however, angling and habitat destruction substantially depleted their numbers. A life history variant, coasters are thought to be larger in size than the resident fish that stay in the natal streams. Four strains of brook trout were held at constant temperature (~12°C ±1°C) and natural photoperiod. A subset of fish was sampled monthly. No significant difference was found between strain (p=0.392) or sampling period (month; p=0.686) in length based relative growth rate. However, there was a significant difference in condition factor across the sampling periods (p<0.001) and strains (p<0.001). The Nipigon strain had a higher condition factor than the Tobin Harbor, Iron River, or Siskiwiit strains. We suggest that the differences in growth in field studies are most likely an environmental effect given the similarity in growth parameters seen under common rearing conditions.

The Effect of Glycosylation on HER2 Presentation by Antigen Presenting Cells
Trisha Sippel, Graduate Student, Department of Biology, Faculty Advisor: Dr. Robert Winn

Human Epidermal Growth Factor Receptor 2 (HER2) plays an important role in regulation of cell growth and proliferation. Some forms of breast cancer have an overexpression of HER2, but because HER2 is also found naturally on cells in the body, these cancer cells go unrecognized by the immune system and grow out of control. If HER2 could be presented by antigen presenting cells (APCs) as a foreign antigen, the body would recognize it on the tumor cells and the immune system could target these cells for destruction. This project will focus on a method to better stimulate APCs to present HER2 to the immune system through the addition of sugars (glycosylation) to the HER2 protein. Both glycosylated and nonglycosylated HER2 will be tested for their ability to be presented as an antigen by APCs and therefore their ability to activate the immune system. Since it has been shown that glycosylation of a protein leads to a more efficient presentation by the APC, the hypothesis is that
the glycosylated HER2 will cause an increased activation of the immune system versus nonglycosylated HER2. This research will provide insight for the development of immune based treatments for patients with breast cancer overexpressing HER2.

The Irony of Food Production
Kathy Stenlund, Undergraduate Student, School of Education,
Faculty Advisor: Dr. Mohey Mowafy

This presentation will focus on the issues surrounding the farming methods used in food production and the consequences thereof on the environment, humans, and society. Following the pattern of food production in the United States—large scale, industrial farming that uses genetically modified seed requiring the use of pesticide and fertilizer in order to grow, many nations are losing their traditional farming practices. The loss of traditional farming methods leads to an increase in malnutrition because people are no longer able to farm in a sustainable way.

The use of chemical pesticides and fertilizers causes instability in the soil which can only be sustained by continued use of pesticides and fertilizers. The health of the soil is vital to the health of the food produced. A crucial problem with this pattern of food production is that while there may be an increase in product yield, the soil is left in a very fragile state, much of the food produced is not for direct human consumption, and it is a system of monoculture food production which further strips the soil of vital nutrients without ever replenishing them.

Elite Sit-Ski Athletes Training and Performance
Jodi L. Tervo, Undergraduate Student, Department Health Physical Education and Recreation, Faculty Advisor: Dr. Randal Jensen

The objective of the current study was to perform a pilot study to form a foundation for further research with paralympic nordic sit-ski athletes. This study focused on correlation between training and performance. Methods: Subjects in this study were elite paralympic athletes, who filled out a survey during a week of national competition. The athletes had five days to complete the seven-page survey. The “Training and Performance Questionnaire” was revised from the form created by Will Hopkins. This survey included six categories of questions. A bivariate correlation was performed, using SPSS. Results: There were few significant findings. A significant correlation between race week skill time spent and the 9 km adjusted time had an $r = -.990$ ($p < .001$). Raw time of 9 km and raw time of 1.3 km correlated with an $r = .990$ ($p < .001$). Discussion: After reviewing literature and performing extensive searches on training and performance correlations for sit-ski athletes there were no studies found. This study is a starting point for further research in this area. Due to the low number of subjects, the results of this study need further investigation.
Ending Hunger in Marquette County Through Non-Governmental Food Assistance Programs: Three Approaches  
Jeff Thomas, Undergraduate Student, Civic Communication,  
Faculty Advisor: Dr. Mohey Mowafy

The annual need for non-governmental food aid in Marquette County is around two million pounds. This presentation will compare and contrast three nonexclusive means of acquiring this product, and outline a sustainable least-cost strategy for providing timely and adequate food assistance to anyone in Marquette County who needs it.

Revolutionary China: The Three Gorges Dam and the Chinese Government  
Jen VanDragt, Undergraduate Student, Department of Geography and Department of History, Faculty Advisor: Dr. Bill Mihalopolous

The Chinese government compares the construction of the Three Gorges Dam to the building of the Great Wall of China. This remarkable feat of nature, symbolic of the indomitable will of the Chinese, is already the root of much environmental damage to the Yangtze River system. The issues this presentation addresses are why the Chinese government views the Three Gorges Dam as an enormous achievement and how this emphasis on development projects blinds the authorities to the unforeseen environmental effects.

A Forensic Analysis for the Presence of Arsenic  
Beth Webb, Graduate Student, Department of Biology, Faculty Advisor: Dr. John Ejnik

Arsenic is used in the preservation of taxonomical specimens. Forensic analytical techniques were used to determine that the Arsenic level in the biology museum, which houses a collection of birds and mammals was below the OSHA suggested daily value (by ingestion). (This project fulfills the graduate requirements for CH 440: Forensic Chemistry.)

Growing up on a Salad Bar Beef and Pastured Poultry Farm Applying Joel Salatin Farming Techniques: A Review  
Nicole Weber, Undergraduate Student, Department of Health, Physical Education, and Recreation, Faculty Advisor: Dr. Mohey Mowafy

As Americans become increasingly aware of the industrialization of animal production and its harm to the environment, public health, and society, a new green revolution is sparking. The return of animals to their natural eating habits: to grazing green grass amidst American farmlands. This idea, although it seems natural and simple, requires creativity, management, entrepreneurism, and observation. This presentation will focus on personal experiences the presenter had growing up on her family farm with the salad bar beef and pastured poultry methods designed by Joel Salatin.

Joel Salatin's financially profitable farming enterprise demonstrates that farmers can make a profit while maintaining a healthy environment and improving consumer health. Presented will be an explanation of the pastured and rotational grazing techniques along with photos, and personal experiences. Discussion of the link in the conventional industry between “fat animals fat people” will be covered along with the alternative health and environmental
benefits of eating grazed meat. Listeners will leave with a newfound appreciation for “green” agriculturalists, an understanding of differences between conventional and pastured meat and questioning the health effect of their meat eating a salad bar. After all, it can be said, you are what you eat”.

Research on Digital Piracy
Courtney Whitfield, Undergraduate Student, Department of Economics,
Faculty Advisor: Dr. Tawni Ferrarini

I have done research on digital piracy under Tawni, and Dwight Brady has had his students research it as well. We will be working together to put together a presentation and poster for this event.

Sustainable Campus Landscape by Planning Practicum: A Demonstration Plan
Bryan Wurzer, Undergraduates Class Project, Department of Geography,
Faculty Advisor: Dr. Steve DeGoosh

The 368-acre campus of Northern Michigan University (NMU) is both expensive and labor-intensive to maintain, and, with grave prospects for rising fuel, material, and equipment costs, the burden of maintaining the current landscape will only increase. Furthermore, there is a growing realization that the “greening” of campus warrants more than lip service... serious commitment is required.

A site was selected as a demonstration area for sustainable practices. In addition to plantings and maintenance, issues include a winter climate, lack of formal pedestrian walkways, appearance from nearby, off-campus, residential areas, and security. A more sustainable landscape would satisfy several university objectives. Goals of this plan include: improve pedestrian access and safety, create a more aesthetically pleasing atmosphere, reduce costs, and create a sustainable campus landscape.

The Problem of Poetic Translation: A Discussion of Motives & Meanings
Jennifer J. Yeatts, Graduate Teaching Assistant, Department of English,
Faculty Advisor: Dr. Russ Prather

The translation of poetry from one language into another presents a variety of problems. By its nature, poetry is an intricate form, requiring attention to details such as rhythm and sound—elements that are difficult to preserve when translated into another language. In this presentation, I highlight passages from Virgil’s Aeneid, the Finnish epic The Kalevela, and Pablo Neruda’s Ode to Tomatoes in both their original languages and translations into English. In an attempt to illuminate the fine points of poetic translation, this presentation explores the effects of language translation on works of poetry.
A Comparative Study of High School Skipping Behaviors in Business, Education and Industrial Technology Students
Michelle Bicigo, Undergraduate Student, School of Education,
Faculty Advisor: Dr. Judith Puncochar

A survey of high school skipping behaviors was given to Northern Michigan University students, which included Business majors (n = 58), Education majors (n = 44), and Industrial Technology majors (n = 70, of which 27 were freshmen and 43 were sophomores/juniors). Freshman Industrial Technology majors reported skipping more high school classes than Business, Education, or advanced Industrial Technology majors. We use theories of metamemory to explain the results. Each group had differing reasons for skipping high school classes, but "being bored" was the most frequently selected category.

O6-Methylguanine – DNA Methyltransferase (MGMT) Gene Silencing using RNA Interference and Sensitivity to Temozolomide
Steve Davis, Graduate Student, Department of Biology
Faculty Advisor: Dr. Robert Winn and Dr. Richard Rovin, M.D.

Brain tumors (gliomas) include astrocytic, oligodendrogial, mixed, and ependymal tumors, with glioblastoma multiforme being the most malignant form (Markert et. al. 2005). Patients with glioblastoma multiforme typically have survival rates of approximately 12 months and has not changed dramatically over the past 30 years despite advancements in treatment with surgery, irradiation, and chemotherapy (Kew, Levin 2003). Temozolomide is an orally ingested chemotherapy agent recently approved by the FDA in 2005 for use in the treatment of glioblastomas.

Temozolomide chemically damages DNA. The DNA repair protein, O6 - methylguanine - DNA methyltransferase (MGMT), specifically repairs this type of DNA damage in the cell. Increased levels of MGMT reduce the effectiveness of temozolomide. Increased cancer survival rates have been linked to low levels of MGMT or by blocking the activity of MGMT. The approach to regulate the expression of MGMT in this project is to use the technique first described by Andrew Fire and Craig Mello in 1998, called RNA interference. Manipulation of MGMT gene expression will be conducted by RNA interference and temozolomide sensitivity will be assessed using real time PCR and EC50 dose response curves. Glioblastoma cell lines models were selected for positive or negative MGMT expression.

Vanadium-Based MRI Contrast Agents
Jessica DePew, Undergraduate Student, Chemistry Department,
Faculty Advisor: Dr. John Ejnik

The current method of taking PET scans to visualizing tumors has room for imporvement. A new method of using MR imaging instead is being researched. The contrast agents purposed for the MRIs of tumors are ones that have a vanadyl ion chelated to organic ligands. The purposed imaging agents utilized the fact that tumor cells have higher glycolysis rate than normal cells. In this research, the level of Vanadium in intracellular extracts was measured
and correlated to MR images and dosaging. The levels of Vanadium in mice at different lengths of exposure was also studied to determine the rate of metabolism of the imaging agent in the tumor, muscle, liver, and kidneys. The rate of Vanadium disappearance was compared to that of Gadolinium, the current standard MRI imaging agent. Results showed that the Vanadium imaging agent had a longer half life in the mice than the current Gadolinium agent. Results of this research also concluded that the Vanadyl chelates do increase intravascular signals by entering the cell and this was shown by qualifying and quantifying the intracellular accumulation of Vanadium in treated cells.

Creating a Baseline of Online Courses to Facilitate New Opportunities at NMU
Tracie Frame, Freshman Fellow, School of Education,
Faculty Advisor: Dr. Judy Puncochar

Northern Michigan University is a laptop campus with several online courses. The purpose of this research is to document the current number of required courses which are taught online in NMU's various programs and to create a baseline from which to measure growth of NMU's online programs. Initial steps in conducting this research involved collection and examination of required courses by programs and degree type. As a liberal arts institution, requirements for an NMU degree must include liberal studies courses.

Analysis of the Liberal Studies Program revealed online courses in all six liberal studies divisions. The research includes suggestions for identifying NMU's new online courses and programs and for making information from this research easily accessible to interested persons.

The Effects of Neurotensin Analogs on Memory in a Novel Object Recognition Task
Lindsay Goboly, Anne Winiarski, Amber LaCrosse, Paul Keller, Elizabeth Holly, Amber Keusch, and Sarah Jacobson, Department of Psychology,
Faculty Advisor: Dr. Adam Prus

Neurotensin is a peptide in the brain that may affect cognitive functioning. Drugs have recently been developed that act like neurotensin (i.e., neurotensin analogs), and are capable of passing through the blood brain barrier. The present study evaluated the neurotensin analogs NT69L and PD149163 in a novel object recognition memory task in rats. Memory impairments in object recognition were found after 4 and 6 hour delays between in the information trial and the retention trial. The muscarinic receptor antagonist scopolamine (0.25 mg/kg) impaired object recognition after a 1 hour delay between the two trials. NT69L (1.0 mg/kg) was found to reverse 4 hr delay- and scopolamine-induced deficits in object recognition, and PD149163 (0.001 mg/kg) was found to reverse a 6 hr delay-induced deficit in object recognition. These results suggest that neurotensin analogs improve short term memory functioning, and offers a novel pharmacological approach for treating cognitive impairment in disorders such as Alzheimer’s Disease, schizophrenia, and Parkinson’s Disease.
DNA from Bird Dropping Confirms a First Michigan State Record  
Skye C. G. Haas, Undergraduate Student, Department of Biology,  
Faculty Advisor: Dr. Alec Lindsay

In October 2005, an unidentified kingbird (Tyrannus sp.) was found in the Village of AuTrain in the Upper Peninsula of Michigan. Thought to be one of two sibling species from Latin America, the unknown Tyrannus was either T. melancholicus or T. couchii, either of which would constitute a first Michigan state record. Differentiation between these two species in the field is problematic, and definitive identification of the unknown bird was lacking. A fecal sample was collected from the bird, and from this genomic DNA was successfully extracted. A small portion (102bp) of the mitochondrial gene encoding 12s rRNA was sequenced from this DNA sample and compared to the comparable sequences from known specimens of T. melancholicus and T. couchii and matched exactly the sequences from the T. melancholicus specimens. This study demonstrates 1) bird excrement can be source for DNA analyses when other genetic sampling techniques are unavailable, 2) a novel technique for identifying vagrant bird species (often of significant interest to ecotourists and both amateur and professional birders), and 3) the importance of well-maintained and comprehensive museum collections.

Use of a Single Nucleotide Polymorphism for Common Loon (Gavia immer) Population Genetic Analysis  
Sarah M. Hagle, Undergraduate Student, Department of Biology,  
Faculty Advisor: Dr. Alec Lindsay

In studies of wildlife conservation, researchers benefit from analyses of genetic distinctiveness among natural populations. Single-nucleotide polymorphisms (SNPS) are inherited as Mendelian markers and can be used to derive inbreeding coefficients, detect natural selection and delineate metapopulation dynamics. This study uses a previously characterized SNP found within an intron of the myeline proteolipid protein (mpp) gene of common loons (Gavia immer). Diploid genotypes of individual loons from two populations were determined using protocol that included a PCR amplification of mpp, a restriction digestion of one allele and the visualization of the digested products using agarose gel electrophoresis. The resulting genotype frequencies were then compared to Hardy-Weinberg expectations for both populations. This is the first use of this technique on any wildlife population to date, and its efficacy and applicability are further discussed.
Pitcher’s Thistle Ecology in the Grand Sable Dunes at Pictured Rocks National Lakeshore

Kim Hardenbrook, Graduate Student, Department of Biology,
Faculty Advisor: Dr. Alan Rebertus

The main objective of this ongoing research is to determine the status of the federally threatened plant Cirsium pitcheri, commonly known as Pitcher’s thistle, in the Grand Sable Dunes at Pictured Rocks National Lakeshore (PIRO). In the summer of 2007, research was conducted to determine the location, abundance, and associated ecological communities (broad scale) of Pitcher’s thistle at PIRO. A preliminary map of the Grand Sable Dunes showing Pitcher’s thistle distribution and abundance map has been created in ArcGIS, but, to date, statistical analysis has not been completed. Research in the upcoming field season, summer 2008, will consist of stratified random sampling using a multivariate approach to determine what biotic and physiographic variables (fine scale) can predict Pitcher’s thistle abundance. The final outcomes of this research will help determine the distribution, population size, demography, associated ecological communities, and conservation aspects of Pitcher’s thistle at PIRO.

Cross Taxa Applicability of DNA Sexing Across Cervid Species

Danielle M. Hernandez, Undergraduate Research, Department of Biology,
Faculty Advisor: Dr. Alec Lindsay

This study aimed to explore the cross-taxa applicability of a particular PCR-based sexing test originally designed for white-tailed deer (Odocoileus virginianus). This test (Lindsay and Belant 2007) relies on a single-reaction technique using PCR (Polymerase Chain Reaction) that amplifies sex chromosome-linked genes (zinc-finger protein: ZFX/ZFY primers). Although more taxa are under examination, we tested the efficacy of the ZFX/ZFY primer system on two other cervid species: caribou (Rangifer tarandus) and moose (Alces alces). DNA was extracted from blood samples of Caribou, the PCR reaction was performed and the product was electrophoretically run on an agarose gel. Results from the gel showed these primers were successful in amplifying sex-specific loci in these taxa. Continuing work will aim to sequence the alleles in these taxa and further test other cervid species. This work will be useful for biologists interested in diagnosing the sex of unknown cervid individuals, and also for those interested in understanding sex chromosome evolution.
Diet Analysis of Shorebird Species Affected by a Botulism Outbreak in Sleeping Bear Dunes National Lakeshore, MI
Rachel R. Holman, Undergraduate Student, Department of Biology, Faculty Advisor: Dr. Jill Leonard

A recent Type E botulism outbreak in northern Lake Michigan, at Sleeping Bear Dunes National Lakeshore, devastated the aquatic avian community. Shorebirds of varying species experienced a large die-off during summer 2007. Because of this, it is necessary to determine the dietary vector causing the spread of the bacteria and whether there is a link between invasive zebra mussels or round goby and the outbreak. In this project, specimens were collected by the National Park Service and shipped to Northern Michigan University where the birds were dissected and gut analyses were performed. Fifteen species (58 individuals) were examined including common loon, double crested cormorant, long tail duck, bufflehead, gulls, grebes, scoters, and mergansers. Gut contents were stored in ethanol until further sorting and ID determinations were made. 19% of the birds contained identifiable fish bones, and in at least one case musculature. 15.5% of birds had clear evidence of dreissenid mussels (likely zebra mussels) and these samples were distinguishable from gastropod mollusks also seen in the collection. Other taxa found in the samples included crayfish, insects, passerine birds, and small mammals. These data support the involvement of fish and invasive mussels in shorebird die-offs; however, they point out that other forage taxa may also be critical in this system.

Response of Lymnaeidae to Acidification by Sulfuric Acid
Rachel A. Hovel, Undergraduate Student, Department of Biology, Faculty Advisor: Dr. Jill Leonard

Aquatic gastropods are recognized as being sensitive to environmental contamination, and may be used as an indicator of relative pollutant levels. In this experiment, wild-captured aquatic snails of the family Lymnaeidae were exposed to differing levels of sulfuric acid in the laboratory and their behavior and mortality observed in response to the pH of the test tanks. The sharpest decrease in movement and feeding behavior, as well as the sharpest increase in mortality, was observed between the tanks with pH of 4.0 and 5.0. Significant difference generally did not occur among tanks at or above pH of 5.0, but regressions indicated strong linkage between decrease in pH and snail vitality. This data suggests a potential for loss of this important order in environments that have experienced moderate to severe acidification.

An analysis of NMU Students’ Qualitative Responses on Proposed Changes to and Strengths of a Structured Controversy for Gender Issues in the USA
Katie Jensen, Research Fellow, School of Education, Faculty Advisor: Dr. Judith Puncochar

Research was conducted on the effects of perspective taking during a structured controversy for “Who has it tougher - females or males?” After the structured controversy, we asked students for possible improvements to the controversy process and to indicate the strengths of engaging in a structured controversy. The suggestions for improvement include balancing the controversy groups by gender, having a male and a female researcher, and allowing participants to research their own ideas preceding the controversy. Participants reported the strengths of the controversy included (1) social relationships and group work, (2) sharing ideas and opinions, and (3) perspective taking. Students suggested several possible topics for structured controversies in other areas.
Academic Service Learning: Nursing Students Outcomes and Benefits
Samantha Lagerman, Junior Research Fellow, Sarah Harriger, Freshman Fellow
Nursing Department,
Faculty Advisor: Dr. Mary Ellen Powers

Academic Service Learning (ASL) has been accepted as a valuable academic pedagogy in a wide range of disciplines, yet is relatively new to nursing education. This poster presentation will describe the results of an ASL initiative implemented at the senior level of the baccalaureate nursing curriculum and provide longitudinal data based thematic analysis of the desired student outcomes and benefits experienced. The ASL experience was designed to fulfill a service needed by the community, while at the same time instilling in students the core principles of social justice. Through qualitative analysis of students’ post-course, thoughtful reflections on ASL, several positive outcomes have been identified. The four prominent themes are: the “feel good” theme in which the ASL experience was described as rewarding and empowering to the student; the “making a difference” theme owing to positively affecting the community through service and viewing the direct impact; seeing the “big picture” as social issues were examined and stereotypes were broken; and finally, a “sense of community” was instilled in students while teamwork was used to fulfill civic duties. This poster presentation will further develop these themes and aims to showcase the benefits of an Academic Service Learning experience.

Price Fixation: How Media Set the Oil Agenda
Mike Lerch, Phillip Britton, Undergraduate Students,
Communications and Performance Studies,
Faculty Advisor: Dr. Dwight Brady

Our presentation/poster will consist of the results of a content study focusing on how media frame the topic of oil. Our hypothesis was that media focused exclusively on the price of oil/gasoline while neglecting information about long term supply. We studied CNN transcripts and NY Times articles, and found that our hypothesis was correct.

Region Economic Indicators
Aaron Lohman, Undergraduate Student, Department of Economics,
Faculty Advisor: Dr. Tawni Ferrarini

Michigan’s Upper Peninsula is a region with its own unique economy. My project assembles these indicators in a spreadsheet. Some of the indicators used are: unemployment, air travel, bridge traffic. These sheets are organized to show annual or monthly changes in the economy.
**Sustainable Equine Parasite Control: A Review and a New Plan**
Ashley Marjomaki, Senior Undergraduate, Department of Biology, Faculty Advisor: Dr. Jackie Bird

This project looks at the life cycles, pathogenesis, diagnosis and treatment of 12 different types of equine parasites. These are the 12 most common infectious parasites found in horses. The history of drug resistance in the parasites and the mechanism by which resistance happens is also reviewed. Current deworming plans are analyzed and a new specific sustainable parasite control plan was developed.

**South Africa and its People: The Reality of Race**
Chelsea Martin, Undergraduate Student, Department of Criminal Justice, Faculty Advisor: Dr. Robert Hanson

I will be making a poster with pictures on it from our trip to South Africa. This poster will show the people of South Africa and will serve as a basis for the presentation I will make on the reality of race in South Africa and how the people interact with one-another and with us as we made our journey through South Africa. This presentation will be based on experience, but the experience is solid facts because we experienced these interactions first hand while in the country. What my classmates and I learned could never be expressed in a classroom setting but must be conveyed through pictures and words.

**Crustacean Cuticle Genes: Isolation and Sequencing**
Matt McFalls, Undergraduate Student, Department of Biology, Faculty Advisor: Dr. John Rebers

The DD5 gene from the Kuruma prawn (Marsupenaeus japonicus) has been found to contain multiple tandem repeats of a chitin binding domain. In most crustacean genes, this chitin binding domain is found in small numbers, but in the DD5 gene the sequence repeats 14 times. This suggests that the DD5 gene may be an important contributor to the crustacean exoskeleton. This project determined the presence of DD5 homologs in related crustacean species, and DNA sequences from these homologs are compared to M. japonicus. The DD5 homologs isolated from crayfish and shrimp DNA were cloned into bacteria for DNA sequencing. The DNA sequences were compared to the original published DD5 sequence. The DNA sequences of genes similar to DD5 in both shrimp and crayfish are expected to provide useful data for understanding the crustacean exoskeleton.
Detection of PIT Tags in a Small Stream Under Winter Conditions: A Study
Elizabeth Nutt and Rachel Koleda, Undergraduate Students, Department of Biology,
Faculty Advisor: Dr. Jill Leonard

Overwintering is an important yet little researched part of the life history of Salvelinus fontinalis, as it represents a period in which survival may be particularly difficult. It is thought that juvenile coaster brook trout may burrow into stream beds to rest and seek shelter during the winter, rather than remain within the water column. In order to test this hypothesis, thirty passive integrated transponders (PIT) tags were affixed to wooden stakes and planted in the substrate and water column throughout Foster Creek, Marquette, MI. Tags were detected with a receiver and data plotted according to location, ice depth, and audibility. The PIT tags that simulated fish within the water column have the most detectibility while those that simulated fish buried in the substrate were generally poor -- especially so with horizontally oriented tags. This data suggests that any coaster brook trout lying within the substrate may be difficult to detect with current methods, although trout remaining in the water column would be easily detected.

Metabolic Energy Expenditure of Children During Rock Climbing Activity
Megan Ostrowski, Undergraduate Student, and Dr. Phillip B. Watts, Department of Health, Physical Education and Recreation,
Faculty Advisor: Dr. Phillip Watts

Rock climbing has been implemented as an activity in some physical education programs for elementary through high-school age students. Although resources and programs are now available, there have been no published studies on the physiological demands and energy costs of climbing in children. The purpose of this study was to measure energy expenditure in children during climbing activities typical of school programs. Twenty-seven children (9 female, 18 male; mean age = 11.0±1.7 yr) participated as subjects. Climbing involved continuous traversing around an 8-foot tall by 27-foot circumference climbing island located in the Exercise Science Laboratory of NMU. Each child climbed one sustained 5-min period followed by a 5-min rest for a total of 10 min which was immediately followed by five 1-min climbing intervals with 1-min rests between each interval for a second total of 10 min. Expired air was analyzed continuously via a lightweight portable metabolic analysis system worn by the subject. Energy expenditure in kilocalories (kcals) was determined during climbing and during the recovery periods. The average total kcals expended during the initial 5-min climbing/5-min rest period was 35.4±11.5 kcals (range = 23.7-74.6). Energy expenditure during the five 1-min climbing/1-min rest intervals averaged 40.4±13.3 kcals (range = 27.3-85.6). Metabolic rate did not return to resting level between the 1-min intervals of climbing and the total kcals were higher for interval climbing than for the 5-min sustained climbing. The average total energy expenditure for the two bouts together was 76±24.6 kcals (range = 51.1-160.2). The wide range of values among the subjects was likely due to differences in body mass. The climbing activity elevated a child’s resting metabolic rate by an average factor of 6-7 during climbing with peak metabolic rates of up to 9-10 times resting level. The average kcals expended per minute in our study was similar to what has been observed for backpacking with a light load, pickup basketball games, soccer, easy running, and moderate speed swimming.
Learning Styles, Class Preferences, Locus of Control, and High School Class Skipping Behaviors
Cale Polinghorne, Graduate Student, School of Education,
Faculty Advisor: Dr. Judith Puncochar

A survey of Industrial Technology (n = 43) and Education (n = 44) undergraduates was conducted on learning preferences, liking for classes, and high school skipping behaviors. Education students skipped fewer high school classes, reported fewer reasons for skipping, and liked school more than Industrial Technology students did. Education students preferred academic classes to non-academic classes, whereas Industrial Technology students strongly preferred non-academic classes to academic classes. Both groups liked to learn through hands-on learning. Education and Industrial Technology students gave their lowest liking scores to learning through reading and writing. No association was present between skipping behaviors and low liking scores of academic classes or non-academic classes.

A study of Mitochondrial DNA Introgression in the Mus Domesticus - M. Musculus Hybrid Zone
Alicia Rhoades, Undergraduate Student, Department of Biology,
Faculty Advisor: Dr. Katherine Teeter

Hybrid zones are regions where distinct species meet, mate, and produce at least some viable offspring. By studying patterns of gene flow (introgression) across hybrid zones, it is possible to make inferences about the history of contact between the species, and the evolution of differences between them. The house mouse species Mus domesticus and Mus musculus hybridize in a narrow zone running north-south through Europe. I investigated introgression of the mitochondrial genome along a transect through the hybrid zone, using a restriction site change in the gene Nd3. Comparison of these data to previously published data on the nuclear genome suggests that mitochondrial introgression is unidirectional, from M. domesticus into M. musculus, and more pronounced than the introgression observed for the nuclear genome. These data demonstrate that mitochondrial and nuclear genotypes for the same individuals can differ dramatically, especially near contact zones.

Use of Nicotine Replacement Therapy to Assist People Quit Smoking
Matthew Roesner, Undergraduate Student, College of Business,
Faculty Advisor: Dr. Gary Stark

This study compares people who smoke (smokers) ability to quit smoking, with using a nicotine replacement therapy (NRT), or using no therapy to quit. I hypothesized that people who use a NRT will have greater success at quitting smoking than those who do not. Results indicate that smokers who use a NRT to quit smoking are more likely to remain abstinent to cigarettes.
Method Development for the Detection of Trace Metals in Biological Samples
Eric Schacht, Undergraduate Student, Department of Chemistry,
Faculty Advisor: Dr. John Ejnik

The research surrounding the development of a method to analyze biological samples for trace metals by closed-vessel microwave digestion is presented. The technique is first compared to the results obtained using conventional open beaker digestion of both bovine liver standards from the National Institute of Standards and Technology and Dace minnows obtained locally from the Yellow Dog Plains. In both instances the samples were digested in a mixture of hydrochloric acid and hydrogen peroxide and analyzed for arsenic, cadmium, lead, manganese, nickel, selenium, thallium, zinc, copper, chromium, and vanadium using inductively coupled plasma optical emission spectroscopy. Results were satisfactory or better for all elements studied, providing support for the validity and superiority of the technique. Research exploring the recovery of mercury spiked into the same biological samples prior to digestion and the refinement of a method for detecting the trace metal accurately at concentrations in the parts per trillion range is also presented. Analysis was carried out using cold vapor atomic fluorescence spectroscopy, and recoveries were generally around ninety-five percent. Subsequent research will apply the technique to establishing baseline concentrations of the above-mentioned elements in aquatic populations inhabiting the Yellow Dogs Plains and monitoring changes that may occur in response to increased development of the area.

Occurrence of Ixodes Scapularis in Pictured Rocks National Lakeshore
Steven J. Schaar, Graduate Student, Department of Biology,
Faculty Advisor: Dr. Jackie Bird & Jerry Belant

Ticks were detected during radio-collaring of anesthetized mammals in Pictured Rocks National Lakeshore (PRNL) trapped during May to July 2001-2005. Ticks from five martens (Martes americana), seven fishers (Martes pennanti), and six bears (Ursus americanus) were removed and keyed to life stage and species. Twenty-nine Dermacentor variabilis, four Ixodes baergi, and six Ixodes scapularis were identified. Dermacentor variabilis were found on bears, fishers, and martens. Ixodes baergi was found only on martens and I. scapularis was found only on fishers. This is the first report of I. scapularis in Alger County and also the first report of fishers serving as host for I. scapularis.
The Characterization and In Vitro Silencing of the Oncogene Zbtb7 in Glioblastoma Multiforme Tumors

Justin J. Segua, Graduate Student, Department of Biology, Faculty Advisor: Dr. Rob Winn and Dr. Rich Rovin M.D.

Despite advancement in the understanding of cancer, the treatment for patients with high grade brain tumors has changed little in the last 10 years. The work presented here includes the use of PCR (differential, reverse transcription and real time) to characterize the expression of Zbtb7 in glioblastoma cell lines and in surgically resected tissue samples. In addition, the use of small interfering RNA was used to silence Zbtb7 in cultured cells and further assays were performed to determine the growth and survival rate of siRNA treated cells. Our group has concluded that Zbtb7 is ubiquitously expressed in high grade brain tumors and further report evidence of gene amplification in 25% of those tumors sampled. In vitro silencing of Zbtb7 using interfering RNA was successful and contrary to the predicted result, apoptosis was not observed. The characterization of Zbtb7 in brain tumors is a novel finding and this project is among few attempting to use biomolecular agents (siRNA) to treat brain tumors. Future directions of this project include the characterization of downstream mechanisms to further elucidate the molecular processes that go awry on the path to malignancy.

Predator Avoidance and its Effect on American Beaver Diet and Fitness

William Severud, Graduate Student, Department of Biology, Faculty Advisor: Dr. John Bruggink

The relative use of aquatic and terrestrial food resources by American beavers (Castor canadensis) may be influenced by predation risk. Beavers may increase their use of aquatic resources to avoid predators, and this may affect their relative fitness. In Voyageurs National Park in northern Minnesota, we will use a combination of live-trapping, radio telemetry, and stable isotope analysis to estimate the relative proportions of terrestrial and aquatic vegetation in beaver diets, the association between proportion of aquatic-based diet and body condition, the association between body condition and recruitment, and the association between foraging time spent in water and survival. We also will estimate trail use in response to predator urine using Trailmaster infrared monitors. Our results will elucidate whether beavers reduce predation risk by increased use of aquatic resources, and whether these aquatic resources are suitable alternatives to terrestrial resources in terms of relative fitness.
Refinement and Application of Non-invasive Tissue Sampling and Microsatellite Genotyping in Studying White-tailed Deer (Odocoileus Virginianus) Population Dynamics
Grant M. Slusher, Graduate Student, Department of Biology, Faculty Advisor: Dr. Alec R. Lindsay

This research aims to refine field collection and genetic analysis techniques used in population estimation of white-tailed deer (Odocoileus virginianus). We have begun sampling a semi-isolated and well-studied population of deer on Presque Isle Park in Marquette, MI. Accurate and exact counts of deer are performed on a regular basis (J. Bruggink) and these counts of the population will provide a unique opportunity to directly evaluate the precision of DNA-based deer population estimation techniques. Genetic samples have been and will continue to be collected using non-invasive hair-snares. DNA is extracted from those hairs and preliminary microsatellite genotyping of individuals has begun. The goals for this study are twofold: 1) refine hair-snare techniques to minimize researcher investment (frequency of snare visits, collection of hair samples, laboratory analyses, etc.), while maximizing the accuracy of the population estimate, and 2) to provide another robust estimate of overall park white-tailed deer population size. Outcomes from this study will establish confidence measures for population estimates derived from genetic data. More directly, results from this research will provide local parks and recreation department staff with second estimate of deer population size, and finally it will demonstrate the utility of a non-invasive technique for sampling large mammals.

Retailer’s New Cash Cow: Customer Satisfaction’s Effect on 18 to 25 Year-olds Brand Loyalty
Christopher W. Storves, Undergraduate Student, College of Business, Faculty Advisor: Dr. Gary Stark

The purpose of this research is to show the need for retailers to focus their customer service strategies on satisfying customers within the age demographic of 18-25 years old. By targeting this market, retailers will be able to establish more brand loyalty for sustainable time. Establishing brand loyalty will positively increase retailer’s profitability over a longer period of time. Previous research has begun to touch on the idea that customer satisfaction creates stronger brand loyalty, however there is limited research focusing on the age demographic.

Dark-Field X-ray Microscopy Using a Segmented Si Detector
Robert Towers, Undergraduate Student, Department of Physics, Faculty Advisor: Dr. Chris Jacobsen (Stony Brook University)

The segmented Si detector at beamline X1A2 at the National Synchrotron Light Source at Brookhaven National Lab had, prior to this experiment, never been used for dark-field imaging of biological samples. The goal of this project was to successfully use dark-field imaging with this detector to provide additional data for a concurrent project involving the investigation of nickel-resistant bacteria.
Synthesis and Characterization of Highly Polarized Molecules Utilizing Propellane as a Linker Unit
Ivy Vachon, Kyle VanDamme and Dave Viau, Undergraduate Students, Department of Chemistry, Faculty Advisor: Dr. Frankie McCormick

The purpose of this research is to synthesize and characterize a new class of colorless molecules. These molecules contain an electron donor unit coupled to an electron acceptor unit through a propellane spacer: this design should provide for highly polarized molecules which may have potential applications in electronics and nonlinear optics. These molecules are unique because of the nontraditional approach to linking the donor and acceptor units. In addition to the target molecules and precursors, we have prepared a set of unlinked donors and acceptor molecules for comparative purposes. Ultraviolet-visible (UV-vis) spectroscopy was used to characterize the amount of interaction between the donor and acceptor units through the spacer. The UV-vis data for these new molecules were compared to the spectra of unlinked donor and acceptor group molecules.

Parameter Identification in a Model of the Human Liver
David Viau, Benjamin DePew, and Sean Dobberstein, Undergraduate Students, Department of Mathematics and Computer Science, Faculty Advisor: Dr. Akhtar A. Khan

An effective mathematical modeling of the human liver is of paramount importance for diagnostic purposes. Therefore, a lot of research efforts have been made to give a mathematical model that can describe the functioning of the human liver. In this work we focus on a simplified model investigated by Lenka Celechovska in her Ph.D. thesis in 2004. It turns out that the system of differential equations that conveniently models the functioning of the human liver involves three unknown parameters. To complete the model, the main task then is to identify these model parameters. The classical approach for solving these kinds of mathematical problems is the so-called quasi-linearization technique. Unfortunately, when the quasi-linearization approach is applied to the human liver model, the identified parameters could admit negative values, which is in contrast to the physical meaning of the parameters. In this work, we propose to use the numerical optimization techniques to solve the above mentioned parameter identification problem. Besides ensuring that the parameters remain positive, there are several other advantages of our approach which will be discussed in the talk.
Protein-Binding Affinities Associated with Various Hemagglutinin Complexes
Brigham Voigt, Undergraduate Student, Department of Chemistry,
Faculty Advisor: Dr. Mark Paulsen

Hemagglutinin is a surface protein located on the Influenza virus which is essential to the viral infection. The human immune system creates antibodies which bind to this protein creating a marker for infection prevention and virus destruction. There is documentation regarding a shift in hemagglutinin structure from year to year due to viral evolution. This shifting prevents consistent antibody recognition of the hemagglutinin virus. Our research involved the computer modeling of various hemagglutinin protein structures binding to the 1968 antibody. Our research showed that the binding 1968 hemagglutinin to the 1968 antibody had the most favorable interaction energy, whereas other years proved to have less effective binding. Our research shows that both solvation effects and the non-bonded forces are critical in predicting binding affinity. Our research predicts that over the course of many generations, natural selection is allowing for reoccurring trends in favorable binding affinity due to amino acid changes. This research could lead to more reliable vaccine construction.

Hycrest Crested Wheatgrass as an Organic Detoxification Approach
Kyle Vrtis, Undergraduate Student, Department of Chemistry,
Faculty Advisor: Dr. Lesley Putman

In this study, hycrest crested wheatgrass was tested for its ability to produce enzymes to metabolize organic toxins in the soil. The two enzymes of interest were glutathione s-transferase (GST) and peroxidase. Assays used for detection of the activity of the enzymes were optimized for use with a 96-well plate reader to increase efficiency and accuracy, while decreasing the cost of reagents required for the assay. After the first treatment of CWG samples, the GST assay determined there was no definitive increase in GST concentration as a result of treatment with TCE and toluene. After the second treatment of CWG samples, the peroxidase assay determined there was a significant increase of peroxidase activity in the treated roots. The increase of peroxidase activity in the roots when grown in the presence of toxins indicated the plants were producing the enzyme to metabolize the toxins.

Using Debate to Construct Understanding of the Controversial Topic:
“Should English be the Official Language of the State of Michigan”
Salem Watts, Research Fellow, School of Education,
Faculty Advisor: Dr. Judith Puncochar

This research involves the effects of debate on Secondary Education majors' understanding of a controversial issue. After indicating their level of agreement on whether "English should be the official language of the State of Michigan," participants had to find arguments opposed to their natural opinion and describe their process of developing their ideas about the topic. Using a theoretical framework of social constructivism, structured controversy appears to be an effective pedagogical tool to prepare students with skills for meaningful constructive debate, informed decision-making, and an appreciation of diverse viewpoints. We examined the effects of engaging in a structured controversy on the opinions of participants during a structured controversy and found a shift in opinion to- English should NOT be the official language of the State of Michigan.
Research on Digital Piracy
Courtney Whitfield, Undergraduate Student, Department of Economics,
Faculty Advisor: Dr. Tawni Ferrarini

I have done research on digital piracy under Tawni, and Dwight Brady has had his students research it as well. We will be working together to put together a presentation and poster for this event.

Sustainable Campus Landscape by Planning Practicum: A Demonstration Plan
Bryan Wurzer, Undergraduates Class Project, Department of Geography,
Faculty Advisor: Dr. Steve DeGoosh

The 368-acre campus of Northern Michigan University (NMU) is both expensive and labor-intensive to maintain, and, with grave prospects for rising fuel, material, and equipment costs, the burden of maintaining the current landscape will only increase. Furthermore, there is a growing realization that the “greening” of campus warrants more than lip service... serious commitment is required.

A site was selected as a demonstration area for sustainable practices. In addition to plantings and maintenance, issues include a winter climate, lack of formal pedestrian walkways, appearance from nearby, off-campus, residential areas, and security. A more sustainable landscape would satisfy several university objectives.

Goals of this plan include: improve pedestrian access and safety, create a more aesthetically pleasing atmosphere, reduce costs, and create a sustainable campus landscape.

Fairy Tale Letters: A French Student’s Perspective
FR 300 Class Project, Undergraduate Students, Department of Modern Languages and Literatures, Faculty Advisor: Dr. Nell Kupper

The letters submitted were the works of FR 300 Reading and Writing French students. They were a product of a unit on French letter writing format, and followed a unit on creative writing, including fairy tales. The students incorporated fairy tale characters and their imaginary correspondences into this creative letter writing project. The students also illustrated the letters to capture the whimsy of the classic fairy tale.
Performance and Localization of Non-U.S. Websites: Internet Users' Preference and Implications for Globalized U.S. Corporations
Neal Glatt, Undergraduate Student, College of Business,
Faculty Advisor: Dr. Gary Stark

As more people around the world are gaining access to the internet and the percentage of the world’s internet users in the United States declines, U.S.-based businesses are creating localized websites to appeal to people of different cultural descents. This study examines how effective the use of localization is when compared to website performance within the computing environments of a given country. I hypothesize that through two experiments and a survey, business undergraduates from universities in Toronto, Tokyo, and Athens will demonstrate that although performance in and localization of websites are both important, performance was more important than cultural localization. U.S.-based businesses must carefully evaluate choices in designing non-U.S. localized websites to maximize user preference for them.