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## 2010 Program: Honors Student Symposium

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***The thesis component of the Honors Program consists of a three-semester, six-credit-hour project that culminates in a significant research contribution, performance, or body of creative work.***

*The Honors thesis project involves a collaboration with one or more faculty members who help direct and focus the student's original thesis topic.*

*The University Honors Program sponsors the Honors Students Symposium as a professional opportunity for the students to present their theses to the University community.*

**The Patrick F. Palermo Honors Program Founders Fund provides support for substantive Honors thesis projects “that involve international research; service and leadership in the community; or which advance the realization of a just society.”**

**The awardees for 2009-2010 are  
Eric J. Krissek and Marie-Claire Tuzeneu.**



The University of Dayton  
**University Honors Program**

presents the

***Honors Students Symposium***  
**2010**

March 12, 2010  
1:00 to 5:00 pm  
Kennedy Union

## Arts and Sciences

### HUMANITIES

- Amistad in Action: Uniting the Americas Through the Sister Parish Relationship*  
 by Elizabeth A. O'Connor ..... Room 207, 3:40 pm
- Any Progress? Portrayals of Women in Domestic Commercials*  
 by Julie B. Ramaccia ..... Room 312, 2:00 pm
- Collection of Short Stories*  
 by Alexander S. Whitehead ..... Room 222, 4:00 pm
- Gay Nation: Decolonizing the Forgotten, The*  
 by Kurt M. Blankschaen ..... Room 222, 4:40 pm
- John Paul II's Guide to Dating: A Handbook for Effectively Teaching Catholic Doctrines on Sexuality in a High School Classroom*  
 by Adam J. Eakman ..... Room 207, 4:00 pm
- Marcion and His Effect on Mainstream Christianity*  
 by Colleen E. Fitzsimons ..... Room 207, 2:20 pm
- Why Mary? An Analysis of the Foundations of Three Marian Religious Congregations Between 1600 and 1815*  
 by Kathryn K. Jennrich ..... Room 222, 3:00 pm

### PERFORMING AND VISUAL ARTS

- Abandoning Aristotle for a Raining Elevator: Ovidian Myth in Contemporary Theatre*  
 by Thomas R. Motz ..... Room 310, 4:20 pm
- Regional Theatres and Their Communities: A Look at Economic and Social Changes in Trends between Regional Theatres and Their Communities a Decade into the New Millennium*  
 by Laura A. Estandia ..... Room 207, 1:00 pm

### SCIENCES

- An Analysis of Alpine Glacier Morphology in the Eastern, Central and Western Himalaya using Remote Sensing Data*  
 by Todd L. Longbottom ..... Room 207, 4:40 pm
- Bacterial DNA Helicases at the Intersection of DNA Replication, Recombination and Repair*  
 by Ryan J. Carpenter ..... Room 311, 2:40 pm
- "Biological Warfare" Leads to Larger Biofilms: The Effect of a Bacterial Virus Attack on the Biofilms of the Bacterium Pseudomonas Aeruginosa*  
 by Jennifer M. Lang ..... Room 211, 2:40 pm
- Bulk-Heterojunction Photovoltaic Cells: The Effect of Interlayer Morphology on Device Performance*  
 by Eric S. Harper ..... Room 312, 3:20 pm
- Cytotoxicity of Zinc Oxide Nanoparticles in Human and Mouse Dermal Fibroblast Cell Cultures*  
 by Kyle A. Meyer ..... Room 211, 4:20 pm
- Design, Implementation and Evaluation of a Pointing Device for Wearable Computers, The*  
 by Andres A. Calvo ..... Room 312, 1:00 pm

- Determining the Effectiveness of Photodynamic Therapy Against Bacteriophage UT1 in Pseudomonas Aeruginosa*  
 by Elizabeth M. Raphael ..... Room 211, 2:20 pm
- Dorsal Eye Selector Pannier (Pnr) Suppresses Retinal Differentiation to Define the Dorsal Margin of Drosophila Eye*  
 by Sarah M. Oros ..... Room 311, 2:20 pm
- Effect of a Cationic Porphyrin on Pseudomonas Aeruginosa Biofilms, The*  
 by Elizabeth A. Markus ..... Room 211, 2:00 pm
- Hamiltonian Cycles in Cayley Graphs*  
 by Matthew P. Magner ..... Room 207, 4:20 pm
- Hedgehog Signaling as a Regulator of Gastric Physiology*  
 by Sally A. Ogle ..... Room 211, 4:40 pm
- miRNAs in Newt Lens Regeneration: Specific Control of Proliferation*  
 by Albert L. Trinh ..... Room 211, 1:40 pm
- Neuronatin Regulation of a Calcium Homeostasis in Human Osteosarcoma Cells*  
 by Jeffrey S. Kuerbitz ..... Room 211, 3:20 pm
- Optical Trapping: Tests in Microsphere Manipulation*  
 by Kevin M. George ..... Room 311, 2:00 pm
- River Palimpsest—The Interdisciplinary Value of Water: Learning the Great Miami River Laterally through Ecology, Chemistry, Geography, Photography and History, A*  
 by Katherine G. Norris ..... Room 207, 1:20 pm
- Synthesis and Characterization of Meso 5-(Pentafluorophenyl)-10,15,20-tris (4-pyridyl) Porphyrin and Its Ruthenated, Copper / Ruthenated, and Platinum / Copper / Ruthenated Analogs*  
 by Sindhu V. Ravipati ..... Room 211, 3:40 pm
- Synthesis, Structure and Sugar Conformation of a 2-Spiroisoxazolidine Nucleoside Analog*  
 by Krista M. Versteeg ..... Room 211, 4:00 pm
- Understanding the Causes Associated with Familial Adenomatous Polyposis in Families with No Identifiable Genetic Mutation in Kentucky and the Surrounding Areas*  
 by Amanda M. Brian ..... Room 211, 1:20 pm
- Understanding the Role of Apoptotic Cell Death in Neurodegeneration Caused by Amyloid Plaques During Early Development*  
 by Rohan M. Modi ..... Room 311, 1:40 pm

### SOCIAL SCIENCES

- Broken Borders: Investigating Ohio's Susceptibility to Human Trafficking*  
 by Alisa B. Bartel ..... Room 310, 4:40 pm
- Comparisons of Face Recognition Among Autistic and Typically Developing Children*  
 by Kyle C. Deane ..... Room 312, 1:40 pm
- Drinking Attitudes and Behaviors*  
 by LeeAnn M. Chomanics ..... Room 310, 1:00 pm



# 1:00 pm

## **Andres A. Calvo**

Computer Science and Computer Engineering

1:00 pm, Room 312

Saverio Perugini, PhD, Thesis Advisor  
Computer Science Department

### **Thesis Title**

***The Design, Implementation and Evaluation of a Pointing Device for Wearable Computers***

### **Description**

US Air Force combat controllers are highly trained special tactics units who use a wearable computer called the MR1. The MR1's current pointing devices, a touchpad and a trackpoint, are inefficient and uncomfortable to use since they were designed for traditional laptops rather than wearable computers. Input devices must evolve for wearable computers just as the mouse for desktop computers evolved into the touchpad and the trackpoint with the advent of laptop computers. This thesis studies the design, implementation and evaluation of two input devices for combat controllers using the MR1. The first design uses the AcceleGlove, a glove which contains accelerometers on its fingertips, to allow the user to move the mouse pointer by measuring a finger's orientation with respect to gravity. The second design consists of gyroscopic sensors attached to a user's finger to move the mouse pointer by measuring the finger's angular velocity. We expect the results to indicate that the new designs provide more efficient and comfortable pointing capabilities than the touchpad and trackpoint. This research is part of a larger effort to improve the performance of combat controllers.

## **LeeAnn M. Chomanics**

Psychology

1:00 pm, Room 310

Jack J. Bauer, PhD, Thesis Advisor  
Psychology Department

### **Thesis Title**

***Drinking Attitudes and Behaviors***

### **Description**

Excessive alcohol consumption is a major problem on many college and university campuses across the country and a major concern among college administrators because of the dangers it poses to college students. While multiple factors contribute to college student drinking, the role of parents during the high school and early college years is important in understanding college drinking. This study aims to explore the impact of parents as a factor that contributes to college students' alcohol use. The study seeks to examine whether students' perception of their parents' drinking habits and perceived approval of drinking impact their own attitudes and behaviors. The research also examines the communication that occurs between parents and students and the students' attitudes and drinking habits, and any negative consequences associated with alcohol use at the family level.

## **Laura A. Estandia**

Theatre and English

1:00 pm, Room 207

Darrell F. Anderson, Thesis Advisor  
Theatre Department

### **Thesis Title**

***Regional Theatres and Their Communities: A Look at Economic and Social Changes in Trends between Regional Theatres and Their Communities a Decade into the New Millennium***



## **Description**

My research takes a look at three regional theatres of different sizes in the Midwest: the Human Race Theatre Company in Dayton, the Cincinnati Playhouse in the Park, and the Actors Theatre of Louisville. The thesis investigates how these theatres are changing economically in the ways that they gather funding in the down economy. The thesis also explores how regional theatres are relating to their audiences, especially younger audiences in the ways that they market themselves and structure their outreach programs. Ultimately, the thesis explores how the theatre arts can help define a community, and how a community can help define a theatre company.

## **David A. Thomas**

Entrepreneurship / Management

**1:00 pm, Room 222**

John E. Gentner Jr, Thesis Advisor  
Management and Marketing Department

## **Thesis Title**

***A Comparison of Management in the Film and Television Industry to Management in the Manufacturing Industry***

## **Description**

This thesis intends to demonstrate the differences between management in the entertainment industry and management in a U.S. corporation that produces goods, specifically from an ethical standpoint.

**1:20 pm**

## **Amanda M. Brian**

Biology

**1:20 pm, Room 211**

Mark G. Nielsen, PhD, Thesis Advisor  
Biology Department  
Andrea Lewis, MS, Thesis Advisor  
Norton Cancer Institute, Louisville, Kentucky

## **Thesis Title**

***Understanding the Causes Associated with Familial Adenomatous Polyposis in Families with No Identifiable Genetic Mutation in Kentucky and the Surrounding Areas***

## **Description**

Familial adenomatous polyposis (FAP) is a hereditary predisposition to developing hundreds to thousands of colonic polyps and colorectal cancer. It is caused by a mutation in the Adenomatous polyposis coli (APC) gene and is inherited in an autosomal dominant pattern. The mutation is 100% penetrant, meaning that individuals who inherit the mutation will manifest the disorder. The mutation is detectable by genetic testing in up to 95% of individuals with FAP. However, in Kentucky and the surrounding areas there are several seemingly unrelated families with FAP but no mutation that can be identified upon genetic testing. Because of the proximity of the families to one another, we believe that they are interrelated and share a common founder mutation. The purpose of this research is to compile a familial basis for this hypothesis that will lead to the identification of the suspected founder mutation and the development of a new genetic test.

# 1:20 pm

## **Lauren K. Etzkorn**

Political Science and Human Rights Studies

**1:20 pm, Room 312**

Natalie F. Hudson, PhD, Thesis Advisor  
Political Science Department

### **Thesis Title**

***The Role of Environmental NGOs in Post-Conflict Rwanda: A Case Study***

### **Description**

Using four different environmental Non-Governmental Organizations (NGOs) from Rwanda as the cases, my research examines the nature and impact of the relationship between NGOs and their donors within the organizations, personally to the donors, and within the recipient community.

## **Brock P. Glasgo**

Mechanical Engineering

**1:20 pm, Room 310**

Kevin P. Hallinan, PhD, Thesis Advisor  
Mechanical Engineering Department

### **Thesis Title**

***Low-Cost Solar Thermal Power: A Design of Experiment***

### **Description**

Current flat-plate solar water heaters are complicated and expensive systems typically added on to existing roofs. A new system is analyzed which utilizes inexpensive greenhouse glazing materials to integrate solar-collecting and roofing functions, drastically reducing the cost of using solar power for domestic hot water use. A design of experiment is being conducted to determine an optimal design and peak system efficiency. The statistical testing method used allows several design parameters, as well as the interactions between these parameters, to be compared and the system's sensitivity to each determined. The results of the study will be used to validate a computer model of the technology which simulates system performance in any climate at any time of year.

## **Gregory E. Moredock**

Leadership and Finance

**1:20 pm, Room 222**

Terence Lau, JD, Thesis Advisor  
Management and Marketing Department

### **Thesis Title**

***The Link Between Value-Added Assessment and Educational Malpractice and Its Implications for Educational Leaders***

### **Description**

The public is pushing for more teacher accountability, and schools are responding by developing in a variety of methodologies and systems. I argue that one of these systems, value-added assessment, will have ramifications in the legal realm. Negligent educational malpractice results when teachers harm students intellectually by negligent and ineffective practices. Value-added assessment will provide a basis for courts hearing negligent educational malpractice cases. This legal development will bring about even more accountability for teachers and schools. Currently, negligent educational malpractice suits have not found much success because courts have ruled that it is impossible to determine if a teacher's teaching ability is the cause of the plaintiff's injury. With value-added assessment, school districts can track teachers and hold them responsible for their performance. This holds severe implications for current and future educational leaders and leadership theory, which have yet to address this possible occurrence.

## **Katherine G. Norris**

Interdisciplinary Studies

**1:20 pm, Room 207**

Ryan W. McEwan, PhD, Thesis Advisor

Biology Department

### **Thesis Title**

***A River Palimpsest—The Interdisciplinary Value of Water: Learning the Great Miami River Laterally through Ecology, Chemistry, Geography, Photography and History***

### **Description**

The overall purpose of this thesis research project is to utilize interdisciplinary areas together to create a valuable spatial and chronological baseline of the Great Miami River. Data, photographs and information were collected during two five-day river trips starting at the headwaters at Indian Lake down to the City of Dayton. Water is an invaluable natural resource to both human and ecological communities, and is currently threatened by global and local pollution and availability. In light of this, communities and scientists must come together to understand the quality and value of natural resources, such as the Great Miami River, in order to inform policy, management and societal perceptions.

# **1:40 pm**

## **COMBINED PRESENTATIONS**

### **Morrison / Smoot**

See individual presenters' information for details.

**1:40 pm, Room 310**

## **Kyle C. Deane**

Psychology

**1:40 pm, Room 312**

Ronald M. Katsuyama, PhD, Thesis Advisor

Psychology Department

### **Thesis Title**

***Comparisons of Face Recognition Among Autistic and Typically Developing Children***

### **Description**

This study compares developmental changes in face perception in children with autism with the corresponding developmental changes among typically developing elementary and middle school children. Participants were presented with a series of trials, each one involving the presentation of a standard photo of an expressionless human face in either a frontal or side view followed by a choice array of faces in three-quarter view. The children were asked to select the same individual from this array that was depicted in the standard photo. It is said that the development of frontal face recognition among typically developing children is qualitatively different from that of autistic children of the same age. However, the present results, which lend only partial support to this view, are discussed in terms of previous findings regarding the social development and facial processing of autistic children.

# 1:40 pm

## **Christina M. Kaiser**

Pre-Physical Therapy

**1:40 pm, Room 207**

Paul M. Vanderburgh, EdD, FACSM, Thesis Advisor  
Health and Sport Science Department

### **Thesis Title**

***A Simple Solution for Body Mass Bias  
in a Competition of Muscle Strength and Aerobic Power***

### **Description**

Recent theoretical and empirical evidence suggests that the ability to move one's weight, either in distance runs or in maximal repetitions (e.g., push-ups) complies with laws of biological scaling such that these events penalize larger subjects. In a popular fitness event, the Pump and Run, based on bench-press and distance-run performance, similar evidence has shown that smaller competitors have a distinct advantage due to the same scaling laws. We hypothesized that the event could be revised so that each female competitor would bench press an absolute weight (70 lbs) instead of a percentage of her weight, the latter of which imposes a bias against larger body mass. According to scaling laws, then, this would give larger runners the advantage on the bench press and smaller runners an equivalent advantage on the run, thereby eliminating body mass bias. In this study we tested this hypothesis with 34 University of Dayton women runners and athletes who competed in both the traditional and modified Pump and Run events.

## **David S. Kaufman**

International Business, Marketing and Spanish

**1:40 pm, Room 222**

Wesley C. King Jr., PhD, Thesis Advisor  
Management and Marketing Department

### **Thesis Title**

***Qualitative Study of Organizational Factors for Clients of a Social Service Agency***

### **Description**

Analyzing information collected from interviews with clients who received job placement assistance from a local social service agency, I examine job satisfaction, organizational citizenship behavior, and perceptions of justice. I also examine overall satisfaction with the service received from the social service agency, and provide recommendations for the agency to better serve its clients.

## **Rohan M. Modi**

PreMedicine

**1:40 pm, Room 311**

Amit Singh, PhD, Thesis Advisor  
Biology Department

### **Thesis Title**

***Understanding the Role of Apoptotic Cell Death in Neurodegeneration  
Caused by Amyloid Plaques During Early Development***

### **Description**

The cause and progression of Alzheimer's disease (AD), which affects over 450,000 people in the United States each year, are not completely understood. Although the symptoms are clearly outlined for Alzheimer's disease, the process by which neurodegeneration occurs is unknown. The amyloid hypothesis explains how the cleavage of the transmembrane Amyloid Precursor Protein (APP) causes the formation of an abnormal amyloid  $\beta$  42 peptide rather than a normal amyloid  $\beta$  40 peptide, resulting in the generation of extracellular amyloid plaques and

the onset of neurodegeneration. We used the *Drosophila* eye model system to further build upon this hypothesis and understand the genetic mechanism of Alzheimer's disease, because of the high degree of genetic conservation between flies and humans. Our objective was to understand the genetic circuitry of apoptotic cell death in Alzheimer's disease by overexpressing various genes in a GMR-driven amyloid  $\beta$  background.

## **Andrew J. Morrison**

Mechanical Engineering

**1:40 pm, Room 310**

Andrew D. Chiasson, PhD, PE, Thesis Advisor  
Mechanical and Aerospace Engineering Department  
Kevin P. Hallinan, PhD, Thesis Advisor  
Mechanical Engineering Department

### **Thesis Title**

***Operational Life-Cycle Optimization of Ground Loop Length in a Hybrid Ground-Source Heating and Cooling System Utilizing a Solar Thermal Collector***

### **Description**

Ground-source heat exchange, or "geothermal" systems, are becoming widely adopted as energy-efficient options in building heating and cooling applications. A significant issue in designing these systems in heating-dominated climates is that a system typically must extract more heat from the earth than it rejects over the course of a year. Over time, this results in a reduction in earth temperature, which in turn adversely affects system energy performance. A promising strategy to overcome this issue is to equip the geothermal system with a supplemental heat source, creating a "hybrid" system. A representative hybrid geothermal system using a solar thermal collector as a supplemental heat source is modeled numerically and optimized to minimize the size of the ground heat exchanger while maintaining a constant mean annual earth temperature.

## **Albert L. Trinh**

PreMedicine and Biology

**1:40 pm, Room 211**

Panagiotis A. Tsonis, PhD, Thesis Advisor  
Biology Department

### **Thesis Title**

***miRNAs in Newt Lens Regeneration: Specific Control of Proliferation***

### **Description**

The eye of adult newts can regenerate a removed lens via transdifferentiation of the pigment epithelial cells (PECs) of the dorsal iris. The same source of cells from the ventral iris is not able to undergo this process. In an attempt to understand this restriction, we have previously studied the role of miRNAs and found that miR-148 shows an upregulation in the ventral iris, while members of the let-7 family show a down-regulation in dorsal iris during dedifferentiation. Here we performed gain- and loss-of-function experiments of miR-148 and let-7b in an attempt to delineate their functions. We found that upregulation of miR-148 significantly decreases the proliferation rates of only ventral PECs, while upregulation of let-7b affects proliferation rates of both dorsal and ventral PECs. These regulations should be compared to those in other animal systems to further understand their roles in regeneration. Neither miRNA affect lens morphogenesis nor induction.

# 2:00 pm

## **Kevin M. George**

Physics

2:00 pm, Room 311

Todd B. Smith, PhD, Thesis Advisor  
Physics Department

### **Thesis Title**

***Optical Trapping: Tests in Microsphere Manipulation***

### **Description**

Optical trapping allows for the manipulation of micro- to nano-scale objects such as polystyrene spheres, nanoparticles, or biological cells. Using various optical lenses and mirrors, laser light is tailored to create an electromagnetic well capable of attracting and holding these small objects due to their index of refraction. Utilizing laboratory equipment, an optical trap was designed and constructed. A number of tests were conducted in order to characterize the trap (strength, depth, size). Additional tests concerning index of refraction, beam profile, and other parameters were also performed.

## **Kimber E. Lucius**

Nutrition and Fitness

2:00 pm, Room 207

Paul M. Vanderburgh, EdD, FACSM, Thesis Advisor  
Health and Sport Science Department

### **Thesis Title**

***Effect of Excess Dead Mass on Allometrically-Scaled Fitness Scores***

### **Description**

The push-up (PU) and distance run (DR) are components of most military physical fitness tests (PFT). Both have been shown to impose a penalty against larger body mass. This has also been predicted using biological laws of allometry. This bias is of concern because PFT scores have an impact on assignment, promotion, and job retention. One proposed solution is the use of correction factors based on body mass that essentially eliminate this bias. Correction factors, however, have been criticized for rewarding excess body fat, an undesirable fitness test outcome. Therefore, the purpose of this study was to test this assertion by artificially simulating the addition of fat mass, or "dead mass," in the form of loaded backpacks, for the PU and DR events. Subjects were 59 University of Dayton ROTC male cadets. Results showed that with the added dead mass, PU and DR corrected scores were, indeed, worse. This was because the advantage in correction factors in added weight was smaller in magnitude than the disadvantage in the actual raw scores. Such a finding has practical implications for potential changes in military fitness assessment.

## **Elizabeth A. Markus**

Biology

2:00 pm, Room 211

Jayne B. Robinson, PhD, Thesis Advisor  
Biology Department

### **Thesis Title**

***The Effect of a Cationic Porphyrin on Pseudomonas aeruginosa Biofilms***

### **Description**

Current studies have indicated the utility of photodynamic therapy using porphyrins in the treatment of bacterial infections. Photoactivation of porphyrins results in the production of singlet oxygen ( $^1O_2$ ) that damages biomolecules associated with cells and biofilms which disrupt the architecture of *Pseudomonas aeruginosa* biofilms. Static biofilms were exposed to various concentrations of porphyrin molecule and irradiated. The integrity of the biofilms was

visualized using confocal laser-scanning microscopy and cell viability determined using standard plate counts. In both wild-type and mutant biofilms, *P. aeruginosa* cells were inactivated; however, the mutant biofilms did not contain extracellular DNA and therefore remained intact. Also, the photoactivation of the porphyrin resulted in degradation of plasmid DNA. This and additional results suggest that the action of the photoactivated porphyrin on *P. aeruginosa* biofilms is two-fold: direct killing of individual cells within biofilms and detachment of the biofilm through degradation of extracellular DNA. Unexpectedly, biofilms pretreated with the porphyrin without photoactivation were substantially more sensitive to antibiotics than untreated biofilms.

## **Julie B. Ramaccia**

Public Relations

**2:00 pm, Room 312**

Teresa L. Thompson, PhD, Thesis Advisor  
Communication Department

### **Thesis Title**

***Any Progress? Portrayals of Women in Domestic Commercials***

### **Description**

This study examines and analyzes commercials that are domestic in nature — those pertaining to common household tasks such as cleaning and laundry. The women in these commercials are analyzed by several categories: their demographics, such as race and class; their clothing, in terms of how conservative and revealing it is; their verbals, such as competency and happiness; and nonverbals, such as fulfillment and frustration. The goal is to understand how women are currently presented in commercials, and whether or not this representation is consistent with reality. This study, as well as previous research, suggests that women continue to be presented in traditional manners and that progress is still needed in these types of commercials.

## **Senia I. Smoot**

Mechanical Engineering

**2:00 pm, Room 310**

Andrew D. Chiasson, PhD, PE, Thesis Advisor  
Mechanical and Aerospace Engineering Department

### **Thesis Title**

***Geothermal Ground-Source Heating: Using TYNSIS to Optimize a Hybrid System***

### **Description**

This project addresses a common problem found in geothermal closed-looped ground source heating systems. Often, if the climate in which a building is located is heating-dominated, the system results in a thermal load imbalance in the ground. It is possible, however, to decrease the load imbalance and increase the system's efficiency by introducing a supplementary heat source such as a solar collector. This project focuses on a hybrid system, comprised of unglazed solar collectors, a heat pump, and ground loops, that is used to heat domestic hot water in a multi-family residential dwelling. TRNSYS, a popular heating system simulation tool, is used to model the system and determine what optimal system conditions can be obtained for the climate in which the building is located.

## 2:00 pm

**Kathryn E. Sunday**

Marketing and International Business

**2:00 pm, Room 222**

Irene J. Dickey, SM, Thesis Advisor

Marketing Department

William S. Sekely, DBA, Thesis Advisor

International Business Department

**Thesis Title**

***The Social Revolution: An Assessment of the Current and Projected Use of Social Media by Generation Y and the Implications for Marketing Practice***

**Description**

With the dawn of the digital age upon us, the possibilities for using the Internet to connect with others are seemingly endless. One of the most common ways in which Internet users connect and network with each other is through “consumer generated media”, or rather, content that is provided and maintained by the user. It is clear that social media, such as *Facebook* and *LinkedIn*, are becoming increasingly pervasive in the lives of students, professionals and consumers. With high volumes of participants, social media sites are the latest way for businesses to reach out to consumers and connect with them. This thesis seeks to better understand the current use and perceptions of social media by the college-educated members of Generation Y and the implications of such for marketing practitioners.

## 2:20 pm

**Sarah A. Burpo**

Political Science and International Studies

**2:20 pm, Room 310**

Jaro M. Bilocerkowycz, PhD, Thesis Advisor

Political Science Department

**Thesis Title**

***Oil Powers and the Power of Their Citizens***

**Description**

In recent years, the question of the existence of the oil curse has arisen. It is the idea that citizens of oil power countries do not receive proportionate wealth to the country's oil wealth. This results in a lower standard of living for the citizens. Is this curse a falsity or a truth?

**Colleen E. Fitzsimons**

Religious Studies

**2:20 pm, Room 207**

Silviu N. Bunta, PhD, Thesis Advisor

Religious Studies Department

**Thesis Title**

***Marcion and His Effect on Mainstream Christianity***

**Description**

In the second century CE, a man named Marcion challenged the beliefs of the mainstream Christian community and created the first list of books to be considered purely Christian Scriptures. His views forced the Church-at-large to better define its beliefs about justice and love and prompted the eventual creation of the New Testament we have today. This thesis looks at Marcion within the context of heresy in the second century and examines the effect he had on the Christianity of his time.



## **Melissa A. Janicke**

Finance and Accounting

**2:20 pm, Room 222**

David A. Sauer, PhD, Thesis Advisor  
Economics and Finance Department  
Robert D. Dean, PhD, Thesis Advisor  
Davis Center for Portfolio Management

### **Thesis Title**

***Valuation Models and the Efficient Market Hypothesis: An Empirical Analysis***

### **Description**

It is generally agreed by financial analysts that the intrinsic, or true, value of a company can differ from the actual price per share of its common stock. The efficient market hypothesis suggests that this difference will rapidly disappear in a market where financial information about the company is disseminated quickly and efficiently. However, important financial information is not always available to every interested investor at the same time; hence it is possible that a "valuation difference" could exist for some time. This project attempts to empirically examine "valuation differences" for the firms within three S&P 500 sectors, spread across different industries, for the first through the fourth quarters of 2009 and on-going in 2010. The objective is to determine how a company's actual market prices respond to intrinsic values that reflect undervalued, fairly-valued and overvalued conditions.

## **Sarah M. Oros**

PreMedicine

**2:20 pm, Room 311**

Amit Singh, PhD, Thesis Advisor  
Biology Department

### **Thesis Title**

***Dorsal Eye Selector Pannier (Pnr) Suppresses Retinal Differentiation to Define the Dorsal Margin of Drosophila Eye***

### **Description**

Retinal determination genes are involved in the formation and specification of the *Drosophila melanogaster* eye field. Another class of genes known as Dorso-ventral (DV) patterning genes are responsible for the axial patterning of the eye field. Loss-of-function phenotypes of RD genes are similar to those of DV genes. Consequent investigation into their interaction has led to the discovery that mutation of dorso-ventral genes prevent ectopic expression of RD genes. Pnr, a GATA-1 transcription factor, is a dorsal selector gene vital to axial patterning, whose loss-of-function phenotype shows dorsal eye enlargement due to ectopic equator formation in the dorsal compartment of the fly eye. Closer examination into the loss-of-function phenotype of pnr will provide insight into (1) whether it is restricted to determining axial patterning eye fate; (2) the specific role pnr may play in the RD gene network; and (3) whether pnr contributes to suppression of the eye in *Drosophila*.

# 2:20 pm

**Elizabeth M. Raphael**

Biology

**2:20 pm, Room 211**

Jayne B. Robinson, PhD, Thesis Advisor  
Biology Department

## Thesis Title

***Determining the Effectiveness of Photodynamic Therapy  
Against Bacteriophage UT1 in Pseudomonas Aeruginosa***

## Description

Photodynamic therapy involves the use of a photosensitizer, in this case a porphyrin, to induce damage in a biological molecule upon activation by light. This project focuses on the use of photodynamic therapy to inactivate bacteriophage, the viruses which infect bacteria, by destroying the genetic material of the phage. Photodynamic therapy was employed against bacteriophage UT1, which infects *Pseudomonas aeruginosa*, and was successful in complete inactivation of the phage. The success of this approach indicates that photodynamic therapy could potentially inactivate other types of viruses as well, adding to the relevance of this study.

# 2:40 pm

**Ryan J. Carpenter**

PreMedicine

**2:40 pm, Room 311**

Matthew E. Lopper, PhD, Thesis Advisor  
Chemistry Department

## Thesis Title

***Bacterial DNA Helicases at the Intersection of DNA Replication,  
Recombination and Repair***

## Description

All bacterial cells must be able to duplicate their genetic information in order to grow. However, DNA replication can be disrupted due to damage in the cell's genome, causing the process to come to a halt. Bacterial cells must be able to repair damaged DNA and restart the process of genome replication to ensure survival. This process, known as "DNA replication restart," is initiated by a DNA helicase called primosome protein A (PriA). As the initiator of DNA replication restarts pathways, PriA must accomplish a diverse array of tasks such as recognizing places along the chromosome where replication has been disrupted, binding the DNA at these sites, and manipulating the DNA in a way that helps resume the process of replication. In this study, I examined the function of PriA in *Neisseria gonorrhoeae*, the pathological agent behind the human disease gonorrhea, and compared its function to the PriA protein of *Escherichia coli*. Using fluorescence polarization techniques, I determined how well PriA binds to various DNA structures, to what extent it can unwind duplex DNAs, and how rapidly it unwinds duplex DNA. Through understanding these characteristics, a better view of PriA's role in DNA replication restart can be constructed.

## **Grace J. Crivello**

Women and Gender Studies and Political Science

**2:40 pm, Room 310**

Leslie H. Picca, PhD, Thesis Advisor  
Sociology Department

### **Thesis Title**

***Out of the "City": How Backlash and Post-Feminism Have Shaped Third Wave Feminism***

### **Description**

Using Susan Faludi's book, *Backlash: The Undeclared War Against American Women*, as a jumping-off point, I examine the different changes which have occurred since Second Wave feminism (the late 1960 through the early 1980s). Since the end of the Second Wave, there have been many feminist theorists who call themselves part of the Third Wave, but I argue that the true Third Wave began in the late 1990s. The other interim philosophies can be separated into two different phases. The first is the Riot Grrrl movement, which grew out of the male-dominated punk rock scene and tried to correct the misogyny found within its subculture. The second set of philosophies, while labeled with many different names, all fall under a second backlash. This backlash is best exemplified by post-feminism which claimed to be the next generation of feminism, but in fact was based on antifeminist principles. It is only in response to this that the true Third Wave, looking back to both the Second Wave and the DIY attitude of the Riot Grrrl movement, creates a synthesis of ideas which are characteristic of the Third Wave. This chronology is not absolute, as is the case with all discussions of feminism and feminist theory, but there is a definite pattern which can be discerned.

## **Jennifer M. Lang**

Biology

**2:40 pm, Room 211**

Jayne B. Robinson, PhD, Thesis Advisor  
Biology Department

### **Thesis Title**

***"Biological Warfare" Leads to Larger Biofilms: The Effect of a Bacterial Virus Attack on the Biofilms of the Bacterium Pseudomonas Aeruginosa***

### **Description**

The bacterium *Pseudomonas aeruginosa* makes harmful biofilms that cause many medical problems. They are more resistant to the host immune system and antibiotics. Due to this, the infection is very difficult to eradicate so new methods of treatment are needed. The use of bacterial viruses, bacteriophage, has been proposed as an alternate method to traditional antibiotics, but our lab previously observed that bacteria respond to bacteriophage attack by increasing in biofilm mass. This unexpected result led to the need for further investigation into how and why this was happening. The results showed that there was more DNA in the bacteriophage-induced biofilms than the regular biofilms. After ruling out DNA release mechanisms, we believe it is a result of the bacterial cells being burst by bacteriophage release. Also, the induced biofilm stability was tested, and it was found to be more susceptible to the antibiotic tobramycin than regular biofilms.

## 2:40 pm

**Andrew M. Topp**

Chemical Engineering

2:40 pm, Room 312

Donald A. Comfort, PhD, Thesis Advisor  
Chemical Engineering Department

### Thesis Title

***Isolation and Characterization of Glycoside Hydrolases from Caldicellulosiruptor Saccharolyticus***

### Description

With growing concern over global warming and waning oil reserves, there has been increased interest in biofuels. A major step forward for biofuels would be the ability to efficiently and economically utilize cellulose rich feedstocks. To accomplish this, new methods of digesting these complex feedstocks into simpler sugar molecules need to be developed. Caldicellulosiruptor saccharolyticus is a thermophilic bacterium capable of breaking down cellulose. Several enzymes from C. saccharolyticus hypothesized to be involved in digesting cellulose were chosen and expressed in E. coli. The functional activity and biochemical characterization of these enzymes will be discussed.

## 3:00 pm

**Kathryn K. Jennrich**

Religious Studies

3:00 pm, Room 222

François E. Rossier, SM, PhD, Thesis Advisor  
Marian Library

### Thesis Title

***Why Mary? An Analysis of the Foundations of Three Marian Religious Congregations Between 1600 and 1815***

### Description

The era between the Catholic Counter-Reformation and the Catholic Restoration after Napoleon saw a rise in apostolic and evangelistic congregations. The Institute of the Blessed Virgin Mary, founded in 1609 by Mary Ward in England; the Marians of the Immaculate Conception, founded in 1673 by Blessed Fr. Stanislaus Papczyński; and the Sisters of the Presentation of Mary, founded in 1796 by Blessed Marie Rivier, all began during this period. These three congregations are similar, first and foremost in that they all bear the name of the Blessed Virgin Mary. Two are female teaching congregations, un-cloistered, which were revolutionary for this time. The Marians, a male congregation, were also forward-thinking in their devotion and commitment to the spread of the Immaculate Conception of Mary. This thesis delves into the lives of these three founders, particularly the reasons why they chose to form these congregations and why they chose to name themselves after the Blessed Virgin Mary.

**Kelly P. Kranjc**

Chemical/Materials Engineering

**3:00 pm, Room 312**Donald A. Klosterman, PhD, Thesis Advisor  
Materials Engineering Department  
Jennifer Chase-Fielding, PhD, Thesis Advisor  
US Air Force Research Laboratory**Thesis Title*****Nano-Enhanced Polymeric Composites for Lightning Strike Protection*****Description**

Composite materials are becoming increasingly integrated into aircraft structure for their unique properties, but composite materials are not as conductive as metals. It is not uncommon for aircraft to be struck by lightning, so it is necessary that composite aircraft materials be able to mitigate the effects of a lightning strike. For this study, nickel nanostrands and vapor-grown carbon nanofibers were incorporated into the surface of a composite along with nickel-coated carbon fiber mats or expanded copper mesh to determine the effect on the damage that the composite experiences after being struck with a 100 kiloampere lightning strike.

**3:20 pm****Deborah L. Crowds**

Marketing and International Business

**3:20 pm, Room 222**Barbara H. John, MA, Thesis Advisor  
Economics and Finance Department**Thesis Title*****The Branding of Cities: A Case Study of Dayton, Ohio, and Lexington, Kentucky*****Description**

Just as products and services are facing extremely high levels of competition in an increasingly globalized marketplace, cities now face unprecedented competition with others for tourism dollars, business investment, young talent, and a diverse set of residents. The 21st century society has created the most mobilized workforce of modern times due to the influence of technology, transportation, and globalization. In response to these trends, cities are discovering a pressing need to differentiate themselves to potential "customers" by an innovative new marketing technique: city branding. By packaging and promoting their unique identity, history, and attributes, cities are developing intensive branding campaigns.

This trend has brought Dayton, Ohio, and Lexington, Kentucky, to develop very different branding efforts over the past five years, and this study will delve into these efforts, as well as their successes and failures, to determine the components of an effective branding campaign for a city.

# 3:20 pm

**Eric S. Harper**  
Chemical Engineering

**3:20 pm, Room 312**  
Vladimir A. Benin, PhD, Thesis Advisor  
Chemistry Department  
Benjamin Leever, Thesis Advisor  
Wright Patterson Air Force Base

## **Thesis Title**

***Bulk-Heterojunction Photovoltaic Cells:  
The Effect of Interlayer Morphology on Device Performance***

## **Description**

The world currently relies on fossil fuels as its primary energy source, but these resources are being depleted at ever faster rates and are non-renewable. Fossil fuels have also been shown to cause pollution. These pollutants have been linked with climate change, as well as the cause of environmentally damaging phenomena, such as acid rain. Together, the increased energy consumption along with the negative impact of fossil fuels proves the need for alternative energy sources.

An investigation into organic photovoltaic cells was conducted, specifically the interlayer of Bulk-Heterojunction photovoltaics (BHJ's). A brief history of solar cells, advancements in solar technology, and the particular theory behind photovoltaic cells, especially BHJ's, is included. Different experimental treatments were applied to the "interlayer" of BHJ's and the resulting device performance was measured to determine a link between interlayer morphology and device performance. It was found that the interlayer surface morphology could be modified and, through experimentation, it was determined that the interlayer morphology does impact the device performance, with rougher surfaces resulting in higher device performance. Continuing research should focus on more precise and effective means to produce morphological changes and how to further increase device performance.

**Jeffrey S. Kuerbitz**  
Biochemistry and Philosophy

**3:20 pm, Room 211**  
Matthew E. Lopper, PhD, Thesis Advisor  
Chemistry Department  
Derek Damron, PhD, Thesis Advisor  
Kent State University, Biology Department

## **Thesis Title**

***Neuronatin Regulation of a Calcium Homeostasis in Human Osteosarcoma Cells***

## **Description**

I researched the effect of the protein neuronatin on intracellular calcium concentrations. I inserted a gene coding for the protein into human osteosarcoma cells and monitored calcium concentration. My findings suggest that neuronatin slows the rate at which cells pump calcium out of the cytoplasm following a spike in calcium concentration.

## **Christen E. Lopez**

Psychology

**3:20 pm, Room 310**

Ronald M. Katsuyama, PhD, Thesis Advisor  
Psychology Department

### **Thesis Title**

*Memory and Comprehension of Short Passages*

### **Description**

In this research we looked at the effects of translation on learning in students studying French. Participants read a series of passages, then were asked to either translate or reconstruct the information in English. They were then tested on what they remembered.

## **3:40 pm**

## **Peter A. Kolis**

Mechanical Engineering and Spanish

**3:40 pm, Room 310**

Binod Kumar, PhD, Thesis Advisor  
Mechanical and Aerospace Engineering Department

### **Thesis Title**

*Photovoltaic Charging of Single-Cell Lithium-Air Batteries*

### **Description**

Solid-state lithium-air secondary batteries currently in development boast the highest theoretical energy density of current battery chemistries. The effective combination of solar photovoltaic cells and solid-state lithium-air secondary batteries would allow the renewable, self-charging and energy-dense storage of electrical power, with applications in portable consumer electronics, the electric auto industry, and residential/commercial solar-photovoltaic systems. A solid-state lithium-ion secondary battery developed by the University of Dayton Research Institute was monitored as it was charged and discharged to determine its response to direct solar-photovoltaic charging, and the resulting data was analyzed to determine the suitability of this battery chemistry to direct solar-photovoltaic charging.

## **Hilary S. Marsh**

Chemical Engineering

**3:40 pm, Room 312**

Kevin J. Myers, PhD, Thesis Advisor  
Chemical Engineering Department  
Michael A. Matthews, PhD, Thesis Advisor  
University of South Carolina, Chemical Engineering Department

### **Thesis Title**

*On the Mechanism of NaBH<sub>4</sub> Hydrolysis: Raman Spectra of Solid Species*

### **Description**

Hydrogen storage is one of the greatest engineering problems associated with creating a hydrogen-based energy infrastructure because current storage systems are often too large and massive to be practical. Sodium borohydride (NaBH<sub>4</sub>) is potentially valuable as a chemical hydrogen storage compound because hydrogen liberated when it is reacted with water can be used in fuel cells. Elucidation of the hydrolysis reaction mechanism is important in the engineering of a better hydrogen storage system. In this investigation, the solid chemical species involved in the hydrolysis reaction were characterized and Raman spectroscopy technique was developed in order to lay the groundwork for the reaction to be studied with in-situ Raman spectroscopy.

# 3:40 pm

## **Elizabeth A. O'Connor**

Religious Studies and Spanish

**3:40 pm, Room 207**

Jana M. Bennett, PhD, Thesis Advisor

Religious Studies Department

Jeffrey Morrow, PhD, Thesis Advisor

Seton Hall University, Theology Department

### **Thesis Title**

***Amistad in Action: Uniting the Americas Through the Sister Parish Relationship***

### **Description**

This thesis examines the relationship between St. Monica parish in Indianapolis and her "sister parish" in Honduras. It explores what it means to have a sister parish, how the relationship functions on each end, and how it plays out in the broader context of helping to unite the Americas into one America. This research integrates concepts such as solidarity, mission and faith, especially as discussed in Pope John Paul II's apostolic exhortation *Ecclesia in America*.

## **Sindhu V. Ravipati**

Biochemistry

**3:40 pm, Room 211**

Shawn M. Swavey, PhD, Thesis Advisor

Chemistry Department

### **Thesis Title**

***Synthesis and Characterization of Meso 5-(Pentafluorophenyl)-10,15,20-tris (4-pyridyl) Porphyrin and Its Ruthenated, Copper / Ruthenated, and Platinum / Copper / Ruthenated Analogs***

### **Description**

Photodynamic therapy (PDT) has gained increasing attention in the past decade as a treatment modality for a number of medical conditions such as skin cancer (melanoma). PDT typically utilizes a photosensitizer, molecular oxygen and light to destroy cancer cells. The ideal photosensitizer will accumulate at tumor cells, absorb light at low energy and will be benign to the cells in the absence of light. Many macrocycles, particularly porphyrin derivatives, have been studied as potential PDT agents. This is due in part to their high affinity for tumor sites, their low dark toxicity, and their intense absorption properties in the visible region of the electromagnetic spectrum. The porphyrins, 5-(pentafluorophenyl)-10,15,20-tris (4-pyridyl) and its metal analogs, were synthesized and then characterized through spectroscopy and electrochemistry. The ability of these porphyrins to bind to DNA was tested through DNA titrations to see if they could be used in future photodynamic therapy studies.

## **Marie-Claire Tuzeneu**

International Studies and French

**3:40 pm, Room 222**

Margaret P. Karns, PhD, Thesis Advisor

Political Science Department

Barbara H. John, MA, Thesis Advisor

Economics and Finance Department

### **Thesis Title**

***The Ripple Effect? Examining the Impact of the Global Economic Crisis on the Least Developed Countries (LDCs)***

### **Description**

Economists predicted as early as 2008 that developing countries would experience the effects of the economic crisis even more severely than the countries where the crisis originated. This



thesis investigates the veracity of that prediction through a case study based on two months of research, observations, and interviews conducted in Togo; a survey of related development theory literature; and a comparison of those findings with data on several surrounding nations. Ultimately, this research led to the conclusion that, contrary to popular belief, no clear link can be made between the economic crisis and those challenges currently confronting Togo. Namely, Togo currently faces a combination of long-term difficulties caused by political upheaval in the 1990s and contracting commodity sectors and short term issues like the 2008 fuel and food crisis and severe flooding. Had the global economic crisis never occurred, Togo would still be suffering from a series of very serious development challenges.

**4:00 pm**

**Alice M. Begovich**

Chemical Engineering

**4:00 pm, Room 312**

Margaret F. Pinnell, PhD, Thesis Advisor  
Mechanical Engineering Department

**Thesis Title**

***Exploring the Significance of Preconditioning Blood Vessels in Ex Vivo Testing***

**Description**

The objective of this study was to determine if preconditioning porcine renal arteries prior to using an energy-based surgical tool that cuts and seals these vessels would enhance the repeatability of subsequent burst pressure tests. An advanced surgical scalpel was used on the blood vessels, half of which were preconditioned before cutting and sealing with the scalpel and half of which were not. After the seal was accomplished, the two halves of the blood vessel were subjected to a burst pressure test. The highest pressure that the seal withstood was recorded. It is expected that the preconditioned blood vessels will have a lower standard of deviation in their burst pressures as compared to the standard deviation of the control group.

**Adam J. Eakman**

Religious Studies and Religious Education

**4:00 pm, Room 207**

Jana M. Bennett, PhD, Thesis Advisor  
Religious Studies Department

**Thesis Title**

***John Paul II's Guide to Dating: A Handbook for Effectively Teaching Catholic Doctrines on Sexuality in a High School Classroom***

**Description**

Recently pregnancy, abortion, and STDs have been continually increasing in adolescents while their understanding of the Catholic Church's teaching on sexuality is decreasing. This thesis is a guide for educators who seek to address this issue by effectively teaching healthy sexual decision-making and an understanding of the Catholic Church's teachings on human sexuality in a Catholic high school classroom. It surveys relevant educational techniques that have been proven effective for sexual education and synthesizes this information with Pope John Paul II's theology of sexuality. Together, this information is combined into a unique approach to teaching sexuality that is more a guide to developing a healthy romantic relationship than an attempt to scare students out of sex. It contains the necessary material for a detailed explanation of Church teaching so educators can finally give adolescents the effective Catholic sexual education that is called for in the new millennium.

# 4:00 pm

## **Tracey L. Horan**

Middle Childhood Education and Spanish

**4:00 pm, Room 311**

Kathryn A. Kinnucan-Welsch, EdD, Thesis Advisor  
Teacher Education Department

### **Thesis Title**

***A Case Study of Connecting Community Engagement Experience with Community Engagement Curriculum***

### **Description**

As the civic health of the nation continues to decline and the U.S. is labeled a “nation of spectators,” community engagement becomes more and more crucial to the vitality of cities across the United States. This is especially true in the case of Dayton, Ohio, recently labeled a “dying city.” Educators, too, have come to value community engagement as a framework that provides engaging, relevant, and meaningful curriculum to students who lack motivation. This research appeals to the interests of community members, students and teachers as it tracks one pre-service teacher’s unique journey from learning about communities in a university classroom, to taking an active role in community outreach, to finally helping develop a curriculum to promote community engagement in middle school classrooms in the Dayton area. Research will discuss the importance of community engagement, patterns among community engagement experiences, and implications for both teacher education programs and curriculum development.

## **Mark M. Plecnik**

Mechanical Engineering

**4:00 pm, Room 310**

Andrew P. Murray, PhD, Thesis Advisor  
Mechanical Engineering Department  
David H. Myszka, PhD, PE, Thesis Advisor  
Engineering Technology Department

### **Thesis Title**

***Design of a Shape-Changing Rigid-Body Parabolic Light Reflector***

### **Description**

Shape-changing mechanisms have the capacity to morph between multiple profiles. These mechanisms are composed of multiple hinged joints and rigid bodies, the classical components of mechanical design. The morphing is activated by the rotation of a single input link. The capacity of these mechanisms to change shape may allow for their use in aerodynamics, deployable mechanisms, wave reflection/concentration, and ergonomics applications. This project includes an investigation and the design of a practical mechanism for a parabolic light reflector. This project will result in the prototyping of this shape-changing light reflector.

**Krista M. Versteeg**

Biochemistry

**4:00 pm, Room 211**Kevin M. Church, PhD, Thesis Advisor  
Chemistry Department**Thesis Title*****Synthesis, Structure and Sugar Conformation  
of a 2-Spiroisoxazolidine Nucleoside Analog*****Description**

As bacterial, viral and cancerous diseases become more prevalent, there is a need for medications that can target the root of the problem, rather than treat the symptoms. Antisense oligonucleotides are medicinal compounds that specifically target and destroy mRNA encoding for specific compounds, thus eliminating harmful proteins or killing the cell. Antisense oligonucleotides are composed of 15-20 base nucleotide molecules, with small substituents which affect their bind to the target mRNA. This thesis project details the process used to create a 2-spiroisoxazolidine analog to be used within the antisense oligonucleotide. These molecules were made using organic chemistry synthesis reactions and the conformation confirmed through 1D and 2D NMR experiments.

**Alexander S. Whitehead**

English and PreMedicine

**4:00 pm, Room 222**Stephen W. Wilhoit, PhD, Thesis Advisor  
English Department**Thesis Title*****Collection of Short Stories*****Description**

This presentation focuses on an original collection of seven thematically-linked short stories that I wrote as my thesis. Heavily based on character, these stories examine the significance of communication in society and private relationships and explore the consequences surrounding its neglect, failure, or destabilization, while experimenting with voice, setting, structure, and symbolism.

**4:20 pm****Matthew P. Magner**

Mathematics and Theatre

**4:20 pm, Room 207**Arthur H. Busch, PhD, Thesis Advisor  
Mathematics Department**Thesis Title*****Hamiltonian Cycles in Cayley Graphs*****Description**

A group is a set of elements with a binary operation that follows a certain set of axioms. There are different types of groups, including normal groups and simple groups. Simple groups are often predictable, but some are sporadic, similar to the occurrence of prime numbers. A Cayley graph is a graph that corresponds to a group and a generating set of the group. A graph is called Hamiltonian if there is a cycle, called a Hamiltonian cycle, which includes every vertex of the graph once and only once. Lovasz conjectured that every Cayley graph contains a Hamiltonian cycle. Cayley graphs for simple groups are observed to find some patterns among them. In each graph, Hamiltonian cycles are found to support Lovasz's conjecture.

# 4:20 pm

**Kyle A. Meyer**

Biochemistry

**4:20 pm, Room 211**

Yiling Hong, PhD, Thesis Advisor  
Biology Department

**Thesis Title**

***Cytotoxicity of Zinc Oxide Nanoparticles  
in Human and Mouse Dermal Fibroblast Cell Cultures***

**Description**

The production of manufactured nanoparticles is increasing rapidly as the field of nanotechnology continues to expand. Many technological advances with nanoparticles take advantage of the nano-sized particles having different properties than the bulk form. These same unique properties, however, may result in some nanoparticles possessing hazardous and toxic effects, even though the bulk form is relatively safe. The current research assesses the toxicity of zinc oxide nanoparticles in vitro through studying the response of human and mouse dermal fibroblast cells after exposure. The cell studies indicate that nano-sized zinc oxide induces stress and cell death, highlighting the importance of more extensive in vivo research into the safety of zinc oxide nanoparticles.

**Thomas R. Motz**

Theatre and English

**4:20 pm, Room 310**

Kay D. Bosse, Thesis Advisor  
Theatre and Communication Departments

**Thesis Title**

***Abandoning Aristotle for a Raining Elevator:  
Ovidian Myth in Contemporary Theatre***

**Description**

In my thesis I make the claim that modern theatre artists — particularly playwrights — are reinventing Ovidian myth for the stage as a way to explore classical themes in nontraditional formats. The reasoning behind this is that Ovidian myth does not rely on the Western literary standard of the Aristotelian A-frame that places the greatest emphasis on crafting a plot in which events stem logically from one another. Rather, Ovidian myths are constructed more as vignettes than fully formed plots, forcing the focus not on events but on character and the interpersonal. I explore these notions via my staging of Sarah Ruhl's play *Eurydice*. This play, as a prime example of the modernist theatrical use of Ovid, is unpacked in the thesis and examined as both a literary work and as a fully-formed and realized piece of theatre.

**Alix A. Omori**

Sociology

**4:20 pm, Room 222**

Dan E. Miller, PhD, Thesis Advisor  
Sociology Department

**Thesis Title**

***Problems with "Going Green":  
The Paradox of Green Capitalism and an Authentic Presentation of Self***

**Description**

Green consumerism is a growing trend in American markets, and companies in every industry are capitalizing on it by marketing products with a "sustainable" agenda and encouraging consumers to make ethical, environmental purchase decisions. Eco-marketing uses an ethical agenda to promote products (a practice sometimes called "greenwashing"), so consumers who

buy in to this trend are making a personal environmental statement while simultaneously “jumping on the hybrid bandwagon”. However, as green consumerism continues to rise, scholars and environmentalists have begun to debate the authenticity of the trend and its consumers, citing inconsistent consumer behavior and the inherent paradox of green capitalism as reasons for their skepticism.

This research examines what it means to “go green” and challenges the green industry to reaffirm its ecological mission and redirect its focus from the consumer to the environment. Using survey data, secondary data analysis and scholarly research, this study attempts to quantify American consumers’ ecological consciousness and level of commitment to the green movement. That is, does the rise of green consumerism indicate a greater movement towards conspicuous consumption or is it simply a manifestation of the influence of green marketing? In exploring the answer to this query, one can assess the efficacy of the green movement and predict the future of ecological consciousness and consumerism in the United States.

## **Michelle L. Timmerman**

Adolescence to Young Adult Education  
and Mathematics

**4:20 pm, Room 311**

Rachel M. B. Collopy, PhD, Thesis Advisor  
Teacher Education Department

### **Thesis Title**

***The Black-White Achievement Gap: A Novice Teacher’s Professional Development Plan for Closing It***

### **Description**

Significant disparities persist between the school performance of African American and Caucasian students in the United States. Teachers have a tremendous impact on the academic achievement of minority students and closing the White-Black achievement gap. Beginning with a thorough literature review on potential causes of the achievement gap, I investigated the knowledge, skills and dispositions an educator needs in order to narrow it. Building upon this investigation, I assessed what is essential for me to know so that I may contribute to closing the achievement gap as a white, middle-class novice teacher in a school with a diverse student population. I developed a five-year professional development plan addressing what I need to learn about myself, students, pedagogy and school structures through interaction with other people, intentional experiences and further reading. Through my professional development plan, this thesis confronts the racial achievement gap and how teachers may help eliminate it.

## **Alexander M. Watson**

Electrical Engineering

**4:20 pm, Room 312**

Russell C. Hardie, PhD, Thesis Advisor  
Electrical and Computer Engineering Department

### **Thesis Title**

***Implementing Guitar Effects Using MATLAB***

### **Description**

The novelty of this thesis project pertains to the use of strictly software algorithms defined using MATLAB to create a variety of electric guitar effects to be employed and controlled in real time. The input guitar signal is taken from the microphone jack on the computer and loaded into MATLAB so that various filters can be applied to change the signal based on controllable parameters. These parameters are controlled using a graphical user interface (GUI) tool in MATLAB as well. The end product of this thesis will provide a solid foundation for any future electrical engineer who may be interested in digital signal processing as it pertains to guitar effects to take to the next level. It will contain all the necessary software files I have developed as well as complete and easy-to-follow instructions for setting a new computer up to reproduce the results I have obtained.

# 4:40 pm

## **Alisa B. Bartel**

Psychology

**4:40 pm, Room 310**

Mark Ensalaco, PhD, Thesis Advisor

Political Science Department

Shawn A. Cassiman, PhD, Thesis Advisor

Social Work Department

### **Thesis Title**

***Broken Borders: Investigating Ohio's Susceptibility to Human Trafficking***

### **Description**

This thesis project is organized into three main subsets: the prevalence of human trafficking in Ohio; Ohio's attempts to combat this criminal enterprise; and the crucial steps Ohio must take to fully eradicate modern-day slavery within its borders. The research includes analysis of case studies, interviews with social service providers, discussions with coalition and task force members, and critiques of Ohio's current legislation. The project concludes with a call to action.

## **Kurt M. Blankschaen**

International Studies and Philosophy

**4:40 pm, Room 222**

Akhila Ramnarayan, PhD, Thesis Advisor

English Department

John A. Inglis, PhD, Thesis Advisor

Philosophy Department

### **Thesis Title**

***The Gay Nation: Decolonizing the Forgotten***

### **Description**

The question that seems to come up in many respects for our generation is the gay question. In terms of legal, social, economic, or religious inclusion, the gay question is asked: "How should gays be included?" While there are many answers to this question, few of them talk about how gays are included. In my thesis I make the claim that gays are asked to assimilate to cultures to which they already belong. In this respect, gays are treated as another nation—foreigners assimilate, natives do not—and so I make the claim that gays should think of themselves as they are treated. I argue that gays constitute a nation; furthermore, I make the case that gays have been colonized. I offer means of resistance to this neocolonialism and an analysis of reviving an atrophying gay culture. I finally attempt a reconciliation between gays in a particular cultural paradigm of Catholic social teaching.

## **Eric J. Krissek**

Adolescence to Young Adult Education  
and Mathematics

**4:40 pm, Room 311**

James B. Rowley, PhD, Thesis Advisor

Teacher Education Department

### **Thesis Title**

***An Ethnographical Exploration of Math and Science Pedagogy  
in a Kenyan Primary (K-8) School***

### **Description**

In a Kenyan primary school, students are struggling to pass math and science proficiency tests. These tests determine which students are eligible to continue their education in secondary school. This is a significant event, since education is one of the few opportunities

for an individual to improve his or her social and economic standing. As a result, what can be implemented, from an educational standpoint, to improve these math and science scores? Before considering all of these interventions, however, the cultural construct of this Kenyan primary school must be considered. Moreover, the question related to why these students are failing must also be investigated. This problem is explored from a plethora of perspectives to offer insight into the realm of math and science pedagogy in Kenya. It also aims to offer educational interventions that align with Kenyan educational philosophies and other ethnographic research strategies.

## **Todd L. Longbottom**

Environmental Geology

**4:40 pm, Room 207**

Umesh K. Haritashya, PhD, Thesis Advisor  
Geology Department

### **Thesis Title**

***An Analysis of Alpine Glacier Morphology in the Eastern, Central and Western Himalaya using Remote Sensing Data***

### **Description**

The present study employs DEMs and Orthorectified images from the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) instrument, as well as Landsat remote sensing data. Images were acquired from 1972 to 2009, and a decadal analysis was conducted to determine ELA, ice velocities, area comparisons, vertical change, and supraglacial/proglacial lake extents across the different regions. The glaciers in each geographic region exhibited starkly different characteristics spatially and temporally.

## **Sally A. Ogle**

Chemical Engineering

**4:40 pm, Room 211**

Yiling Hong, PhD, Thesis Advisor  
Biology Department

Yana Zavros, PhD, Thesis Advisor  
University of Cincinnati, Biology Department

### **Thesis Title**

***Hedgehog Signaling as a Regulator of Gastric Physiology***

### **Description**

Sonic Hedgehog (Shh) is a morphogen that is known to play a vital role in embryonic development; however, until recently little was known about its role in the adult. Due to the decrease in Shh expression with Helicobacter Pylori infection, a known precursor to gastric cancer, understanding the importance of Shh in the adult stomach is of great interest. This study explores the role of Shh in regulating gastric physiology in the adult mouse. Experimental data indicates that Shh is needed to maintain both the normal structure and the function of the gastric epithelium.





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<b>PRESENTER</b>	<b>ROOM AND SESSION TIME</b>	<b>PRESENTER</b>	<b>ROOM AND SESSION TIME</b>
Bartel, Alisa B. ....	Room 310, 4:40 pm	Lopez, Christen E. ....	Room 310, 3:20 pm
Begovich, Alice M. ....	Room 312, 4:00 pm	Lucius, Kimber E. ....	Room 207, 2:00 pm
Blankschaen, Kurt M. ....	Room 222, 4:40 pm	Magner, Matthew P. ....	Room 207, 4:20 pm
Brian, Amanda M. ....	Room 211, 1:20 pm	Markus, Elizabeth A. ....	Room 211, 2:00 pm
Burpo, Sarah A. ....	Room 310, 2:20 pm	Marsh, Hilary S. ....	Room 312, 3:40 pm
Calvo, Andres A. ....	Room 312, 1:00 pm	Meyer, Kyle A. ....	Room 211, 4:20 pm
Carpenter, Ryan J. ....	Room 311, 2:40 pm	Modi, Rohan M. ....	Room 311, 1:40 pm
Chomanics, LeeAnn M. ....	Room 310, 1:00 pm	Moredock, Gregory E. ....	Room 222, 1:20 pm
Crivello, Grace J. ....	Room 310, 2:40 pm	Morrison, Andrew J. ....	Room 310, 1:40 pm
Crowdus, Deborah L. ....	Room 222, 3:20 pm	Motz, Thomas R. ....	Room 310, 4:20 pm
Deane, Kyle C. ....	Room 312, 1:40 pm	Norris, Katherine G. ....	Room 207, 1:20 pm
Eakman, Adam J. ....	Room 207, 4:00 pm	O'Connor, Elizabeth A. ....	Room 207, 3:40 pm
Estandia, Laura A. ....	Room 207, 1:00 pm	Ogle, Sally A. ....	Room 211, 4:40 pm
Etzkorn, Lauren K. ....	Room 312, 1:20 pm	Omori, Alix A. ....	Room 222, 4:20 pm
Fitzsimons, Colleen E. ....	Room 207, 2:20 pm	Oros, Sarah M. ....	Room 311, 2:20 pm
George, Kevin M. ....	Room 311, 2:00 pm	Plecnik, Mark M. ....	Room 310, 4:00 pm
Glasgo, Brock P. ....	Room 310, 1:20 pm	Ramaccia, Julie B. ....	Room 312, 2:00 pm
Harper, Eric S. ....	Room 312, 3:20 pm	Raphael, Elizabeth M. ....	Room 211, 2:20 pm
Horan, Tracey L. ....	Room 311, 4:00 pm	Ravipati, Sindhu V. ....	Room 211, 3:40 pm
Janicke, Melissa A. ....	Room 222, 2:20 pm	Smoot, Senia I. ....	Room 310, 2:00 pm
Jennrich, Kathryn K. ....	Room 222, 3:00 pm	Sunday, Kathryn E. ....	Room 222, 2:00 pm
Kaiser, Christina M. ....	Room 207, 1:40 pm	Thomas, David A. ....	Room 222, 1:00 pm
Kaufman, David S. ....	Room 222, 1:40 pm	Timmerman, Michelle L. ....	Room 311, 4:20 pm
Kolis, Peter A. ....	Room 310, 3:40 pm	Topp, Andrew M. ....	Room 312, 2:40 pm
Kranjc, Kelly P. ....	Room 312, 3:00 pm	Trinh, Albert L. ....	Room 211, 1:40 pm
Krissek, Eric J. ....	Room 311, 4:40 pm	Tuzeneu, Marie-Claire ....	Room 222, 3:40 pm
Kuerbitz, Jeffrey S. ....	Room 211, 3:20 pm	Versteeg, Krista M. ....	Room 211, 4:00 pm
Lang, Jennifer M. ....	Room 211, 2:40 pm	Watson, Alexander M. ....	Room 312, 4:20 pm
Longbottom, Todd L. ....	Room 207, 4:40 pm	Whitehead, Alexander S. ....	Room 222, 4:00 pm