8th Annual
Scholars Week
Program and Abstracts

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Welcome

to ***Scholars Week*** 2009. This year marks the eighth anniversary of Murray State University's ***Scholars Week*** celebration and the publication of the fifth edition of *Chrysalis: The Murray State University Journal of Undergraduate Research*, featuring the scholarly endeavors of students throughout the University.

The 2008-09 academic year has been an especially productive one for Murray State students and faculty. MSU undergraduate students joined students from Kentucky's other public institutions of higher education and the Kentucky Community and Technical College System for *Posters-at-the-Capitol*, an event in Frankfort organized by Murray State's Office of Undergraduate Research and Scholarly Activity (URSA). Three graduate students from Murray State also took part in the first Graduate Research Day, which was a similar program also held at the Capitol. Throughout the year, over thirty undergraduate Murray State students have received financial support for faculty-mentored projects through the URSA Grant Program, and three Research Scholar Fellowships were awarded to undergraduate students who participated in a very competitive review process.

The University has also embarked on a journey to grow visibility and involvement in undergraduate research in the College of Education (COE). Two different events were held this year in the COE and a directory has been initiated to disseminate information on education faculty interested in mentoring undergraduates through this "high-impact" learning method. Much time was also invested during the year on modifying the Presidential Scholarship Program to incorporate the involvement of undergraduate research. Next year, the existing scholarship program will become known as the Presidential Fellowship Program and recipients will be expected to engage in ongoing research activities under the guidance of a faculty mentor.

As the 2008-2009 academic year culminates, the University is looking forward to the annual ***Scholars Week*** celebration which recognizes the creative and scholarly work of hundreds of Murray State undergraduate and graduate students.

I encourage you to attend as many of this year's ***Scholars Week*** poster presentation sessions, performances and exhibits as possible. I am grateful to you – our students, faculty and staff – for making this another outstanding year for scholarly accomplishments at Murray State University.

Dr. Randy J. Dunn
President
Murray State University

Welcome to the 8th anniversary of ***Scholars Week*** at Murray State University. ***Scholars Week*** has become a very important event at Murray State University for our students and faculty. This is truly a university-wide celebration of undergraduate and graduate research, scholarship, and creative activity.

I applaud the efforts of our Office of Undergraduate Research and Scholarly Activities (URSA) for implementing this program eight years ago and then working with students and faculty to achieve greater and greater participation each year. During this week, students have the opportunity to showcase their scholarship efforts through oral presentations, poster sessions, exhibits, and performances.

I believe research, scholarship, and teaching go hand-in-hand to provide one of the very best learning environments for students. We know from current research in learning theory that students learn and retain knowledge better when they are fully engaged in the process. Through the efforts of our dedicated faculty, Murray State University is developing into one of Kentucky's institutions of choice for students who want to engage in the process of discovery and do significant research and creative work as undergraduates.

I encourage all of you to take advantage of the activities of this week and enjoy!

Dr. Gary R. Brockway
Provost and Vice President for Academic Affairs
Murray State University

There are no guarantees in life; we all have heard that. It's difficult to guarantee anything, especially a college / university's performance with regard to student learning, but there are some parameters: In the world of accountability in which we all live, critical components of student learning are obvious in courses completed, grades achieved, and ultimately graduation; however, another equally critical component of student learning is in research and scholarship during the undergraduate years. "Traditionally, undergraduate education has taken place in the classroom, while research has been for graduate students and faculty. No more. College and universities are pushing hard to get many more undergraduates involved in research" (Justin Pope, Associated Press, USA Today, Feb. 5, 2007). This article goes on…,"Nationally, there is nothing hotter than undergraduate research," says George Barthalmus, NC State's director of undergraduate research.

As an NC State alumnus, I echo Dr. Barthalmus' comments, and I am very proud, as a Murray State University faculty member and administrator to share with you that your education here, with tremendous faculty/staff interaction, has been exponentially "ramped up" with regard to undergraduate research under the leadership of Dr. John Mateja in the Undergraduate Research and Scholarly Activity Office. You should be proud of your engagement in scholarship and research during our annual ***Scholar's Week***, working hand-in-hand with professors across all of our colleges, departments, and disciplines. I am very proud to welcome you to this cutting edge event where Murray State University is an equal peer to some of the best research universities in the nation.

There are no guarantees in life, and student learning is difficult to measure; however, your participation in Murray State University's ***Scholar's Week*** is evidence of your success here as a student as well as your success in the not-too-distant-future as a graduate. Don't forget your beginnings, and always remember your alma matre, Murray State University, Kentucky's Public Ivy University and a leading comprehensive university in the nation.

Dr. Tim Todd
Dean, College of Business and Public Affairs

Scholars Week is a rewarding and exciting event for the College of Education and Murray State University. During the year we celebrate student contributions and achievements in many domains but during *Scholars Week* the academic work and achievement is displayed by our most accomplished students. The display of academic work and achievement reflects our institution and gives our community and citizens of the Commonwealth insight to the true meaning of our institution.

Students from each college within the university have prepared exhibits and presentations that reflect their academic endeavors. I encourage you to visit all of the displays and personally congratulate the scholars for their outstanding work and achievement.

As Dean of the College of Education, I welcome you to ***Scholars Week*** and trust you will be impressed with the displays and the hospitality and friendliness of our students, faculty, college and university.

Dr. Russ Wall
Dean, College of Education

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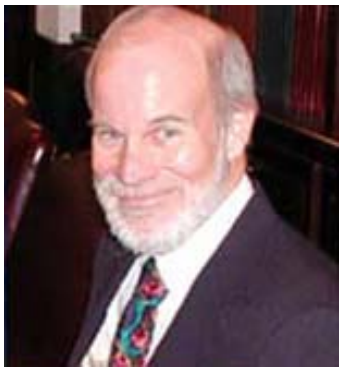

Murray State University's ***Scholars Week*** provides an exciting opportunity to recognize and celebrate the academic achievements of our undergraduate and graduate students, showcasing the results of their scholarly and creative projects. Research, fundamental and applied, is an essential component of our curricula. Throughout history, major discoveries and new knowledge have been essential to human progress. Through active research agendas and creative endeavors, our faculty and students explore the boundaries of their disciplines and expand our realm of possibilities. Discovery though research and creative activity encourages a sense of relevance and excitement as new knowledge is applied to society, industry, and beyond. The faculty in the College of Humanities and Fine Arts work together with their students on research and creative projects in classrooms, clinics, and studios, becoming partners in the exploration of disciplines and the acquisition of new knowledge. This partnership expands the abilities of our students to think independently, creatively, and critically. As one of the leading universities in the region, this is our ultimate mission.

Dr. Ted Brown
Dean, College of Humanities and Fine Arts
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On behalf of the College of Health Sciences and Human Services, welcome to ***Scholars Week***! The college journey is a unique time in life where new beginnings for learning and life experiences take place. *Scholars Week* is an amazing opportunity for learning and scholarship potential. Please join us in celebrating accomplishments of the many talented individuals at Murray State University. This event showcases undergraduate and graduate students' exhibits in intellectual and creative roles within their fields of expertise. Remember, whatever you choose in life, "Go confidently in the direction of your dreams. Live the life you've imagined" (Henry David Thoreau).

Dr. James "Corky" Broughton
Dean, College of Health Sciences and Human Services

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MSU's ***Scholars Week*** is a time for us to celebrate the research, scholarship, and creative accomplishments of our students. During this week, we have the opportunity to recognize and affirm those students who have demonstrated their commitment to their disciplines by pursuing learning beyond the confines of the classroom. In addition, we honor those faculty who have invested their time, talents, and resources to involve students in a richer learning experience. The posters and exhibits presented this week are evidence of MSU's dedication to creating a student-centered learning environment where students are encouraged to pursue excellence in their creative and academic achievement. The College of Science, Engineering, and Technology is happy to support ***Scholars Week***, and congratulates all who participate.

Dr. Steve Cobb
Dean, College of Science, Engineering, and Technology
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On behalf of the School of Agriculture, I would like to welcome you to this unique opportunity to celebrate research, scholarly, and creative activity. It is also a time to showcase our dedicated faculty who are devoted to the personal and professional growth of our students. Life is a journey with many avenues. As you participate in this event, you will view the numerous ways the University is committed to academic excellence as well as providing the opportunity to explore these avenues. Through activities like ***Scholars Week***, Murray State University and the Murray State University School of Agriculture offers its students the opportunity to get an education instead of just a degree. I would like to commend all the participants in this event.

Dr. Tony Brannon
Dean, School of Agriculture

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While the accomplishments of our students is a constant point of pride to Murray State University, ***Scholars Week*** stands out as it gives us an opportunity to highlight the amazing research and creative activity performed by some of our best and brightest students. Much like the faculty who work with these students firsthand, those of us here in the University Libraries have the good fortune to witness the learning and growth that accompanies these student endeavors. The excellent displays you will see during ***Scholars Week*** are the visible result of that learning, and help demonstrate the value Murray State University places on teaching, research and service excellence.

On behalf of the faculty and staff of the University Libraries, welcome!

Mr. Adam Murray
Interim Dean, University Libraries
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A Welcome from the Undergraduate Research and Scholarly Activity Advisory Board and Staff

On behalf of the Undergraduate Research and Scholarly Activity Advisory Board and staff, welcome to our eighth annual ***Scholars Week*** celebration. We are pleased that over the past seven years that several thousand Murray State University undergraduates and graduate students have had the opportunity to present their research, scholarly, and creative works to the university community.

The work displayed in this year's ***Scholars Week*** abstract booklet represents thousands of hours of effort on behalf of Murray State's students and faculty. To our students, you are to be commended for your dedication and effort! Your efforts will be rewarded when you apply to graduate school or when you look for that first job. To the faculty, you are helping our students succeed and this is among our greatest rewards.

Please join the URSA Advisory Board and staff in celebrating the accomplishments of our students by attending as many of the ***Scholars Week*** events as possible. Our young scholars need your continued support!

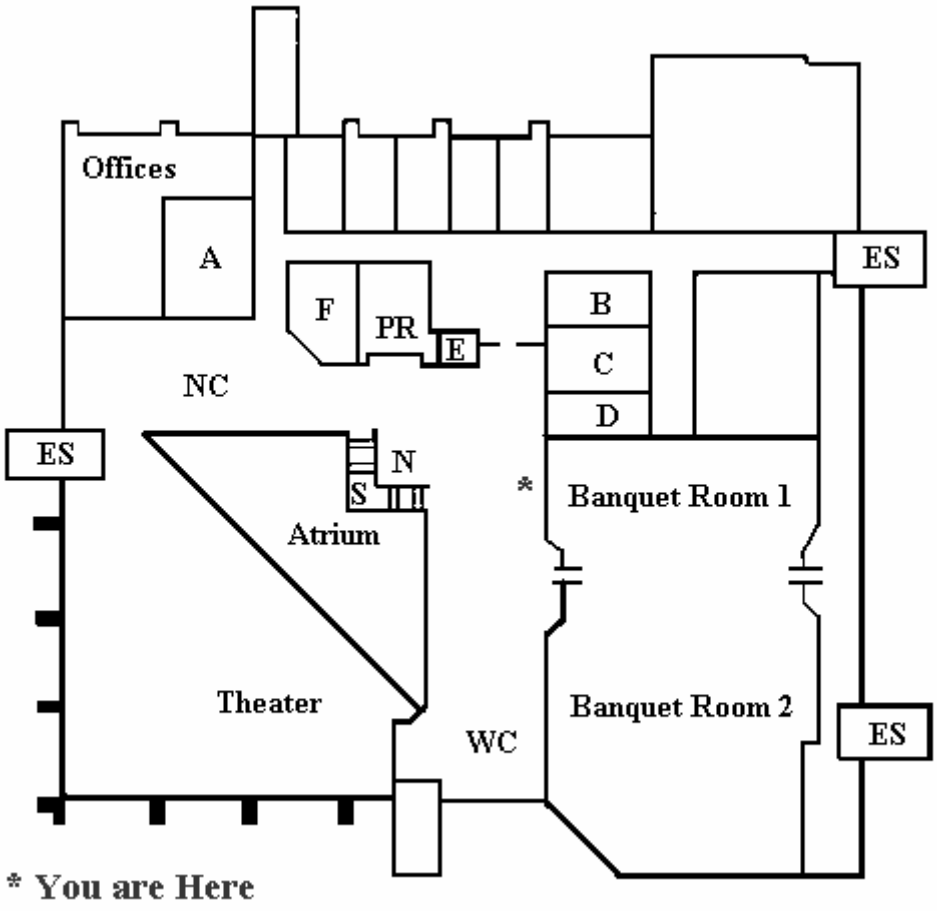
Advisory Board and Staff:

Dr. Terry Derting Biological Science	**Dr. Tracey Wortham** Occupational Safety and Health	**Dr. Zbynek Smetana** Art
Dr. Meagan Musselman Education	**Dr. Joyce Shatzer** Education	**Dr. Paula Waddill** Psychology
Dr. Terry Holmes Business Administration	**Dr. David Eaton** Economics and Finance	**Dr. David Ferguson** Agriculture
Dr. Pat Williams Agriculture	**Dr. Nancey France** Nursing	**Dr. Harry Fannin** Chemistry
Mr. Brad MacDonald Library	**Dr. John Mateja** URSA	**Mr. Jody Cofer** URSA

Murray State University

Scholars Week

April 20 - 24, 2009



A – Barkley Room
B – Ohio Room
C – Mississippi Room
D – Cumberland Room
S – Center Stairs
NC – North Concourse
E – Elevator
F – Tennessee Room
N – Crow's Nest
PR – Public Restrooms
ES – Emergency Stairs
WC – West Concourse

Scholars Week Program

Monday, April 20, 2009

Poster Session

Sigma Xi Poster Competition

Large Ballroom, Curris Center
Session Chair: Dr. Daniel Johnson
9:00 a.m. – 12:00 p.m. Poster Set-Up
12:00 p.m. – 4:00 p.m. Poster Judging
* *Undergraduate*
** *Graduate*

Jonathan Alexander** - Geosciences
Digital Analysis of Archaeological Excavation Test Floors Using Samples from Murray State University's Archaeological Field Schools

Catherine Aubee** – Biological Sciences
Effects of Roundup Exposure on Behavior and Reproductive Function in a Pond-Breeding Salamander

Nanditha Billa** - Chemistry
Conger Specific Analysis and Toxic Evaluation of PCB Congeners in Sediment and Fish Samples Collected From Lower Tennessee River, Kentucky

Carrie Brazelton* & Todd Walker* - Biological Sciences
Natural History and Immunity in a Caribbean Termite: A 10 Year Study

Glenna Buford* – Mathematics & Statistics & Jona Kos* – Biological Sciences
The Effects of Population Dynamics on the Spread of the Invasive Species, Alligator Weed (Alternanthera philoxeriodes)

Whitney Coyle* – Music Education & Mathematics
Statistical Analysis of Diffusion Tensor Imaging Data From Traumatic Brain Injury Patients

Christopher England** - Geosciences
Land-Cover Change Mapping of Calloway County Using Satellite Remotely Sensed Data

Chris Etheridge*, Bhasker Radaram**, & Widchuda Meeim** – Chemistry, Leslie Smith* – Chemistry & Biological Sciences, & Matthew French* & Pierce Arnold* – Biological Sciences
Synthesis of Amidopyrroles as Probes of Type 3 Amino glycoside Kinases

Sarah Farmer* – Mathematics, Secondary Education & Sarah Thomason* – Biological Sciences, Zoological Conservation
Evaluation of Microsatellites in Ambystoma maculatum

Rajani Gourishetty** - Chemistry
The Selectivity of Different Ion-Exchangers in Ion-Selective Electrodes (ISEs) Based on Ionic-Liquid Plasticized Polymeric Membranes

Kathryn Hogan* - Pre-Veterinary Medicine
Computational Characterization of the Ground Electronic State of the Superoxide Radical

Kayce Humkey* – Creative Writing & Archaeology & Kristin Thomas-Wathen* – Geoarchaeology
Microartifact Analysis of a Mississippian House Floor at Wickliffe Mounds

Development of Functionalized N-Heterocyclic Scaffolds for Application in the Synthesis Amphibian Alkaloids

Hao Jiang** & Dongjiao Liu** – Biological Sciences
Using Molecular Markers to Study the Patterns of Genotypic Diversity of an Invasive Plant, Alligator Weed (Alternanthera philoxeroides) *in Southeastern U.S.*

Nandeesh Karmakonda** - Chemistry
Monitoring Histone-Derived Peptide Methylation with Microchip Micellar Electrokinetic Chromatography

Vidyasagar Kummarikunta** - Chemistry
Organohalogen Pollutants in Sediment and Fish Samples Collected from Clarks River, Kentucky

Dongjiao Liu** & Hao Jiang** - Biological Sciences
Predicting the Spatial Distribution of an Invasive Plant, Lonicera japonica, Based on Species Occurrence Data From Two Watersheds in Western KY and TN

AndrewMattmiller*, Christina Jackson *, Bradley Oliver*, Dan Varonin*, & Kevin Witbrodt* - Biological Sciences
Using The Fruit Fly As A Model System To Understand Germline Development

Elizabeth Nicole Mills** – Geosciences
Analysis of Historic Aerial Photographs for Archaeological Sites Within Fort Campbell, Kentucky-Tennessee

Evan Roberts* & Kala Foy* - Chemistry

Amanda Trites** - Geosciences
Identifying Areas of Damage in Calloway County During the January 2009 Ice Storm Using Change Classification of Remotely Sensed Imagery

Robert Tokosh** – Agriculture
Assessing Carbon Pools in Riparian Soils and Sediments of Two Contrasting Creek Ecosystems

Subhadra Vemu** - Chemistry
Levels of Endocrine Disrupting Pollutants in Wastewater and River Water Samples from Western Kentucky

Jeff Viniard** - Geographic Information Systems
Change Detection in Louisiana Wetlands Using Object-Based Image Analysis

Kyra Williams** - Geosciences
Change Detection Analysis of Erosional and Depositional Features Along the Ohio River Using Remotely Sensed Data

Oral Sessions

Renaissance Art Session I

Barkley Room, Curris Center
Session Chair: Dr. ZB Smetana
10:30 a.m. – 11:30 a.m.

(Participants in this session will be posted a later date.)

Research "Hot Spot": *Women In Television News in China: Presence, Story Assignment and Source Selections*
Tennessee Room, Curris Center
Rui Qu – Journalism & Mass Communications
12:15 p.m. – 12:30 p.m.

Economics Session
Ohio Room, Curris Center
Session Chair: Dr. David Eaton
12:30 p.m. – 2:30 p.m.

Michael Biethman – Economics
Farmland Prices in Southern Illinois

McKenzie Dossett – Economics
The Impact of NCAA Basketball Championships on College Admissions

John Findley – Economics
The Road to Prosperity: Is America Working Too Much To Obtain Greater Well-Being?

Berlin Haugen – Economics
Acquiring America: The Disassembling of a Dynasty

Gretchen Kilby – Economics
Does Socio-Economic Status Impact the Choice of Religious Denomination?

Research Hot Spot: *Development of an Open Source, Low Cost Sensor Network*
Tennessee Room, Curris Center
Eli Hooten – Engineering & Physics
3:15 p.m. – 3:30 p.m.

BioMaps Mini-Symposium
Barkley Room, Curris Center
Session Chair: Dr. Renee Fister
3:30 p.m. – 5:00 p.m.

Katherine Eiland – Pre-Veterinary Medicine
The Haldane Function of Genetic Mapping

Sarah Hargis – Biomedical Science, Pre-medicine & Jessica Dunker – Physics Engineering
The Binding Force
Amanda Main – Wildlife Biology & Philip Berardi – Biological Sciences
Island Biogeography

Performance(s)

Danielle Gosselin, Soprano, Senior Recital
Performing Arts Hall, 6:30 p.m.

Orchestra Concert
Mr. Dennis L. Johnson, conductor
Lovett Auditorium, 8:00 p.m.

Jennifer	Bandle
Megan	Belknap
James	Boles
Jacob	Bradley
Amy	Brandon
Matthew	Butterfield
Nicholas	Calcamuggio
Da-Ye	Choi
Nate	Clark
Whitney	Coyle
Hillari	Crowly
James-Kyle	Damron
Rachel	Dinwiddie
Marilyn	Feezor
Brandon	Felker
Tina	Franke
Lance	Fulks
Eun	Ji-Jo
Grant	Jones

MinJi	Kim
JiEun	Ku
SaeRom	Kwon
Robert	Lamburg
SaRah	Lee
Andrew	Miller
Joshua	Morgan
Jon	Nash
Marie	O'Brien
Edmund	O'Brien
Brandon	Orr
Sue-Jean	Park
Seth	Peveler
Nikki	Pierceall
Madeleine	Pratt
Chrissie	Richardson
Megan	Richter
Ann Marie	Spenns
J C	Stewart
Ben	Stone
Tomie	Sugira
Mady	Trevathan
Cameron	Vile
Gracie	Wallace
Lexie	Ward
Nick	Wright
Emily	Wuchner
Laura	Young
Mary	Young-Pettit

Tuesday, April 21, 2009

Oral Sessions

Honors Humanities Session

Mississippi Room, Curris Center
Session Chair: Dr. Warren Edminster
9:30 a.m. – 10:30 a.m.

Amanda Crider – Biological Sciences, Pre-Medicine & Spanish
Jose Marte: The Warrior-Poet of the 1895 Cuban Independence Movement

Matthew Hall – History
The Fall of the Communist Party of the United States of America

Kayla Reno – History
Italian Colonialism in Africa: Ethiopia in Liberal and Fascist Italy, 1890s to 1941

Marketing Research Session I

Ohio Room, Curris Center
Session Chair: Dr. Timothy Johnston
9:30 a.m. – 10:45 a.m.

Tyler Holloway, Evan Arnett, & Teston Smith – Marketing, Na Yu – Accounting, & Michelle Crockwell – Advertising
FLW Outdoors Market Research Project

Ryan Schuler – Management & Marketing, Sarah Williams, Chris Griffin, Brandon Jones, & Amber Langston – Marketing
Bristol Broadcasting Co.

Eighteenth-Century Women's Session

Ohio Room, Curris Center
Session Chair: Dr. Kelley Wezner
2:00 p.m. – 3:00 p.m.

Amberly Brooke Bailey – English
The Middle-Class Way of Mothering: Upper-Class Responded to the Changing Views of Motherhood Represented by Middle-Class Values

Sanci Canon – English Literature

The Realities of Domestic Servants in Eighteenth-Century Theater and London Society

Tessa Powell – English Literature
Beyond the Breast: Frances Burney's Mastectomy

Modern Language Senior Colloquium

Mississippi Room, Curris Center
Session Chair: Dr. Meg Brown
2:00 p.m. – 4:30 p.m.
(listed in order of presentation)

Bridgett Farrell – Spanish & English Literature
A Psychoanalytic Study of Santa Teresa de Jesus

Arwen Gaddis – Music & French
Eroticism in French Symbolist Poetry and In French Impressionist Song During the Nineteenth Century

Lorena Olandes Godinez – Spanish
The Wonders of the Popol Vuh

Kasey Ray – Spanish
The Impact of Indigenismo in Ecuador Portrayed Through the Literary Aspects of Jorge Icaza

Jessica Forbes – French & Int'l. Affairs
An Analysis Through Film of the Occupation of France During World War II

Amy Shannon Davis – Spanish & Public Relations
"Machismo" As Seen Through Spanish Cinema

Awards Recognition Reception

Faculty Club
4:00 p.m. – 5:30 p.m.

Dr. Renee Fister, Professor of Mathematics and Statistics, 2009 Recipient of the University Distinguished Mentor Award

Dr. Alexey Arkov, Assistant Professor of Biological Sciences, 2009 Recipient of the Alumni Association's Emerging Scholar Award

Dr. Haluk Cetin, Associate Professor of Geosciences, 2009 Recipient of the CISR Presidential Research Fellowship

Sigma Xi Banquet

Large Ballroom, Curris Center
6:30 p.m. – 8:30 p.m.
(For Sigma Xi Members, Competition Participants, and Invited Guests)

Performance

Choral Concert
Performing Arts Hall, 8:00 p.m.
Dr. Bradley Almquist, conductor

David Bivins
Evan Boswell
Brad Brauser
Angela Brown
Adam Bryan
Matthew Butterfield
Rebecca Calvert
Paul Corder
Jasmine Davis
Rebekah Davis
Samantha Doran
Dominique Duarte
Rebekah Feldhaus
Michelle Ford
Felicia Gammon
Katy Green
Liahna Guy

Kenton Henderson
Daniel Holmes
Rebecca Hostilo
Phillip Hudson
Amy Hughes
Andrew Jones
Sarah Kendall
Erika Knight
Aaron Krueger
Michael Martin
Clark McGee
Daniel Milam
Jessica Moore
Laura Neal
Alexander Normansell
Andrew Perkins
David Poole
Elizabeth Powell
Holly Pritchard
Scott Pullen
Mary Reding
Adam Reneer
Abby Richmond
Joseph Ryker
Eric Rudd
Sarah Schneider
Theri Shelburne
Erin Silliman
Ashlan Stephensen
Brant Veal
Jeff Viniard
Elaine Waddell
Samantha Walters
Ryan Weldon

Wednesday, April 22, 2009

Poster Session

General Session
Small Ballroom, Curris Center
9:00 a.m. – 11:30 a.m.
Students will be with their posters from 10:30 a.m. to 11:30 a.m.

*** Sigma Xi Poster Competition Participant*
**** American Humanics or Service Learning Posters*

Jonathan Alexander – Geosciences **
Digital Analysis of Archaeological Excavation Test Floors Using Samples from Murray State University's Archaeological Field Schools

Amber Ash, Mallory Dickerson & Allison Powers – Organizational Communication ***
We R Kids

Catherine Aubee – Biological Sciences **
Effects of Roundup Exposure on Behavior and Reproductive Function in a Pond-Breeding Salamander

Jaclyn Acree – Recreation & Leisure Services ***
Spring Creek Nursing Home

Nanditha Billa – Chemistry **
Conger Specific Analysis and Toxic Evaluation of PCB Congeners in Sediment and Fish Samples Collected From Lower Tennessee River, Kentucky

Katie Bogard – Recreation & Leisure Services ***
United Way Senior Breakfast

Carrie Brazelton & Todd Walker - Biological Sciences **
Natural History and Immunity in a Caribbean Termite: A 10 Year Study

Bryon Bruce, Benjamin Bullen, Jonathan Byrn, Dane Cassady, David Farrell, Corey Franklin, Stephanie Galla, Justin Harrod, Eric Johnston, Steven Kinnard, Michelle Lee, Amanda Main, Santiago Matin, Rachel Postlewaite, Jenna Ray, Ashley Read, Shaun Roberts, Molly Runyon, Lori Smith, Kristin Thomas-Wathen, Amanda Trites, Nathan Vanausdoll, & Corey Wheeler – GSC/PLN 705 Land Use Planning Class
Murray Bikeway Plan: Project S.A.F.E.

Glenna Buford – Mathematics & Statistics & Jona Kos – Biological Sciences **
The Effects of Population Dynamics on the Spread of the Invasive Species, Alligator Weed (Alternanthera philoxeriodes)

Jeremy Burris – Outdoor Recreation ***
A Day as a Zebra

Jarrad Chester – Music ***
Park Gazebo

Kaitlin Chiaventone – Business Administration ***
Awana

Emily Cosby – Organizational Communication, Jennifer Block – Biological Sciences, & Adam Dyer – major unknown ***
B.A.R.K. Pet Responsibility and Animal Safety

Whitney Coyle – Music Education & Mathematics **
Statistical Analysis of Diffusion Tensor Imaging Data From Traumatic Brain Injury Patients

Mary Crowe – Psychology
Family Dynamics and Childhood Success

Eric Dunsford – Public Administration, Maggie Gorman, & Laurel Smith – Youth & Non-Profit Leadership ***
BOO-GO

Carrie Elliott, David Crouch, Bryan Craig, & Grant Fridy – Agricultural Sciences
The Effect of Various Nitrogen Fertilizer Sources on Dark Fired Tobacco

Christopher England – Geosciences **
Land-Cover Change Mapping of Calloway County Using Satellite Remotely Sensed Data

Chris Etheridge, Bhasker Radaram, & Widchuda Meeim – Chemistry, Leslie Smith – Chemistry & Biological Sciences, & Matthew French & Pierce Arnold – Biological Sciences **
Synthesis of Amidopyrroles as Probes of Type 3 Amino glycoside Kinases

Sarah Farmer – Mathematics, Secondary Education & Sarah Thomason – Biological Sciences, Zoological Conservation **
Evaluation of Microsatellites in Ambystoma maculatum

Aaron Flood – Art Education ***
Public Mural

Michelle Farney – Psychology
Effect of Victim Impact Statements on Sentencing in Capital Murder Cases

Brittany Fiscus – History
Oda Nobunaga's Response to Militant Buddhism Turns Genocidal

Annette Fowler – Chemistry
Trace Level Analysis of Polybrominated Diphenyl Ethers in Samples From The Murray Water Treatment Plan Using a Gas Chromatograph-Electron Capture Detector

January Futrell – Integrated Studies, Chase Peck – History, Michelle Lee & Jonathan Byrn – Geoarchaeology
Archaeological Survey of 3 Acres for the City of Murray

Lacey Harris – Advertising ***
Big Brothers Big Sisters

Kathryn Hogan - Pre-Veterinary Medicine **
Computational Characterization of the Ground Electronic State of the Superoxide Radical

Kayce Humkey – Creative Writing & Archaeology & Kristin Thomas-Wathen – Geoarchaeology **
Microartifact Analysis of a Mississippian House Floor at Wickliffe Mounds

Hao Jiang & Dongjiao Liu – Biological Sciences **
Using Molecular Markers to Study the Patterns of Genotypic Diversity of an Invasive Plant, Alligator Weed (Alternanthera philoxeroides) *in Southeastern U.S.*

Korey Kelley – Outdoor Recreation ***
KY Department of Fish and Wildlife Resources

Vidyasagar Kummarikunta – Chemistry **
Organohalogen Pollutants in Sediment and Fish Samples Collected from Clarks River, Kentucky

Charles Lee – Geoarchaeology
What Projectile Points Tell Us: A Study of Projectile Points of the Savage Cave Site in Logan County, Kentucky

Jonathan Lewis – Organizational Communication, Grant Mathis – Chemistry, & Juan Arias – International Affairs and Public Administration ***
Health and Wellness Fair

Dongjiao Liu & Hao Jiang - Biological Sciences **
Predicting the Spatial Distribution of an Invasive Plant, Lonicera japonica, Based on Species Occurrence Data

Seth Lovan, Brian Diffenderfer, William Mitchner – Outdoor Recreation ***
Basic Aid Training (BAT)

Amanda Main – Wildlife Biology
Treefrog Population Dynamics

Michael Marsh – Organizational Communication, Marcus Wilson & Ashley Rawlings – Sociology ***
Drop It Week!

Andrew Mattmiller, Christina Jackson, Bradley Oliver, Dan Varonin, & Kevin Witbrodt - Biological Sciences **
Using The Fruit Fly As A Model System To Understand Germline Development

Elizabeth Nicole Mills – Geosciences **
Analysis of Historic Aerial Photographs for Archaeological Sites Within Fort Campbell, Kentucky-Tennessee

Robert Long-Mendez – Integrated Studies ***
Welcome A Foreign Student Through Recreation

Alex Muller – Special Education
Hoofbeats of Hope, Inc.

Calla Murdock – Nursing
Stress Level and Management Skills of Admitted Baccalaureate Nursing Students

Justin Parrish – Agricultural Science Technology, Daniel Hayden & Josh Miller – Agribusiness, & Joshua Scott – Agriscience/Agronomy
The Effects of Fungicide Treatments on Dark Tobacco

Brooke Phillips – Applied Mathematics & Lauren Schmidt – Mathematics and Computer Sciences
The Mathematics of Indian Drums

Joseph Powell – major undeclared ***
Murray-Calloway County Parks and Recreation

Evan Roberts & Kala Foy – Chemistry **
Development of Functionalized N-Heterocyclic Scaffolds for Application in the Synthesis Amphibian Alkaloids

Jacob Sanders – Nursing
The Impact of Evidence-Based Practice on Pain Management Outcomes, Registered Nurses' Awareness of EBP, and RN's Overall Perception of Pain Management

Michael Schupp – Criminal Justice ***
Service Learning at Murray City Parks

Nathan Smith – Organizational Communication ***
Murray-Calloway County Parks and Recreation Department

Michael Suiter – Public Administration, Lacey Harris – Advertising, & Shannon Turnley – major unknown ***
Thanksgiving Food Drive

Brett Taylor & Caroline Peake – Organizational Communication, Latika Hudspeth – Business Administration, Ashlee Pearson – Criminal Justice, Angela McGahee – Electronic Media, & Adam French – major undecided ***
No Boys Allowed (NBA) / Not for Ladies (NFL)

Staci Carver Todd & Pam Bell – Sociology, & Shelley Evancho – Psychology ***
The Party

Robert Tokosh – Agriculture **
Assessing Carbon Pools in Riparian Soils and Sediments of Two Contrasting Creek Ecosystems

Amanda Trites – Geosciences **
Identifying Areas of Damage in Calloway County During the January 2009 Ice Storm Using Change Classification of Remotely Sensed Imagery

Armando Valdes – Outdoor Recreation ***
Service Learning at Paris Landing State Park

Subhadra Vemu – Chemistry **
Levels of Endocrine Disrupting Pollutants in Wastewater and River Water Samples from Western Kentucky

Jeff Viniard - Geographic Information Systems **
Change Detection in Louisiana Wetlands Using Object-Based Image Analysis

Ethan Williams – Recreation and Leisure Services ***
Frisbee for the Park

Kyra Williams – Geosciences **
Change Detection Analysis of Erosional and Depositional Features Along the Ohio River Using Remotely Sensed Data

Joshua Woehlke – English Education
The Content and Usage Revision Engine

President's *Scholars Week* Luncheon

Large Ballroom, Curris Center
Moderator: Provost Dr. Gary Brockway
11:30 a.m. – 1:00 p.m.

Remarks:

President Dr. Randy J. Dunn

Performance:

"The Dada Experiment"
Department of Theatre
Lissa Graham-Schneider, director

Cast:
Aaron Krueger
Cara McHugh
Devin Metzger
Ashlan Stephenson
Paige Taylor

Recognition of:

1. MSU Alumni Association's Distinguished Researcher Award Recipient
2. MSU Alumni Association's Emerging Scholar Award Recipient
3. MSU Distinguished Mentor Award Recipient

MSU Alumni Association Distinguished Researcher Award Colloquium

Theater, Curris Center
Session Chair: Dr. Bommanna Loganathan
1:30 p.m. – 2:30 p.m.

Dr. James Duane Bolin, Professor of History in the College of Humanities and Fine Arts and 2008-2009 Distinguished Researcher Recipient

In Search of Adolph Rupp

Oral Sessions

Honors Education Session

Tennessee Room, Curris Center
Session Chair: Dr. Joyce Shatzer
9:30 a.m. – 10:00 a.m.

Tamsyn Garner – International Affairs
The Correlation Between Education and Civil War

Jessica Simpson – Middle School Education
Charting a Route: International Exceptionality

College of Education: Student Teacher Eligibility Portfolios

Crows Nest, Curris Center
Session Chair: Ms. Jeanie Robertson
9:30 a.m. – 1:30 p.m.

Marsha Jackson – Elementary Education

Marian Geneva Karanja – Learning & Behavior Disorders

Rebecca Elaine Kight – Middle School English/Mathematics

Amanda McCuiston – Elementary Education

Shannon Nichols – Secondary Education - Physics

Jenaya Perdue – Elementary Education

Angela Wilson – Elementary Education

Renaissance Art Session II

Barkley Room, Curris Center
Session Chair: Dr. ZB Smetana
10:30 a.m. – 11:30 a.m.

(Participants in this session will be posted at a later date.)

Discovering Politics

Ohio Room, Curris Center
Session Chair: Dr. Ann Beck
2:00 p.m. – 5:00 p.m.

Christopher Allen – Political Science
Development Problems in Middle Eastern Oil Producing Countries

James Chamberlain & Zach Park – Political Science
Presidential Elections and Voter Registration

Justin Crice – Political Science
Confronting the Front-Loading Issue in Presidential Primaries

Jessica Davis – Political Science
Presidential Influence Through Supreme Court Nominations

Elyse Hills – Political Science
Child Protective Services: A System in Need of Reform

James Irwin – Public Administration
Fine Tuning The Employment Division of Oregon v. Smith Test To Include Heightened Scrutiny In Cases Involving An Individual's Religiously Grounded Omission

Corey McBee – Political Science & Public Relations
The Effectiveness of Parties in Legislative Body Leadership Elections

Cara McHugh – Theatre & Political Science
Fact vs. Fiction

Katelyn Morosky – Political Science
Globalization of Bailouts

Makayla O'Neill – Political Science
National Security Changes: The Response After September 11, 2001

James Osborne – Political Science
A Comparative Evaluation of the British and German Electoral Systems

Jay Winters – Political Science
Economic Collapse Within Congress

Research "Hot Spot" Presentation: *The Effects of Five Forage Grasses on Soil Properties*

Robert Tokosh - Agriculture
Mississippi Room, Curris Center
2:00 p.m. – 2:15 p.m.

Watershed Studies Institute

Research Symposium

Mississippi Room, Curris Center
Session Chair: Dr. Howard Whiteman
2:30 p.m. - 5:30 p.m.

2:30 Dr. Howard Whiteman
Welcome and announcement of WSI Graduate Support Awards

2:35 Tom Anderson – Water Science
Competitive Interactions of Two Ambystoma *Salamanders: The Effects of Unequal Proportions of Competitors on Fitness and Life History Pathways*

2:45 Nanditha Billa – Chemistry
Conger Specific Analysis and Toxic Evaluation of PCB Congeners in Sediment and Fish Samples Collected From Lower Tennessee River, Kentucky

3:00 Michael Cooper – Biological Sciences
Characterization of the nif Gene Cluster Found Within A Nitrogen-Fixing Agrobacterium tumefaciens Isolated From Ledbetter Creek

3:15 Hao Jiang & Dongjiao Liu – Biological Sciences
Using Molecular Markers to Study the Patterns of Genotypic Diversity of an Invasive Plant, Alligator Weed (Alternanthera philoxeroides) *in Southeastern U.S.*

3:30 Ryan Parish – Geoarchaeology
A Chert Sourcing Study: Visible/Near-Infrared Reflectance Spectroscopy at the Dover Quarry Sites, Tennessee

3:45 Break for Refreshments

4:00 Brittany Viers – Biological Sciences
*The Impacts of Loblolly Pine (*Pinus taeda*) on Native Early Success ional Plant Communities in Western Kentucky, Western Tennessee, and Southern Illinois*

4:15 Vidyasagar Kummarikunta – Chemistry
Organohalogen Pollutants in Sediment and Fish Samples Collected from Clarks River, Kentucky

4:30 Dongjiao Liu & Hao Jiang - Biological Sciences
Predicting the Spatial Distribution of an Invasive Plant, Lonicera japonica, *Based on Species Occurrence Data From Two Watersheds in Western KY and TN*

4:45 Dr. Emily Croteau – WSI postdoctoral associate
The Role of Microsatellite Analyses in Ecological Research

5:00 Dr. Todd Levine – WSI postdoctoral associate
Describing Reproductive Ecology: Female Reproduction in an Endangered Mussel

Performance

Wind Ensemble Provost's Concert

Lovett Auditorium, 8:00 p.m.

Jennifer	Bandle
James Davis	Boles
Chris	Buis
Joshua	Byrne
Nicholas	Calcamuggio
Aspen	Carrigan
Jacob	Carroll
Gabe	Charbonneau
Whitney	Coyle
James-Kyle	Damron
Anthony	Darnall
Paul	Davis
Rachel	Dinwiddie

Kyle	Dixon
Kyle	Dixon
Kala	Dunn
Cassie	Fischer-Flaherty
Jared	Gawthorp
Cameron	Gish
Addisson	Grimm
Tyler	Hart
Tara	Haslett
Daniel	Haulk
Matt	Hightower
Cornelius	Hocker
Phillip	Hudson
Tim	Hutchens
Steven	Incata
Grant	Jones
Amanda	Main
Kaylee	Marks
Cody	Martin
Cory	Mullins
Greg	Neff
Megan	Richter
Megan	Richter
Joseph	Ryker
Shaun	Saulsberry
Marshall	Shank
Foster	Smith
Rebecca	Thompson
Johnathan	Torsak
Mady	Trevathan
Jill	Wallis
Heather	Waters
Jonathan	Watkins
Chris	Watson
Steven	Wiggins
Emily	Wuchner

Thursday, April 23, 2009

Oral Sessions

Marketing Research Session II

Ohio Room, Curris Center
Session Chair: Dr. Timothy Johnston
9:30 a.m. – 10:45 a.m.

Magen Ford – Advertising, Robin Thweatt, Ho Juan Kang, & Ashley Brandt – Marketing, & Kaoutar Chakna (graduate student) – Business Administration
University Book and Bean

Michael Windle, Tim Shelton, Joshua Medeiros, & Bryan Propst – Marketing
Murray State Housing Trend Survey

Honors Mathematics and Science Session

Mississippi Room, Curris Center
Session Chair: Dr. Bob Pervine
9:30 a.m. – 10:45 a.m.

Eli Hooten – Engineering Physics
Design of a Reinforcement Learning Controller for Ms. Pac Man

Nick Hooten – Engineering Physics
Optimization Methods for Symbolic Regression Problems in Genetic Programming Using GPLAB

Joshua Hyatt – Mathematics
Bidigraph Representations for Finite Edge Colored Lattices

Meredith Stevenson – Applied Mathematics
A New Fuzzy Time Series Method for Forecasting Enrollments

Ryan Walls – Mathematics
A Computable Embedding of Knots to Labeled Graphs

Psychology Session
Tennessee Room, Curris Center
Session Chair: Dr. Paula Waddill
2:30 p.m. – 3:30 p.m.

Ashley Fannin – Psychology
Numerical Rule Learning
Cristin Laird – Psychology
The Relationship of Gender Identify and Selection of Friends

Jenny Wilkins – Psychology
Flirting and Jealousy in Committed, Heterosexual Romantic Relationships

Discrimination Inside and Outside the Workplace Session
Tennessee Room, Curris Center
Session Chair: Dr. Leigh Johnson
3:30 p.m. – 4:15 p.m.

Tiara Crenshaw – Political Science, Ashley Johns- Advertising, & Sara Woods – Sociology
From Struggle to Success

Ashley Wright – Business Administration
Do Incidents Outside the Workplace Create a Hostile Work Environment?
(Honors Thesis Presentation)

Freshman Reading Experience Essay Contest Winner's Session
Ohio Room, Curris Center
Session Chair: Dr. Kelley Wezner
3:30 p.m. – 4:30 p.m.

Asia Burnett – Liberal Arts
The Sound of Silence: Juxtaposition in Silas House's "Clay's Quilt"

Angela Denk – English
Matrimony and Foreshadowing in "Clay's Quilt"

Courtney Graves – Athletic Training/Pre-Physical Therapy
Natural Environment Effects on Emotions

Mychal Noelle Herron – Communication Disorders
Bound in Chains

Friday, April 24, 2009

Oral Sessions

Occupational Safety and Health Session
Barkley Room, Curris Center
Session Chair: Dr. Tracey Wortham
9:30 a.m. – 10:30 a.m.

Kent Clouse – Occupational Safety & Health
Guitar Hero Ergonomic Study

Trevor Harper, Simon Crouch, & James Payne – Occupational Safety & Health
Ergonomic Evaluation of Material Handling Tasks

Matthew Rowe, Steven Beck, & Brent Kelley – Occupational Safety & Health
Metal Fabrication Shop MSD Exposure

Leah Sallee – Occupational Safety & Health
Seatbelt Survey 2009

Honors Fine Arts Session
Ohio Room, Curris Center
Session Chair: Ms. Ann Neelon
9:30 a.m. – 10:30 a.m.

Angela Hatton – English-Creative Writing/Literature & Angela Walther – English Literature
The Life and Work of Mary Peach Collier (This presentation is not an honors thesis presentation, but rather a Research Scholar Fellowship presentation.)

Jessica Moore – Vocal Music Performance & Chemistry
The Castrati in Opera

Tara Radtke – Elementary Education
Loris Alert: Living the Rush

Rebecca Vergho – Creative Writing
Portrait of a Woman

Liberal Arts Session

Mississippi Room, Curris Center
Session Chair: Dr. Barbara Cobb
11:30 a.m. – 12:30 p.m.

Asia Burnett – Liberal Arts
The House that Holgrave Built: Continuing Tragedy in the House of the Seven Gables

Sean McElwain – Liberal Arts
Study of Free Trade on Jamaica/Unindustrialized Nations

Robyn Parker – Liberal Arts
Race and Identity in African-American Literature

Charles Perdue – Liberal Arts
Green Trucking

Other Scholarly Events in April

April 2, 2009

Performance

New Music at MSU
Performing Arts Hall, 8:00 p.m.

April 4, 2009

Performance(s)

MSU String Competition
Performing Arts Hall, all day

Chris Watson, Saxophone, Senior Recital
Farrell Recital Hall, 6:30 p.m.

Emily Wuchner, Bassoon, Senior Recital
Performing Arts Hall, 8:00 p.m.

April 5, 2009

Performance

Grant Jones, Trumpet, Student Recital
Farrell Recital Hall, 6:30 p.m.

April 7, 2009

Performance(s)

Jasmine Davis, Soprano, Senior Recital
Performing Arts Hall, 6:00 p.m.

MSU Jazz Ensembles
Lovett Auditorium, 8:00 p.m.
Mr. Todd E. Hill, conductor

Blue Jazz Ensemble

Jacob	Carroll
Zach	Coffey
Tim	Hutchens
Kaylee	Marks
Matt	Motherbaugh
Jonathan	Nash
Marshall	Shank
J C	Stewart
Chris	Watson

Gold Jazz Ensemble

Chris	Buis
Zach	Coffey
Josh	Cole
Keith	Dossett
Tara	Haslett
Matt	Mothersbaugh
Seth	Peveler
Hannah	Rodgers

Jazz Band

Ashley	Boaz
Jake	Bradley
Chris	Buis
Gabriel	Charbonneau
Nathan	Clark
Joshua	Cole
Bethany	Doll
Danielle	Gosselin

Addisson	Grimm
DeShawn	Grinstead
Daniel	Holmes
Sarah	Kendall
Shaun	Linton
Mandy	Main
Sarah	Paul
Matt	Roark
J C	Stewart
Justin	Veazey
Cody	Wells
Steven	Wiggins

Jazz Orchestra

James David	Boles
Nick	Calcamuggio
Jacob	Carroll
Nathan	Clark
Kevin	Dame
James Kyle	Damron
Anthony	Darnall
Jasmine	Davis
Rachel	Dinwiddie
Kala	Dunn
Tim	Hutchens
Grant	Jones
Jonathan	Nash
Seth	Peveler
Heidi	Saunders
Marshall	Shank
Joe	Tarry
Johnathan	Torsak
Chris	Watson
Brent	Webster

April 8, 2009

Performance(s)

Jonathan Watkins, Clarinet, Student Recital

Farrell Recital Hall, 6:30 p.m.

Woodwind Chamber Ensemble Concert

Performing Arts Hall, 8:00 p.m.

Jennifer	Bandle
Ashley	Boaz
Josh	Byrne
James-Kyle	Damron
Rachel	Dinwiddie
Tom	Haley
Becca	Hostilo
Kaylee	Marks
Chris	Meyer
Rodneny	Mills
Sarah	Paul
Joseph	Ryker
John	Torsak
Mady	Trevathan
Chris	Watson
Steven	Wiggins
Emily	Wuchner

April 9, 2009

Performance

Percussion Ensemble Concert

Lovett Auditorium, 8:00 p.m.

Jacob	Bradley
Aspen	Carrigan
Paul	Davis
Nathan	Gerstenecker
Andy	Howell
Phillip	Hudson
Robert	Lamberg

Bryce	Miller
Kyle	Payton
Tatiana	Romanko
Ben	Stone
Becca	Thompson
Jill	Wallis
Nick	Wright

April 11, 2009

Performance

Jeremy Clark McGee, Tenor, Senior Recital
Farrell Recital Hall, 3:30 p.m.

April 14, 2009

Performance(s)

String Orchestra Concert
Performing Arts Hall, 6:30 p.m.
Joseph Eunkwan Choi, conductor
Sue Jean-Park, soloist

Toyosi Akande
Da-Ye Choi
Hillari Crowly
Sarah Lee
Andrew Miller
Mary Pettit
Madeline Pratt
John Stewart
Gacie Wallace

Brass Chamber Music Concert
Performing Arts Hall, 8:00 p.m.

Matt	Butterfield
Josh	Cole
James-Kyle	Damron
Andrew	Ellerbusch
Cameron	Gish
Tyler	Hart
Matt	Hightower
Frankie	Leslie
Chris	Missig
Greg	Neff
Sarah	Orsborn
Barry	Sharp
Sam	Underwood
Justin	Veazey
Ryan	Weldon

April 15, 2009

Performance

Matthew Butterfield, Tuba, Senior Recital
Performing Arts Hall, 8:00 p.m.

April 16, 2009

Lecture

Waterfield Distinguished Lecture Series in Public Affairs
"Abraham Lincoln: A Kentucky Politician"
Dr. Roger Billings, Professor of Law, NKU, guest speaker
Theater, Curris Center, 7:30 p.m.

Performance

Symphonic Band & Concert Band Concert
Lovett Auditorium, 8:00 p.m.

Symphonic Band

Kalin	Alvey
Jennifer	Bandle
Norm	Blakely
Ashley	Boaz
Amy	Brandon
Catherine	Chambers
Taylor	Clements
Joshua	Cole
James-Kyle	Damron
Anthony	Darnall
Rachel	Dinwiddie
Kyle	Dixon
Bethany	Doll
Jocelyn	Dora
Keith	Dossett
Brittany	Dotson
Kala	Dunn
Andrew	Ellerbusch
Lance	Fulks
Nathan	Gerstenecker
DeShawn	Grinstead
Tom	Haley
Amity	Harris
Tara	Haslett
Kenton	Henderson
Katie	Herrenbruck
Rebecca	Hostilo
Andy	Howell
Andrea	Langford
Brandon	McKinley
Rodney	Mills
Cory	Mullins
Sarah	Paul
Kyle	Payton
Seth	Peveler
Nikki	Pierceall
Chrissy	Richardson
Eric	Riggs
Hannah	Rodgers
Tatiana	Romanko
Joseph	Ryker
Barry	Sharp
Ben	Shelby
Spencer	Sullivan
Shelise	Washington

Concert Band

Daniel	Apple
Carrie	Brazelton
Kayla	Breen
Allison	Brugge
Nick	Burns
Nick	Burns
Renee	Campoy
Alex	Chancellor
Patrick	Clouse
Mary	Coleman
Kevin	Dame
James-Kyle	Damron
Luke	Dennis
Rachel	Dinwiddie
Brittany	Dotson
Brandon	Felker
Alexia	Fortson
Brandon	Gonzales
Aaron	Greene
Amity	Harris
Ben	Hembruck
Daniel	Holmes
Rebecca	Hostilo
Andy	Howell
Jamie	Kelly
Wiliiam	Leslie
Frankie	Leslie
Stephanie	Lossie
Daniel	Mayo
Brittney	Meredith
Chris	Meyer
Rodney	Mills
Chris	Missig
Matt	Morthersbaugh

Johna	Murray
Jennifer	Myers
Pam	Myrick
Jon	Nash
Corrine	Nichy
Alex	Normansell
Tomika	O"Bryan
Sarah	Orsborn
Rachel	Owen
Chris	Patel
Sarah	Paul
Kyle	Payton
Leslie	Potts
Kaleigh	Ray
Ginny	Richerson
Joseph	Ryker
Heidi	Saunders
Davis	Scott
Kelly	Sizemore
James	Stone
Spencer	Sullivan
Justin	Thomas
Chad	Tilley
Kristen	Tinch
Samuel	Underwood
Bethany	Vick
Cameron	Vile
Jeremy	Waid
Michael	Ward
Ryan	Weldon
Dylan	White

April 17, 2009

Performance

Opera Workshop
Performing Arts Hall, 8:00 p.m.

April 18, 2009

Performance(s)

Laura Neal, Mezzo-Soprano, Senior Recital
Performing Arts Hall, 3:30 p.m.

Da Ye Choi, Violin, & Sarah Lee, Cello, Joint Junior Recital
Performing Arts Hall, 6:30 p.m.

Kala Dunn, Piano, Junior Recital
Performing Arts Hall, 8:00 p.m.

April 19, 2009

Performance(s)

MSU Concert Choir
Lovett Auditorium, 3:30 p.m.
Dr. Bradley L. Almquist, conductor
Matthew Mazzoni, collaborative piano

Matt Hightower, Tuba, Student Recital
Performing Arts Hall, 8:00 p.m.

April 25, 2009

Performance

Marshall Shank, Flute, Junior Recital
Farrell Recital Hall, 8:00 p.m.

Special Recognition

2008-2009 Undergraduate Research And Scholarly Activity Grants

Recipient	Faculty Mentor(s)
Devin Cherry	Dr. Lara Homsey
Chris Etheridge	Dr. Edie Banner
Michelle Farney	Dr. Paula Waddill
Brittany Fiscus	Dr. David Pizzo
Broadus Fitzhugh	Dr. Kevin Revell
Annette Fowler	Dr. Bommanna Loganathan
Justin Gossett	Dr. Ryan Anderson
Eli Hooten	Dr. James Hereford
Kayce Humkey	Dr. Lara Homsey
Gretchen Kilby	Dr. David Eaton
James Mayes	Dr. David White
Christopher Muncie	Dr. Suguru Nakamura
Evan Roberts	Dr. Edie Banner
Jacob Sanders	Dr. Dana Manley
Marthamary Scherer	Dr. Roger Weis & Dr. Lillian Daughaday
Leslie Smith	Dr. Edie Banner

2008-2009 Undergraduate Research Scholar Fellowships

Recipient	Faculty Mentor
Ashley Fannin	Dr. Paula Waddill
Angela Hatton	Dr. Kevin Binfield
Angela Walther	Dr. Kevin Binfield
Joshua Woehlke	Dr. Debbie Bell

2008 MSU Alumni Association Distinguished Researcher Award

Dr. Duane Bolin, College of Humanities and Fine Arts

2008 MSU Alumni Association Emerging Scholar Award

Dr. Robin Zhang, College of Science, Engineering and Technology

2008 MSU Distinguished Mentor Award

Dr. Howard Whiteman, College of Science, Engineering and Technology

Jaclyn Acree - Recreation and Leisure Services
Mentor: Dr. Kelly Rogers
Service Learning Project
During my course of REC 101, I was required to commit to and write about 15 hours of Service Learning. This task was to be performed at places that offer recreational activities to individuals with differentiating needs. I kept a journal throughout this service- arning project and wrote down all my goals, attitudes, and challenges that I came across. The service-learning is intended to increase my social responsibility as well as experiential learning. I decided to complete my Service Learning Project at the Spring Creek Nursing Home. I went there every Thursday afternoon and set up Bingo and helped those individuals who can't hear or aren't able to move their arms to play Bingo. It has helped me to recognize values associated with leisure and recreation as well as to recognize the relationships and responsibilities of leisure service providers. This project has had a very positive impact on my life and the way I view things. I always thought that nursing homes were places full of sad elderly people and hopelessness. Needless to say, I was extremely wrong. Being able to go and see the recreational side of the facility helped me to realize how important my Recreation Major truly is. These recreational activities and interaction with other residents is the one and only thing that keeps these amazing elderly people healthy, active, and happy. Even activities such as Bingo present them with the challenges they need in their lives, and gives them a sense of joy and fulfillment.

Johnathan Alexander - Geosciences
Mentor: Dr. Haluk Cetin
Digital Analysis of Archaeological Excavation Test Floors Using Samples from Murray State University's Archaeological Field Schools
Archaeological reporting can be considered a discipline based on two basic factors; material culture and investigator interpretation. Material culture, those physical items found during an excavation, often lead to the most likely interpretation of a site. The soil, in which those materials lie, however, can tell a story in and of itself. Soil discolorations exposed during excavation provide another type of physical record to the investigator. Ability to recognize patterns in soil discoloration with the naked eye can be difficult due to soil type, lighting, moisture content and experience. The soil record, and subsequently, any information the soil may have contributed to the site's interpretation is destroyed with each layer peeled away. Digital photography of test pit floors has become a standard practice as a means to preserve that information before it is destroyed. As an added yet unintended benefit, imagery allows an investigator to re-evaluate initial interpretations of soil discolorations through image enhancement techniques. Digital images of three MSU archaeological expeditions were chosen for re-evaluation utilizing image enhancement. Each image, after rectification, has been reduced to single color bands (RGB) and evaluated for geometric anomalies through use of various interpolation and edge detection methods with the intent of verifying prior interpretation and identifying previously unrecognized soil discoloration patterns.

Tom Anderson - Water Science
Mentor: Dr. Howard Whiteman
Competitive Interactions of Two Ambystoma Salamanders: The Effects of Unequal Proportions of Competitors on Fitness and Life History Pathways
Interspecific competition is an important interaction in community ecology and can be influenced by many factors, including the relative proportions of the interspecific competitors. Studies manipulating the relative proportions of interspecific competitors can elicit different responses (i.e., intensity or outcome of competition) and show asymmetries in competitive abilities, yet such studies are rare in the literature. Competition has been well-studied between larval mole (*Ambystoma talpoideum*) and spotted (*Ambystoma maculatum*) salamanders, revealing differing competitive strategies (interference and exploitative, respectively). The majority of previous studies involving mole and spotted salamanders manipulated density in equal proportions when looking at competitive interactions, which is unrealistic to expect in natural settings. This study is designed to understand how unequal densities of competitors will affect mole and spotted salamander competitive abilities. Additionally, mole salamanders are facultative paedomorphic, displaying two reproductive phenotypes: an aquatic adult (paedomorph) and a terrestrial adult (metamorph). Interspecific competition should affect this polyphenism, yet it has not been previously tested. Sixty experimental ponds have been set up to manipulate relative proportions of mole and spotted salamanders at two different densities that will be monitored over a 15 month period. Measurements of growth and mass will be recorded for fitness estimates, and dietary and habitat partitioning will be analyzed I predict that the species that is in greater proportion will be competitively superior and reduce the growth and survival of their competitor, and that differing levels of competitors will influence how many metamorphs/paedomorphs will be produced by A. talpoideum.

Amber Ash – Organizational Communication, Mallory Dickerson & Allison Powers – majors unknown
Mentor: Dr. Roger Weis
YNL 350 Special project / We R Kids
We R Kids is the name of a group of students in the Youth/Non-Profit 350 class from Murray State University that had a information table about becoming a mentor for the Big Brothers Big Sisters program in Calloway County in the Curris Center. There are currently one hundred children in Calloway County waiting to be matched with a Big or mentor. We R Kids allowed college students the chance to ask questions about how the program worked and what was required to become a mentor. The format of the program consisted of information sheets being provided for those interested in becoming a mentor to fill out that will be returned to the Big Brothers Big Sisters office in downtown Murray. Numbers were provided in case of further questions based on joining the program or wanting to make a monetary donation. Many forms are expected to be returned filled out based on the publicity made about the event. We want the children to not have to wait another day for someone to make a difference in their lives.

Catherine Aubee – Biological Science
Mentor: Dr. Howard Whiteman
Effects of Roundup Exposure On Behavior And Reproductive Function In A Pond-Breeding Salamander
Contamination of water resources poses serious risks to humans and wildlife. These risks often go undetected until contamination reaches a critical level that results in high rates of disease, malformation, or death. This study utilized a pond-breeding amphibian as a model to examine dose-dependent effects of a common herbicide, Roundup, on behavior and reproduction. Videotaped behavioral trials were used to evaluate courtship, competition, and feeding response of exposed and unexposed spotted salamanders. Sperm count and motility were documented for spermataphores deposited during the trials. Finally, individual testosterone, estradiol, and corticosterone levels were determined using enzyme immunoassay (EIA). This study represents an early step in identifying possible physiological consequences of herbicide exposure, and may serve as groundwork for broader, ecosystem-level analysis.

Amberly Bailey - English
Mentor: Dr. Kelly Wezner
The Middle-Class Way of Mothering: Upper-Class Responded to the Changing Views of Motherhood Represented by Middle-Class Values
During the long-eighteenth century, the concept of motherhood shifted as notions of domesticity and the idea of the angel of the house emerged; however, this shift was a fluid, constant movement affecting women of all social statuses. In particular, the rise of the middle class and changing definitions of private and public spheres led to middle-class females newly embodying the growing cult of domesticity. Writers began to criticize upper-class females and their supposed lack of maternal ideals, casting them as detached, irresponsible, and neglectful of their maternal duties in favor of pleasure and entertainment. In response, aristocratic women felt pressure to conform to new ideals of motherhood and strove to portray themselves as closer and more affectionate with their children. William Congreve's <u>The Way of the World</u> responds to the tensions created for the upper class by showing the shift from the old, aristocratic ideal of motherhood in Lady Wishfort to the new, middle-class ideal in Mirabell's and Millamant's relationship. Congreve's play denigrates Lady Wishfort's detached; selfish mothering style as it praises Mirabell's concerned, nurturing view of motherhood. However, Millamant's shocked response to Mirabell's conception of motherhood showcases part of the tensions concerning these changing views.

Michael Biethman – Economics
Mentor: Dr. David Eaton
Farmland Prices in Southern Illinois
Growing up and owning farmland in southern Illinois led me to select land prices as my senior economics project. I chose three counties in southern Illinois: Randolph, Monroe, and Jackson. I chose these there counties because they all offer something different to land price evaluation. Monroe County is located very close to St. Louis (MO), and has seen an increase in population since the year 2000. Randolph is a very rural county, with more square acres than the other two counties. Jackson County is home to Carbondale, which is one of the largest cities in southern Illinois. All three counties are home to a number of rural farm acres and all have different populations as well as population densities. Some of the other determinates going into my project are the prices received by farmers for their crops, the amount of acres planted, and the total number of farmable acres in each county. Lastly I have a number of actual land sales that took place in each of the counties. I am hoping that through my research I will be able to see a price differentiation between counties as well as through time.

Nanditha Billa - Chemistry
Mentor: Dr. Bommanna Loganathan
Congener Specific Analysis and Toxic Evaluation of PCB Congeners in Sediment and Fish Samples Collected From Lower Tennessee River, Kentucky
Polychlorinated biphenyls (PCBs) are well known global environmental pollutants. PCBs are mixtures of 209 different congeners. Physical and biochemical properties of each congener vary widely depending on the number and position of chlorine atom attached to biphenyl rings. Non-ortho-chlorine substituted PCBs are considered highly toxic, as it elicit toxic effects similar to 2, 3, 7, 8- tetrachlorodibenzo-p-dioxin. Therefore, congener specific analysis is essential for proper risk assessment due to PCB contamination in environment and biological samples. Very limited information is available on contamination profiles of aryl hydrocarbon hydroxylase (AHH) enzyme inducing dioxin-like (coplanar) PCBs and di-ortho-chlorine substituted PCBs. The objective of this study was to determine contamination levels, bioaccumulation and biomagnification of AHH inducing and non-AHH inducing PCB congeners in sediment and fish samples collected from the lower Tennessee River, Kentucky. Fish species analyzed were largemouth bass (Micropterus salmoides); bluegill (Lepomis macrochirus); longear sunfish (Lepomis megalotis); spotted bass (Micropterus punctulatus); gizzard chad (Dorosoma epedianum); black crappie (Pomoxis nigromaculatus). The sediments and fish samples were processed and analyzed using standard methods. The results revealed that, in sediments, total PCBs (excluding AHH including PCBs) concentration ranged from 4-5 ng/g and AHH inducing PCBs ranged from 0.14-0.23 ng/g dry wt. In fish samples, total PCBs ranged from 33.21-595 ng/g dry weight and AHH inducing PCBs ranges from 2.05-57.4 ng/g dry wt. Toxic equivalents (TEQs) for dioxin like PCBs in fish ranged from 1.3 x 10-3 ng to 8.3 x 10-2 ng/g.

Katie Bogard - Recreation & Leisure Services
Mentor: Dr. Kelly Rogers
United Way Senior Breakfast

During the spring 2009 semester, I was enrolled in REC 101 - Introduction to Recreation and Leisure Services. Throughout this course students have been required to complete 15-hour Service-Learning Projects. I chose to work with United Way to complete my project and was able to organize a Senior Citizen Breakfast. Through this experience, I have gained a new understanding of the needs of my community and how I can make a difference. Two key components that I feel strong about are, first, connecting service with learning. This is where working with people is meaningful to you. When you connect with people through a service project you learn who they are. This gives someone a prime opportunity to learn how they feel about the community and ways one can help make a difference. Second, I enjoy experiential learning. This is more of a hands-on learning experience where you grow as a person from new knowledge, skills, and awareness. While completing this project I met two specific course objectives. First, I explored the implications of leisure to society. For example at the Weaks Center they have many activities for the seniors, including basketball, pool, bingo, and many more. Second, I experienced many recreation and leisure issues, needs and services relating to special populations. I have looked at many ways to help the community on the issues that need attention, and have helped by serving my community.

Carrie Brazelton & Todd Walker – Biological Science
Mentor: Dr. Claire Fuller
Natural History and Immunity in a Caribbean Termite: A 10 Year Study

Termites are highly important in the recycling of woody debris into soils, particularly in tropical ecosystems. Termites are social organisms, living in colonies of up to 500,000 individuals. Living in social groups increases the risk of contracting infectious diseases. This, in conjunction with human-induced problems such as climate change and habitat degradation, could negatively affect the termites, and therefore, soil production. Previous short-term research showed that temperature and humidity affect reproduction, survival, aspects of immunity and susceptibility to fungal disease in the Caribbean termite, *Nasutitermes acajutlae*. To determine the magnitude of these effects, we conducted a 10-year study on the island of St. John, USVI. We measured the relationship between abiotic climate variables including light, soil moisture, soil temperature, relative humidity and temperature inside and out of selected nests, and biotic variables: survival, growth and reproduction of termite colonies. We are also further examining how their immune system is affected by their habitat. Previous research documented that one aspect of termite immunity (phenoloxidase activity) increases with temperature, as does susceptibility to fungal infections. To determine the effect of habitat on a second aspect of immunity, we are examining fat content of termite bodies taken from the multiple microclimates. We determined that termite colonies grow and reproduce most in warm temperatures and high humidity. We also found that fat content is higher in these environmental conditions which could lead to higher levels of immunity. This study provides insight into how climate change might affect soils and wood recycling in tropical ecosystems.

Bryon Bruce, Benjamin Bullen, Jonathan Byrn, Dane Cassady, David Farrell, Corey Franklin, Stephanie Galla, Justin Harrod, Eric Johnston, Steven Kinnard, Michelle Lee, Amanda Main, Santiago Matin, Rachel Postlewaite, Jenna Ray, Ashley Read, Shaun Roberts, Molly Runyon, Lori Smith, Kristin Thomas-Wathen, Amanda Trites, Nathan Vanausdoll, & Corey Wheeler – GSC/PLN 705 Land Use Planning Class
Mentor: Dr. Robin Zhang
Murray Bikeway Plan: Project S.A.F.E.
Murray Bikeway Plan Project S.A.F.E. is a three-phase, six-year plan encouraging Safety, Accessibility, Fun, and Environmental responsibility. The primary goal of the bikeway plan is to promote bicycle use as an alternative means of transportation to encourage healthy lifestyles and environmental responsibility. Phase I: Awareness and Education Through Recreation concentrates on immediate affordable implementation of bike routes, infrastructure, and education programs in the first two years. Phase II: Expansion of Existing Routes builds on the established recreational routes emphasizing new paths linking common points of interest. Phase III: All Major Points of Interest Linked expands the network to include all identified areas within and outside the city at the end of six years. The three phases of Project S.A.F.E. will create bikeways on roads where they are most suitable before constructing them in areas that are less suitable. Incorporating bikeways into the city of Murray would provide a quick, fun way for people to travel through town. This bikeway plan will encourage environmentalism by providing people a means to commute through the area without using our planets limited resources. Ultimately, the bikeways will be beneficial to the entire community, providing a much needed alternative mode of transportation and recreational opportunities for Murray's residents.

Glenna Buford – Mathematics & Statistics & Jona Kos – Biological Sciences
Mentor: Dr. Maeve McCarthy
The Effect of Population Dynamics on the Spread of the Invasive Species, Alligator Weed (*Alternanthera philoxeriodes*)
Alligator Weed (*Alternanthera philoxeroides*) is an invasive perennial plant of the Amaranthaceae family that is found in multiple climates. It was originally discovered in the Parana River region of South America, but has been studied the most in China. The concern for the invasion of alligator weed is due to the economic and environmental threats it poses. Our hypothesis is that the adaptability of populations affects the spread of the aquatic species. We looked at the population dynamics of alligator weed in three states: Mississippi, Kentucky, and Tennessee. The population dynamics were compared to see if there is a significant difference between the growth rates, suggesting adaptation. A population that has greater adaptation will be more invasive. We expected to find that Mississippi has greater adaptability to different climates, because its population has been in the United States longer.

Asia Burnett - Liberal Arts
Mentor: Dr. Kelly Wezner
The House that Holgrave Built: Continuing Tragedy in the House of the Seven Gables
For over a century now the ending of Hawthorne's The House of the Seven Gables has been a subject of critical debate. Complaints range from the lack of unity that separates the conclusion from the rest of the book to a lack of skill or foresight on Hawthorne's part in its development. But not all of the debate spawns from the objections to the author's stylistic choices. Some readers see the ending as truly happy and regenerative - almost to the point of being overwhelming - while others see the ending a bit ironically or tinged with sadness not premeditated by Hawthorne. As for me, perhaps I would be the most pessimistic critic of all. For while the young can make their own blunders, it seems that they often follow too naively onto the pathways of the old, foolishly thinking a new trail is being blazed. But unlike critics like Matthiessen and Johnson, I do not pin the tragic quality of the ending on some flaw or oversight on Hawthorne's part. Instead, I believe that Hawthorne intentionally and skillfully manufactured his tragic social commentary. I want to dissolve the myth that the marriage and inheritance at the end of the work were meant to be taken as redemption, unveiling the darker side to Hawthorne's seemingly sunny conclusion.

Jeremy Burris - Outdoor Recreation
Mentor: Dr. Kelly Rogers
A Day as a Zebra
My experience during my service-learning project has provided me with a better understanding of what it takes to become a referee or official in basketball, volleyball, or soccer. I have been working with Intramurals through Campus Recreation here at Murray State as a volunteer to complete 15 hours of service for REC 101 - Introduction to Recreation and Leisure Services. Through participating in this project, I was able to learn many new things about the sports I enjoy. In addition, I was able to meet an important need on my campus. I was also able to meet different people and work with other employees. I was able to reflect on these experiences through journaling and class discussions. Overall, volunteering as a referee was a great service-learning project for my personal experience.

Sanci Canon – English Literature
Mentor: Dr. Kelly Wezner
The Realities of Domestic Servants in Eighteenth-Century Theater and London Society
In eighteenth-century London, servants were symbols of status. Eighteenth-century English drama mirrors this role, as servants in plays delineate social class, aid audience interpretation, and advance the plot. Despite this likeness, their stage depiction was drastically different than their roles in reality. Drama depicts them as one-dimensional characters who were either ready to deceive their masters or place their masters' best interest above their own. Playwrights also ignore social circumstances, the mistreatment from their masters, that often justifies their behavior. However, William Wycherley's *The Country Wife* both participates in and exceeds traditional theatrical depictions of servitude. His female domestic servant, Lucy, is her mistress's confidante, and thus conforms to conventions; yet, Lucy's character is multi-dimensional and is able to acknowledge the compromising circumstance in which she has been placed. Lucy exemplifies how servitude places people in an unidentifiable social class combining the roles of a servant with the appearance of nobility. This blending of social class simultaneously creates an outward dependence on the nobility and an inward independence from and knowledge of upper-class society. Moreover, Wycherley uses Lucy's unusual position to illustrate the complicated movement toward companionate marriage, provides an alternative to the current system of financial gain in marriage, and offers a moral model of an honorable marriage.

James Chamberlain - Political Science
Mentor: Dr. Ann Beck
Presidential Elections and Voter Registration
Barack Obama's historic election can be attributed to many factors. Obama's get out the vote effort and focus on voter registration had a noticeable effect on the election outcome. Obama's campaign strategies may forever affect the way presidential campaigns are ran.

Jarrad Chester - Music
Mentor: Dr. Kelly Rogers
Park Gazebo
Ten years ago a young Boy Scout started a project to build a gazebo for Chestnut Park in Calloway County. Half way through the project he decided to join the Army and drop the project leaving a half built gazebo for the park to finish. I and a classmate have taken on the task of completing this gazebo as a service project for the park. We've had to reinforce the frame as is has been weathered and worn from years of having no roof. Only after reinforcing the frame would the frame support the roof. When this project is completed Calloway Co. Park will have a newly finished gazebo looking over the disc golf course and parts of the baseball fields. This has been a fun and educational project that has allowed me better my woodworking skills as well as build contacts for future jobs. All in all I'm glad that I have had the opportunity to give back to the community that has been my home for my college career and I hope the community can benefit from our work.

Kaitlin Chiaventone - Business Administration
Mentor: Dr. Kelly Rogers
Awana
Over the course of the spring 2009 semester students who were enrolled in REC 101-Introduction to Recreation and Leisure Services were required to complete a 15-hour Service-Learning Project. Projects were to be completed at area facilities that provide recreation and leisure services. Each student was also required to keep a reflection journal and submit a poster for Scholar's Week. Two key components are experiential learning and social responsibility. Taking on a leadership role and being in an environment full of children will help me when I become a parent. This project has also helped me develop social responsibility. It has given me a compassion for children and become more aware of their needs. My project is called Awana, a children's church program. My job was to direct the games of all age groups every week. I had to come prepared with supplies needed for each game. One of leisure's many meanings is recreation. Awana gives children time to be physically active while playing games. Physical activity reduces the amount of health problems. Awana helps the children keep their bodies and hearts in shape. The experience I have had as the Awana games director has impacted me greatly. It has helped me grow in my leadership skills, and has given me the confidence in not being scared to make mistakes. Awana has also helped out my church significantly. The day when they needed a new director was the day that I started. I know volunteering was a big help.

Kent Clouse – Occupational Safety & Health
Mentor: Dr. David Fender
Guitar Hero Ergonomic Study
Guitar Hero Ergonomic Study Guitar hero has been a very popular game for many years with millions of Americans playing this game many hours a week. There are possible ergonomic risks with playing a game that requires repetitive physical actions and the MSU American Society of Safety Engineers (ASSE) Student Section decided to conduct an ergonomic assessment of the game under controlled conditions. The ages of the subjects studied ranged from 21 to 58 with 14 males and 1 female. Each of the players filled out a survey with questions determining player experience, hours per week of playing, the level of play anda box with several parts of the upper body with ranging comfort scores from comfortable to extremely uncomfortable. Each player was then observed playing the game, all using the same song. Results showed that the left side of the body experiences higher risk compared to the right side. Also the more experienced players were at a higher risk for injury. When asked to rate the pain from comfortable to extremely uncomfortable 53.3 percent had discomfort in their right wrist/hand and lower back, 60% in their left forearm and left fingers. Where majority of the pain for most all the subjects were in their left wrist/hand at 80%. To reduce the risk of injury individuals should stretch before games and take breaks between games. Also, if pain in hands, wrist, lower back, forearm and fingers occur, stop playing take a longer rest period and let muscles and joints recover.

Michael Cooper – Biological Science
Mentor: Dr. Timothy Johnston
Characterization of the nif Gene Cluster found within a Nitrogen-fixing Agrobacterium tumefaciens Isolated from Ledbetter Creek
Biological nitrogen fixation is a critical part of the nutrient cycle in aquatic and terrestrial systems. The only organisms able to fix N2 are microorganisms using the enzyme nitrogenase. *Agrobacterium tumefaciens* is a well-known Gram negative alpha-proteobacterium that uses its Ti plasmid to affect a horizontal gene transfer that infects plants creating crown gall tumors. This ability has made A. tumefaciens an ideal vector for creating transgenic strains of plants. The isolated nitrogen fixing organism was determined to be A. tumefaciens by determination and subsequent BLAST search of the DNA sequence that codes for the 16S ribosomal subunit. A similar analysis of the nif H gene resulted in an 84% match to a nif H sequence from an Erwinia carotovora strain. Further research will identify the remaining genes that comprise the nif operon.

Emily Cosby, Jennifer Block, & Adam Dyer - Organizational Communication
Mentor: Dr. Roger Weis
B.A.R.K. Pet Responsibility and Animal Safety
In this paper, the Human Society of the United States will be described. The history of HSUS will be explained and career opportunities through HSUS will be given. The collaboration between the YNL 350 group and the Murray-Calloway County Humane society was developed into a program. The steps to plan, implement and evaluate this program will be described. Throughout the paper there are sections that describe the program and identify the major issues, developmental needs and competencies that were addressed with the program.

Whitney Coyle - Music Education and Mathematics
Mentor: Dr. Kenneth Fairbanks
Statistical Analysis of Diffusion Tensor Imaging Data from Traumatic Brain Injury Patients
Diffusion Tensor Imaging (DTI) is a new tool that is used by researchers to non-invasively track changes in the white matter pathways or connective fibers in the brain. More specifically, DTI is type of MRI that takes images of particular regions of the brain and their respective white matter pathways. After a Traumatic Brain Injury (TBI) the connective fibers of the brain can become twisted, fractured or broken. The DTI is able to pick up white matter damage, which could cause developmental issues and delays, damage that may not have been found in a routine MRI. The two measures that the DTI can track are fraction anisotropy (FA) and the apparent diffusion coefficient (ADC). The data set provided included 147 subjects, 101 male and 46 female, 76 subjects had a TBI and 71 had an orthopedic injury (OI). This research required the use of statistical analysis using multivariate linear regressions on the data provided to test the significance of the correlation between the two measures throughout different regions of the brain.

Tiara Crenshaw - Political Science, Ashley Johns – Advertising, & Sara Woods - Sociology
Mentor: Dr. Steve Jones
From Struggle to Success
Everyone has a struggle, but no one knows his or her struggle. Our discussion is about the struggle that led to the success of many African American women. We will focus on the Fist Lady Michele Obama's story while incorporating information about African American women and their culture.

Justin Crice - Political Science
Mentor: Dr. Ann Beck
Confronting the Front-Loading Issue in Presidential Primaries
In recent years, much has been written about presidential primaries and the front-loading effect. And too many scholars, front-loading problems are portrayed as a negative actor in electing the presidential nominees from the Republican and Democrat parties. This research design will examine prior literature on the topic of presidential primaries, look at the problems that front-loading has presented, and form a way to determine if early primary success culminates into gaining the nomination for President of the United States. The model will study the front-runner before the primary process and how they faired from the beginning to the end.

Amanda Crider – Biological Science & Spanish
Mentor(s): Dr. Warren Edminster & Dr. Leon Bodevin
Jose Marte: The Warrior-Poet of the 1895 Cuban Independence Movement
In today’s society, the name Jos Marte conjures up many images. To Spanish students in the United States and elsewhere, Marte was a poet, typically classified with the modernist movement in Latin America. To the people of Central and South America, Marte was an orator, a writer, and a proponent for a unified America. The people of Cuba, however, know the real Marte, the patriot-poet completely devoted to his country and the ideals of freedom and democracy. In Cuba, Marte is hailed as a hero, an apostle, and the biggest reason behind the success of the Cuban independence movement from Spain. Although it may seem unlikely that one man could so drastically change the course of a nation, in the case of Marte, these laurels are quite deserved. Marte dedicated his whole life to independence for Cuba from Spain, and though he did not live to see a free Cuba, he was nonetheless the reason Cuba was freed from colonization. Marte's success hinged upon several things, including the influence of Abraham Lincoln, Marte's passion for Cuba, his personal connections, his simple yet elegant poetry, and even his untimely death. However, Jose Marte was more than a revolutionary, a writer, or a Cuban with dreams of independence; he was the hero of the Cuban independence movement.

Emily Croteau – Biological Science
Mentor: Dr. Howard Whiteman
The Role of Micro Satellite Analyses in Ecological Research
Molecular markers are increasingly being used for ecological questions that are challenging to answer directly from field data. Micro satellites specifically have become the molecular marker of choice for answering these difficult questions. Micro satellites are tandemly repeated units of 2-5 base pairs that are found within the nuclear genome. These markers have a high mutation rate, resulting in a large amount of variability, and they are easily amplified using established molecular techniques. Multi-locus genotypes can be obtained quickly and used in conjunction with a statistical program, can be used to examine genetic diversity, population isolation, dispersal, and degree of relatedness. Using information from two focal organisms I will illustrate the utility of micro satellites and the types of questions that can be answered.

Mary Crowe - Psychology
Mentor: Dr. Alysia Ritter
Family Dynamics and Childhood Success
The purpose of this study was to determine the perceived effect of family structure and child gender on child success level, as well as if there were any interactions between family structure and child gender. This study was based on information from Barter and Renold (1999), Camilleri and Ryan (2006), Clarke, Kitzinger, and Potter (2004), Demuth and Brown (2004), Mehrabian (2000), Simmons and O'Connell (2003), and Simmons and O'Neill (2001). The participants were 120 (38 male) Murray State University students, who were asked to read 1 of 6 scenarios and complete a 30-item questionnaire, which was measured on a 4-point Likert scale. There was a significant difference, $F(2, 114) = 5.52$ $p < .01$ on the relationship subscale. Specifically, it was found that children rose by a mother and a father were rated significantly more successful in relationships than children raised by homosexual parents.

Amy Shannon Davis – Spanish & Public Relations
Mentor: Dr. Leon Bodevin
"Machismo" As Seen Through Spanish Cinema
A concept seen through history is the idea of sexism. This notion has taken root and become something nearly tangible in Spain through the influences of different cultures and people the country has been exposed to in its existence. This concept has acquired a name: "machismo." Machismo encompasses the gender inequality in thoughts, ideas, and actions of the Spanish people, from the vantage point of the male appraising the female gender. Through analyzing several films by Spanish directors, this presentation will delve through gender relations and perceptions as seen in popular culture depicted through film to the Spanish public.

Jessica Davis - Political Science
Mentor: Dr. Ann Beck
Presidential Influence through Supreme Court Nomination
A president may attempt to influence the direction of policy and judicial decisions in the United States through his selection of judicial nominees, specifically in the Supreme Court.

Angela Denk – English, Creative Writing (fiction emphasis)
Mentor: Dr. Kelley Wezner
Matrimony and Foreshadowing in Clay's Quilt
This paper presents a brief analysis of the two wedding ceremonies in Silas House's novel, Clay's Quilt, and examines them through a lens of literary symbolism with an emphasis on foreshadowing. The paper also addresses the topic of deliberate language in the construction of coherent fiction.

McKenzie Dossett - Economics
Mentor: Dr. David Eaton
The Impact of NCAA Basketball Championships on College Admissions
It is thought that winning a sports championship will boost a college's image and attract more applications for enrollment. The project focuses on the quantity and quality of college applications to a college after winning a NCAA basketball championship. It looks at trends before and after a championship in applications of first-time, first-year freshmen. The data collected includes the number of applications submitted, number of students admitted, and the number of students enrolled along with average standardized test scores for each year. National averages in select fields are also used for comparison. The purpose of this research is to determine if and how colleges are affected by NCAA basketball championships.

Eric Dunsford – Public Administration, Maggie Gorman & Laurel Smith – Youth & Nonprofit Leadership
Mentor: Dr. Roger Weis
BOO GO
BOO-GO was an hour long bingo program that took place at Hickory Woods Retirement Center in Murray, Kentucky. During this hour of games, the students entertained the elderly with delightful conversation, drinks, and food. The program was enjoyed by twenty elderly men and women who used the opportunity to reflect upon memories of once being so young. The format of BOO-Go was a series of bingo games. After winning the game the winner would receive a piece of candy. After BOO-GO was finished, the students treated all the players to cupcakes and drinks. During this time, the students had the opportunity to socialize with the elderly. Through these conversations, the students felt like they put the youth back into the elderly Players.

Katherine Eiland – Biological Science, Pre-Veterinary Medicine
Mentor: Dr. Maeve McCarthy
The Haldane Function of Genetic Mapping
Geneticist JBS Haldane was among the first to quantify the relationship between the genetic map distance of genes and their resulting recombination rates. The map distance measures the gap separating a certain set of chromosomal genes, which then directly affects the chances of a recombination occurring. When recombination does take place, corresponding segments of the chromosomes that contain those genes are switched. Since the genetic coding sequences have been altered, the organism's physical appearance may reflect that change. By observing the association of certain physical traits, such as hair color or disease, with those genetic changes, Haldane was able to reach the following conclusion: the greater the chromosomal distance between the locations of a set of genes, the more likely a recombination event will occur. He then developed an equation to approximate the frequency of gene recombination in genetic mapping based on the distance between the genes: C= (1/2) (1-e^ (-2x)), where C = the fraction of recombination between loci A and B, and X = the map distance between loci A and B. This equation was later studied by many other scientists and is considered one of the basic foundations of genetic mapping, which has enabled progressions such as the completion of several species' DNA genomes.

Carrie Elliott, David Crouch, Bryan Craig, & Grant Fridy - Agriculture Science
Mentor(s): Dr. Iin Handayani & Dr. Andy Bailey
The Effect of Various Nitrogen Fertilizer Sources on Dark Fired Tobacco
Nitrogen (N) has been recognized as the primary soil nutrient required for tobacco growth and production. Therefore, study on N fertilizers available in the market and their associated impacts have led to interest in investigating the effects of various N sources on dark fired tobacco yields. Fertilizers with various ratios of nitrogen, phosphorus, and potassium were used in this experiment. The fertilizers used were: 32% UAN (N-P-K; 32-0-0), Ammonium Nitrate (N-P-K; 34-0-0), Ca Nitrate (N-P-K; 15.5-0-0), Triple 15 Yara Mila (N-P-K; 15-15-15), Yara Mila (N-P-K; 21-7-14), and Hydro Comp (N-P-K; 14-0-14). The fertilizer rates were: 5.75, 5.4, 11.8, 12.25, 8.75 and 13.15 lbs/plot, respectively. The rates were equal to 150 Lbs N/ac. The objective of this study was to determine the effect of different nitrogen commercial fertilizers on tobaccos yield. The results show that there is no significant difference among the fertilizers at the level of significance of 5%. The highest average yield was found in Hydro Comp treatment (3263 Lbs/ac) and the lowest was in Ca Nitrate treatment (2793 Lbs/ac). We found high variability on the total yield under Ammonium Nitrate, Hydro Comp, Yara Mila, and Ca Nitrate treatments. In summary, UAN, Ammonium Nitrate, Ca Nitrate, Triple 15 Yara Mila, Yara Mila, and Hydro Comp provide similar potential N fertilizers to enhance dark fired tobacco yields in western Kentucky.

Christopher England - Geosciences
Mentor: Dr. Haluk Cetin
Land-Cover Change Mapping of Calloway County using Satellite Remotely Sensed Data
Western Kentucky has a variety of vegetation and land-cover. Land Between the Lakes National Recreation Area has received much attention and analysis of its land-cover types. What about other parts of the Jackson Purchase area? Calloway County, home of Murray State University is the focus of this study. By analyzing and comparing remotely sensed images collected from Landsat sensors, land-cover change of the area was mapped. Images collected on 31 July, 1991 from Landsat Thematic Mapper and images collected from Landsat Enhanced Thematic Mapper (ETM+) on 17 September 2000, were analyzed to distinguish land-cover types. Additionally, the change in land-cover types was determined by comparing the two datasets.

Chris Ethridge, Bhasker Radaram, & Widchuda Meeim – Chemistry, Matthew French & Pierce Arnold – Biological Sciences, & Leslie Smith – Chemistry & Biological Sciences
Mentor: Dr. Edie Banner
Synthesis of Amidopyrroles as Probes of Type 3 Amino glycoside Kinases
Amino glycoside antibiotics have been used since the 1950s to combat a variety of bacterial infections. However, the effectiveness of this class of antibiotics has been hindered by modifying enzymes expressed in various pathogenic bacteria. One such enzyme, APH(3′)-llla, operates by a transfer mechanism whereby a phosphoryl group from ATP is covalently attached to the aminoglycoside antibiotic. In order to combat this method of bacterial resistance it is crucial to understand the ATP binding site of APH(3′)-llla. This binding site will be examined through the synthesis of several series of chemical probes. Such studies of the active site will provide an understanding of the enzyme's structure and mechanism which will allow for the rational design of potential inhibitors of APH(3′)-IIIa to aid in efforts to combat antibiotic resistance. The synthesis of two classes of N-heteroaromatic compounds, 2-Amidopyrroles and 3-Amidopyrroles, are described.

Ashley Fannin - Psychology
Mentor: Dr. Paula Waddill
Numerical Rule Learning
There are many factors that may interfere with one's ability to remember number pairs or other given information. One condition that has an effect on memory is the amount of time between when one sees the stimulus and when one is tested on that stimulus. Another factor that may contribute to the amount of information that one can remember is if any other information is presented before the person is tested on the stimuli. This project investigated these. Over 120 Murray State students were asked to complete a memory task where they saw a string of number pairs and later had to remember if a certain number pair had been seen previously in the string of numbers. The results of this research project have practical implications that may help to improve memory strategies.

Sarah Farmer – Mathematics, Secondary Education & Sarah Thomason – Biological Science, Zoological Conservation
Mentor(s): Dr. Howard Whiteman & Dr. Emily Croteau
***Evaluation of Microsatellites in* Ambystoma maculatum**
Phenotypic plasticity is the ability of a trait to change in response to an environmental cue. Salamanders are known to exhibit phenotypic plasticity in the form of facultative paedomorphosis, producing a paedomorphic (aquatic) or a metamorphic (terrestrial) body morphology, which provides a unique vertebrate model for understanding the evolution of phenotypic plasticity. Previous research has revealed the mechanisms that produce this polymorphism; however, little is known about the evolutionary mechanisms that maintain it. By studying the fitness consequences of facultative paedomorphosis, we can better understand the evolution of this polymorphism. We have proposed using nuclear markers to assign parentage and to create a pedigree within a closed population of tiger salamanders as a way of measuring fitness differences among morphs. As a first step, we evaluated polymorphism using previously designed Ambystoma microsatellite markers in spotted salamanders (*Ambystoma maculatum*). Tissue samples of 55 salamanders were collected from a local population and DNA was amplified using PCR to assess microsatellite variability. In this ongoing study, nine loci have been successfully amplified, six of which are polymorphic and will be used to determine relatedness in this population. The results of this study will eventually be applied to a population of facultatively paedomorphic tiger salamanders to better understand the evolution of phenotypic plasticity.

Michelle Farney - Psychology
Mentor: Dr. Paula Waddill
Effect of Victim Impact Statements on Sentencing in Capital Murder Cases
There is a great deal of controversy surrounding the implementation of victim impact statements at the sentencing phase of criminal proceedings. In these proceedings, the family of the victim or the victims themselves is given the opportunity to speak out about their victimization. There is concern that these statements may play too great a role in sentencing, while some believe the statements finally gives victims the rights they deserve. The current research was designed to investigate how the presence and source of a victim impact statement affect a participant's decision in a capital murder case where the only options for sentencing are the death penalty or life without the possibility of parole. This research was intended to provide a greater understanding of the effect of victim impact statements at criminal sentencing. Interestingly, it was the victim impact statement from the daughter that significantly increased the likelihood of the defendant receiving the death penalty opposed to a statement from the mother or no statement. The results of this study may have important implications for sentencing proceedings in capital murder cases. It is crucial for attorneys to have an understanding of the jury members' views regarding the death penalty and victim impacts. For a prosecutor pushing for the death penalty, victim impact statements from the child of the victim may prove to be quite effective.

Bridget Farrell - Spanish & English Literature
Mentor: Dr. Mica Howe
A Psychoanalytic Study of Santa Teresa de Jesus
According to the principles behind sublimation in the writings of both Sigmund Freud and Jacques Lacan, studying the art produced by a subject reveals desires that have been repressed. Because of this connection between artist and art, Freud and Lacan's theories provide a basis for insight into the psyche of the writer when analyzing literature. The theories of the two psychoanalysts become particularly provocative when applied to Santa Teresa de Jes's, a baroque mystic and nun, whose writings and life provide a distinctive lure for a psychoanalytic interpretation. She reluctantly wrote during a time when women rarely wrote and in her writings detailed the ecstasy she felt as a result of her relationship with God. She yearned for a union with God that would make her whole. This study, psychoanalysis of Santa Teresa and some of her works will discuss her identity development according to the theories set forth by Freud and Lacan, as well as some psychoanalytic principles that can be found in her writings.

John Findley - Economics
Mentor: Dr. David Eaton
The Road to Prosperity: Is America Working Too Much To Obtain Greater Well-Being?
The American motto has always been that working long hours will produce a greater society. Few doubt that a correlation is present between the two. It is essential to work hard and thus long hours are required. However, as a society, are the long hours becoming counterproductive? What would a shorter work week do? The allocation of time of most parents is so stringent in certain categories that we have neglected what made America so alluring and prosperous in the first place. In order to examine the problem, a close examination is needed in: the idea of prosperity, the theory of allocation of time, and social capital - a measure of societies well being. Lastly, it is with these area researched that the answer for social capital to increase and in so doing further our society not only finically but culturally as well.

Brittany Fiscus - History
Mentor: Dr. David Pizzo
Oda Nobunaga's Response to Militiant Buddhism Turns Genocidal
Oda Nobunaga was an important figure of the Japanese warlord class and one of the three main "unifiers" of the country during its "Warring States" period (1530s-1580s). Nobunaga unified one third of Japan under his power through military conquests and alliances. On his quest to solidify his power, the main obstacles Nobunaga came across were monasteries of militant Buddhist monks. These "warrior monks" were as powerful as any landlord, possessed vast tracks of land, and were their own well-trained armies. In order to obtain their lands Nobunaga specifically targeted groups of these monks, with the aim of radicating them completely. Though Nobunaga's military conquests are seldom referred to as genocide, my project makes the argument that when compared to the United Nation's definition of genocide and other cases of genocide, Nobunaga's treatment of Buddhists should be considered as such. A lot of what determines whether or not something is classified as genocide depends on intent and primary sources written by and about Nobunaga make a strong argument that Nobunaga intended to completely destroy militant Buddhism, and had a personal vendetta against the religion. Even though Nobunaga was not successful in completely destroying all forms of Buddhism, he essentially commits a cultural genocide at the very least. After this period militant Buddhism dies out, in large part because of his persecutions.

Aaron Flood - Art Education
Mentor: Dr. Kelly Rogers
Public Mural
During the 2009 spring semester, students enrolled in REC 101 - Introduction to Recreation and Leisure Services were required to complete a 15-hour service learning project. A journal was to be completed during the project to document the progress and results. The project was to be completed at local recreation and leisure facilities. My project was through the Murray-Calloway County Parks and Recreation Department and I was asked to paint a mural for the public pool. It was an opportunity for me as an individual artist to do work for a broader audience and the community. The experience taught me about how visual arts can brighten and improve public spaces and recreation areas. Also I was challenged to think about all of the people who would view the work and how they would react to it as a community. Overall it has been a good experience and has made me more aware of how people spend their free time and energy. The role of recreation in my own life has also been affected in a positive way. The value of time spent participating in fun and enjoyable activities has never been higher.

Jessica Forbes - French & International Affairs
Mentor: Dr. Janice Morgan
An Analysis Through Film of the Occupation of France During World War II
The occupation of France by the Germans during World War II was a very dynamic time period. Within the French society, there were two different sides to take: one could cooperate with the Germans or one could resist. This presentation will include analysis of the films Lacombe Lucien and Au revoir, les enfants (Goodbye Children) both by the director Louis Malle. These films will show how the French went about resisting or complying with their German occupiers. These two films show the moral dilemma that moved into the French society of this war torn time period. Some French decided that the right thing to do would be to resist. At the opposite end, some were tempted by the Nazis power and control and betrayed their country by working alongside the Germans. By comparing different characters and situations in both films, the analysis will show the different aspects of the society. Throughout, there will be historical facts infused into the analysis to help support the ideas shown in both films. By using both artistic and actual examples, this presentation will help to explain the nature of the mindset of the French during the Second World War.

Magen Ford - Advertising, Robin Thweatt, Ho Juan Kang, & Ashley Brandt – Marketing, & Kaoutar Chakna – Business Administration
Mentor: Dr. Timothy Johnston
University Book and Bean
The goal of this study was to determine student awareness of University Book and Bean. University Book and Bean is a new bookstore in the Murray Community that offers a large selection of trade books as well as textbook sales and buyback services. They also offer a coffee shop and wireless internet access to create a welcoming environment for students. Finding from a survey created by our marketing research team of approximately 150 students will be presented.

Annette Fowler - Chemistry
Mentor: Dr. Bommanna Loganathan
Trace Level Analysis of Polybrominated Diphenyl Ethers In Samples From The Murray Water Treatment Plant Using a Gas Chromatograph-Electron Capture Detector
Polybrominated diphenyl ethers (PBDEs) are one of the additives in flame retardants. These compounds are used in industrial and domestic applications such as plastics, textiles, and in electronic appliances including computers and televisions. Widespread use of PBDEs have resulted in environmental contamination. Exposure to PBDEs can cause harmful effects in wildlife and humans. Due to widespread use of this chemical, environmental media such as air, water, and biota (plants and animals) are contaminated with PBDEs. PBDEs discharged from waste water treatment plants (WWTP) are considered to be one of the important sources of PBDE contamination of rivers and lakes. In this study, an assessment was made on the quantity of PBDEs that are being discharged from the Murray Waste Water Treatment Plant (MWWTP). Influent, effluent water, suspended sediment, and sludge samples from MWWTP were collected and analyzed for PBDEs. A gas chromatograph equipped with electron capture detector (GC-EDC) was calibrated using known concentrations of PBDE standards.

January Futrell – Integrated Studies, Chase Peck - History, & Michelle Lee & Jonathan Byrn - Geoarchaeology
Mentor: Dr. Lara Homsey
Archaeological Survey of 3 Acres for the City of Murray
The Public Archaeology class at MSU conducted a archaeological survey of a 3 acre tract of land located just south of Fire Station #2 on S. 16th Street on October 25, 2008. The City of Murray plans to construct a new fire station here with the aid of federal grant money. The purpose of this study was threefold: (1) to determine if the proposed project area contained cultural resources that would be adversely impacted by the proposed construction; (2) assess National Register of Historic Places eligibility for any cultural resources found; and (3) to train archaeology students in the Public Archaeology class, a Service Learning course at Murray State University, in modern cultural resource management.

Arwen Gaddis - Music and French
Mentor(s): Dr. Therese Saint-Paul & Dr. Randall Black
Eroticism in French Symbolist Poetry and in French Impressionist Song During the Nineteenth Century
Eroticism is a controversial topic which has, and continues, to garner attention in all the fine arts, including literature and music. Nineteenth-Century France experienced an explosion of literature, art, music, and entertainment which was centered on the erotic. The Symbolist poets of France were especially involved in using their words to speak to the erotic through the subconscious. Simultaneously, French Impressionist composers were exploring how to affect the listener's emotions through their dreamy compositions. In a desire to, express the erotic through the subconscious, many French Impressionists chose to set the words of their symbolist colleagues to music. In this presentation, selected Symbolist poems are analyzed in depth to explore how the Symbolists were able to affect the emotions of the reader and why these works have a subconscious connection to the erotic. These poems, which were transformed into French art songs, are then analyzed to show how the Impressionist composers helped to convey the poets' emotional intentions to the reader and how the composers were able to emphasis the erotic aspects of the poems through their songs.

Tamsyn Garner - International Affair
Mentor: Dr. Simone Silva
The Correlation Between Education and Civil War
Do states with less secondary school enrollment and a lower literacy rate have more civil wars? This quantitative research paper will explore the effect of education on the stability of a state. In this study, stability will be defined as lack of intrastate war. Data might show that these educational factors impact the stability and conflict levels of a state. This data will be then applied to specific countries currently engaged in civil war. The study will be both historical and current, and could show how a state might use education to effectively rebuild after a civil war.

Lorena Olandes Godinez – Spanish
Mentor(s): Dr. Mike Waag & Dr. Meg Brown
The Wonders of the Popol Vuh
The original manuscript of the Popol Vuh, an ancient Mayan text is one of few that survived the conquest of what is now Mexico and Central America, has disappeared. However fray Francisco Ximenez translated the manuscript from Quiche with Roman Characters to Castellano in 1701, opening the doors to be analyzed and translated into other languages. The Popol Vuh is a literary document which has a wealth of ethnographic information. Going beyond the transcriptions and or translations of this text, this study will do an in depth analysis of the trickster a character in mythology folklore and religion which goes against the norm. There will be a brief discussion of the Popol Vuhs survival and discovery, and a comparison with the Christian Bible.

Rajani Gourishetty – Chemistry
Mentor: Dr. Daniel Johnson
The Selectivity of Different Ion-Exchangers in Ion-Selective Electrodes (ISEs) Based on Ionic-Liquid Plasticized Polymeric Membranes
Ion-exchange sites, particularly phenylborate and quaternary ammonium salts, long have been fundamental to the preparation of ionophore-containing plasticized poly(vinyl chloride) (PVC) membranes used in ion-selective electrodes (ISEs) or optodes. These sites reduce the electrical resistance of the organic membranes, induce extraction of ions-of-interest (i.e., cations for borate salts and anions for ammonium salts) and/or ensure that the membranes are permselective. In addition, careful selection of ionophore/ion-exchanger ratios in the membranes is important in obtaining optimal sensor selectivity. Recently, it was demonstrated that ionic liquids (ILs) are capable of plasticizing PVC and other polymers. Electrodes prepared from such IL-plasticized polymeric membranes have displayed some limited responses to ions. Furthermore, ISEs based on a sulfate-selective ionophore incorporated in IL-plasticized membranes have exhibited significantly greater selectivity for sulfate response as compared with electrodes prepared from organic plasticizers. Interestingly, none of the aforementioned electrode membranes employed traditional ion-exchanging additives. This presentation focuses on the observed behavior of ISEs constructed from IL-plasticized membranes which contain such ion-exchanger sites. Included among the electrodes studies are those based on membranes with only ion-exchangers added, as well as membranes simultaneously containing ion-exchanger and neutral ionophores, or ion-exchanger and charged ionophores. Furthermore, various ILs were used as plasticizers. Characteristics that appear to influence the behavior of these ISEs include the junction potential at the IL-membrane/water interface and the absolute lipophilicities of the ionic liquid cation and anion.

Courtney Graves - Athletic Training & Pre-Physical Therapy
Mentor: Dr. Kelley Wezner
Natural Environments' Effect on Emotions
Silas House creates specific moods throughout Clay's Quilt by using the natural surroundings of Eastern Kentucky. Not only do his descriptions of weather and the changing seasons add more detail, but the weather affects how people feel and what kind of mood they are in. If it is raining and cold, people seem sadder; whereas if it is warm and sunny, people are more cheerful. During the novel, he uses rain and snow to portray bad events that are happening, which creates a negative mood: snow and ice are associated with death, and rain is associated with sadness. On the other hand, he establishes a more positive outlook with warm weather, associated with happiness, and by describing the change in seasons, which often reflect positive changes in the characters' lives. The situations the characters were in throughout Clay's Quilt reflect the emotions that we associate with weather and seasons, which helps readers better relate to the characters. House uses the weather and seasons in Clay's Quilt to create different moods for the reader, establish a better understanding of what is happening, and even to foreshadow what is going to happen later on in the book.

Matthew Hall - History
Mentor: Dr. Stephanie Carpenter
The Fall of the Communist Party of the United States of America
The Communist Party of the United States of America had gained a high level of popularity for a Marxist party in the United States by the late 1930s. Then, in 1939, following a shift in the Party Line of the Soviet Union and the subsequent reaction of the Party in the United States, the CPUSA began a slow decline. Marked by a superficial upswing in 1941, this decline would continue until the CPUSA was weaker politically than it had been before 1935. This decline was caused by a number of factors, primarily activities of the Party's leader, General Secretary of Earl Browder. However, he does not bear full responsibility, and activities in Europe and the Soviet Union must also be considered. Earl Browder is responsible for forming the Party's ideology in the period both before and after 1941. However, following the Nazi invasion of the USSR, communication between the Soviet government and its satellite parties around the world became more difficult. The independence felt by the CPUSA in the Popular Front era grows and Earl Browder begins to change Party policy to fit even more into American politics. Browder eventually interprets the Tehran conference into a hybrid form of capitalism and socialism. This leads to criticism both at home and abroad and eventually Browder is ousted and the Party's Old Guard is returned to power. These moves away from communist ideology and shifts in Party Line to accommodate the Soviet position at time, lead to the fall of the CPUSA.

Sarah Hargis – Biological Sciences, Pre-Medicine & Jessica Dunker – Physics Engineering
Mentor: Dr. Maeve McCarthy
The Binding Force
The Michaelis-Menten mathematical model represents the reaction of a substrate and enzyme to form a product; it in essence models enzyme kinetics. There are two mathematical assumptions when using the Michaelis-Menten equations. These assumptions are: (1) the system is in steady-state so that the concentration of the enzyme bound to the substrate is constant and (2) the substrate is available in excess so that the concentration of the substrate is much greater than the concentration of the enzyme. This equation is used for the study of inhibition of alcohol dehydrogenate by two mutually nonexclusive inhibitors, nutrient uptake rate as a function of cell size and transporter density, and multisided phosphorylation. Described in detail in the report is the mathematical breakdown of the Michaelis-Menten equation which concludes as follows:
$1/v\ (0) = [K\ (m)/v\ (max)]\ [1/S] + [1/v\ (max)]$
where v (0) is the initial reaction rate, K (m) is the Michaelis constant (max) is the maximum reaction rate and S is the concentration of the substrate. Our report goes more in-depth in the biomathematics of the Michaelis-Menten equation.

Trevor Harper, Simon Crouch, & James Payne - Occupational Safety and Health
Mentor: Dr. Tracey Wortham
Ergonomic Evaluation of Material Handling Tasks
This presentation will include an analysis of ergonomic issues at a material distribution facility in Western Kentucky. Three members of OSH 663 Applied Workplace Ergonomics visited the site to evaluate potential ergonomic risk factors for musculoskeletal disorders in material handling using techniques such as the NIOSH Lifting Equation, 2D Biomechanics, Liberty Mutual psychophysical manual handling tables, Rapid Upper Limb Assessment, Strain Index and ergonomic checklists. An overview of the findings along with recommendations for reducing ergonomic hazards will be presented.

Lacey Harris - Advertising
Mentor: Dr. Kelly Rogers
Big Brothers Big Sisters
During the spring 2009 semester I was enrolled in REC 101 - Introduction to Recreation and Leisure Services. Throughout this course students have been required to complete 15-hour Service-Learning Projects. I chose to work with Big Brothers Big Sisters to complete my project and was able to organize an event for the bigs and littles in the program. Through this experience, I have gained a new understanding of the needs of my community and how I can make a difference. Through this event with Big Brothers Big Sisters I learned how to dedicate myself to my community, and help make a positive influence. With my event we were able to have different activities that would give the children and their bigs time for recreational activities. We had different activities such as; swimming, relays, and a treasure hunt. We also watched a movie and had a snack. Through this I have learned how to connect service with learning and helped others do this as well. While completing this project I met two specific course objectives. First, I explored the implications of leisure to society. For example at the Carr Health building there are many different activities that one may participate in. Second, I experienced many recreation and leisure issues, needs and services relating to special populations. I have looked at many ways to help the community on the issues that need attention, and have helped by serving my community. I plan to continue to make a positive influence to my community.

Angela Hatton – English, Creative Writing/Literature & Angela Walther – English Literature
Mentor: Dr. Kevin Binfield
The Life and Work of Mary Peach Collier
Our project focuses on developing a biographical context for Mary Peach Collier, a 19th century British working-class poet who published four cumulative editions of a book of poems entitled Poetic Effusions. While many of Collier's contemporaries, including Lord Tennyson and John Keats, already have well-established biographies which have been thoroughly researched, Collier, who is virtually unknown in the literary world, has not had the same time devoted research of her life. Our work has been to research through primary documents evidence of Collier's life, including birth records, census data, and newspaper publications. By examining Collier's life, we have begun the process of building a connection between the author's circumstances and her body of work. Furthermore, through doing this primary research on a little known poet, our goal has been to contribute to the expansion of the English literary cannon beyond what for many years has been dominated by relatively few authors. Our presentation will be the culmination of our research, introducing Collier's life as it has influenced the circumstances of her poetry. We will use examples from both on-site research and from Collier's original work to define the developments in tone, style, and maturity through the various editions of her book.

Berlin Haugen - Economics
Mentor: Dr. David Eaton
Acquiring America: The Disassembling of a Dynasty
American business has witnessed international direct investment grow at a staggering rate; and its management replaced by former competitors all too often. A wide array of influential factors has fueled the rising tide of foreign investment through acquisition in the United States. The mere image of American business and the brand equity within our company’s names alone have global reach and have amassed tremendous envy abroad for decades. Iconic companies, many with over a century of American family ownership have been forced to surrender their fortresses to foreign invaders as globalization has grown teeth. Anheuser Busch towers as an example of this phenomenon and its acquisition presents a unique set of welfare consequences. This paper will address the history of the Anheuser Busch beer empire and how its disassembling by Belgium brewer Inbev may compromise one of its greatest assets, the St. Louis people. The reasons such a monolithic acquisition was made possible and what direct effects may result once it is completed will be studied. Historical acquisitions will be examined in an effort to forecast potential implications for AB's future. Shareholder wealth will be reviewed; however, general welfare for all of AB's stakeholders will be of prime focus. The overarching goal will be to find a correlation between foreign investment in American companies and shifting corporate values. The St. Louis people grew up around this red brick brewery and now must wonder how they will fare as management moves an ocean away.

Mychal Noelle Herron - Communication Disorders
Mentor: Dr. Kelly Wezner
Bound In Chains
In Silas House's novel Clay's Quilt, Alma, the woman who stole Clay Sizemore's heart, is a shy, conservative woman who carried a mysterious and yet soft-spoken presence with her. Her background is the foundation of who she is, and her father's dominance over her life means that she lacks the self confidence to trust her own decisions. In the beginning of the novel, Alma is seen as a timid woman by the world around her, illustrated in her clothing that she uses to both hide the guilt she feels for leaving her family and to cover the fault she sees in her family. Alma overcomes her lack of self-confidence by playing the only object she can rely on, her fiddle. Through each performance, Alma takes little pieces of herself back, reclaiming the pieces that Denzel, her abusive husband, and her father could not keep away from her forever. As she releases the chains of bondage that her past has latched onto her, she finds the key to unlock those chains, and that key is Alma.

Elyse Hills - Political Science
Mentor: Dr. Ann Beck
Child Protective Services: A System in Need of Reform
In this paper I review how the Child Protective Services review cases of child abuse and neglect, and the length of time is used to determine the severity of the abuse and neglect. I hypothesize that if Child Protective Services would reform the length of time a case on child abuse/neglect was lengthen and the CPS system would reach out to more outside resources, then there would be less reoccurrences in cases of child abuse/neglect.

Kathryn Hogan – Pre-Veterinary Medicine
Mentor: Dr. Wafaa Fawzy
Computational Characterization of the Ground Electronic State of the Superoxide Radical
The ground electronic state of the superoxide radical is a diatomic molecule that contains an unpaired electron and carries a negative charge. This anion plays an important role in chemistry in biological systems, and has been found to be a reaction intermediate in the process of respiration. Many experiments have been carried out to help scientist develop a further understanding of the chemical oddity. However, instability of the radical makes its trapping and detection a very difficult experimental task. In this work calculations that invoke high level quantum mechanical theories are used to provide accurate potential energy curves and properties of the radical. Calculations were carried out using the Gaussian and Molpro program suits. In order to confirm accuracy of results, calculations were performed using different levels of theories and different basis sets. Results showed that the Hartree-Fock method is an unreliable level of calculation for this molecule On the other hand, correlated ab initio calculations using the CCSD(T) method and a relatively large basis set provide accurate characterization for the radical. Results of this work will be presented.

Tyler Holloway, Evan Arnett, & Treston Smith – Marketing, Na Yu - Accounting, & Michelle Crockwell - Advertising
Mentor: Dr. Timothy Johnston

FLW Outdoors Market Research Project

The goal of this study was to determine the awareness of FLW Outdoors and student's interest in fishing. FLW Outdoors is a fishing company located in Benton, Kentucky. A survey of Murray State student asked about their interest and perceptions of fishing as well as their knowledge of FLW outdoors. Finding from a survey of about 120 respondents will be presented.

Eli Hooten - Engineering Physics
Mentor: Dr. James Hereford
Design of a Reinforcement Learning Controller for Ms. Pac Man
This project aims to develop an intelligent, deterministic agent using Genetic Programming (GP) concepts. GP applies the concepts of reproduction, mutation, and evolution seen in nature to computer programs. The agent will be utilized to develop the best strategy for playing the populare arcade game, Ms. Pac Man. It will be the job of the agent to utilize functions controlling movement, evasion, and pursuit to attain the highest score possible. The agent will evolve itself over a period of many trials at playing the game. Essentially, the agent will begin with a very rudimentary ruleset for playing Ms. Pac Man. This ruleset will evolve with subsequent trials. The end result will be an agent that has achieved the best possible ruleset for playing Ms. Pac Man.

Eli Hooten - Engineering & Physics
Mentor: Dr. James Hereford
Development of an Open Source, Low Cost Sensor Network
The aim of this project is to create an open-source, low cost sensor network. Possibilities for this network exist in research, industry, and any other monitoring type of application. The open-source nature of this sensor network allows it to be fully expandable by users to suit a wide variety of needs with limited modification to the original hardware and software. The goal of this project is not to create a highly advanced sensor network, but rather to implement a generic system capable of being easily modified by end users. In order to facilitate this, the sensor network will possesses a centralized data access point. This data access point will serve as a means of information sharing, storage, and access by members of the network without any modification by the end user. Each agent in the network will also be easy to modify, possessing accessible ports and being easy to assemble with basic tools. The final product will also include a software library so that end users can get the network up and running with minimal effort.

Nick Hooten - Engineering Physics
Mentor: Dr. James Hereford
Optimization Methods for Symbolic Regression Problems in Genetic Programming Using GPLAB
Genetic Programming (GP) is an evolutionary computing technique that can automatically solve problems without the form or structure of the solution being specified in advance. GPLAB is a GP toolbox developed for use with MATLAB, a powerful data modeling and simulation programming environment. Symbolic regression is an active area of research in GP, and represents one of GP's original applications. By using computer programs developed using GP methods, researchers can avoid the difficulty and bias in determining a best-fit function for a body of data inherent to traditional regression methods and allow a good-enough function to be evolved from a population of computer programs. Advances in this field could allow researchers to focus less on the management and interpretation of data, and more on the meaning and relationships among the data. A typical GP simulation contains many parameters and variables. By carefully investigating and optimizing these, it is possible to produce sufficient results as efficiently as possible. The aim of this presentation is to develop some basic fundamentals of GP for an audience unfamiliar with the field, as well as to present the results of work concerning optimization methods for symbolic regression problems using GPLAB.

Kayce Humkey – Creative Writing & Archaeology & Kristin Thomas-Wathen - Geoarchaeology
Mentor: Dr. Lara Homsey
Microartifact Analysis of a Mississippian House Floor at Wickliffe Mounds
This project analyzes a collection of microartifact (artifacts sized 2mm or less) samples from a partial prehistoric house floor at Wickliffe Mounds. The analysis of these artifacts hoped to distinguish activity areas within the Mississippian home. After careful examination of nine artifact groups (daub, May grass, copper, shell, rock, ceramics, lithics, charcoal, and bone), patterns of diverse special use within the house were observed. These results exemplify the value of microartifact analysis in determining separate activity areas in this and similar prehistoric households.

Joshua Hyatt - Mathematics
Mentor: Dr. Rob Donnelly
Bidigraph Representations for Finite Edge Colored Lattices
G. Birkhoff's Fundamental Theorem for Finite Distributive Lattices concludes that any finite distributive lattice can be compressed into a smaller poset from which the lattice can be recovered. However, G. Markowsky later discovered that “any” lattice can be compressed into a poset represented by a bipartite directed graph. This talk will explore the Markowsky technique for compressing a lattice as well as applying this technique in studying the edge-colored lattices that occur from partial orderings of roots associated with simple Lie algebras/groups. Discussion will include the relationship between the poset from Birkhoff's Fundamental Theorem and its Markowsky equivalent bipartite directed graph representation for any finite distributive lattice.

Robin Irwin - Public Administration
Mentor: Dr. Thomas Glover
Fine Tuning The Employment Division Of Oregon v. Smith Test To Include Heightened Scrutiny In Cases Involving An Individual's Religiously Grounded Omission
Employment Division of Oregon v. Smith (1990) (herein Smith) is the United States Supreme Court opinion that abrogated nearly three decades worth of reliance upon a compelling interest test in cases involving the First Amendment's Free Exercise Clause. Justice Scalia, writing for the majority in Smith, cited Reynolds v. United States (1878) wherein the Court had identified a belief/action distinction in cases involving free exercise. The student's research reveals that Justice Scalia either intentionally or inadvertently overlooked a second distinction identified in Reynolds: the distinction between an individual's positive actions versus an individual's omission. The common law action/omission distinction was more fully discussed in Regina v. Wagstaffe, a British case that was cited by the U.S. Supreme Court in Reynolds, but ignored by Justice Scalia. Instead of identifying the action/omission distinction and incorporating it into the Smith test, Justice Scalia merely lumped positive actions and omissions together without explanation or authority, and thereby violated his own philosophy that judges have the power to say what the law is, not the power to change it. James M. Beam Distilling Co. v. Georgia, 501 U.S. 529, 549 (1991) (J. Scalia concurring). The paper sets forth a corrected analysis for courts in future free exercise cases, identifies support for an action/omission distinction in the text of the U.S. Constitution, the writings of J.S. Mill, and in the common law, and explains why using heightened scrutiny instead of a rational basis test is consistent with public policy in free exercise cases involving omissions.

Hao Jiang & Dongjiao Liu – Biological Science
Mentor: Dr. Kate He
Using Molecular Markers to Study the Patterns of Genotypic Diversity of an Invasive Plant, Alligator Weed (*Alternanthera philoxeroides*) in Southeastern U.S.
Alligator weed (*Alternanthera philoxeroides*) is a successful invader native to South America. It has invaded all continents except Africa and Europe. In spite of its serious invasiveness all over the globe, alligator weed has been rarely studied in terms of its invasion mechanisms. It is even more surprising that knowledge on the relationships between its genetic variation and invasiveness is still very limited. This project attempts to uncover the mechanisms of alligator weed invasion using molecular markers to examine the patterns of genotypic variation of this successful invader. The analysis of genetic variation was carried out using Inter-Simple Sequence Repeat markers (ISSRs) on plant samples collected from three states in the southeastern US. The molecular evidence indicates that there is genetic variation in alligator weed populations. The results of this study suggest that genetic variation is closely related to the history of species introduction. Moreover, high genetic variation found in alligator weed populations contributes to its invasion success.

Korey Kelley – Outdoor Recreation & Leisure Services
Mentor: Dr. Kelly Rogers
KY Department of Fish and Wildlife Resources
As a student enrolled in REC 101 - Introduction to Recreation and Leisure Services this semester I have volunteered fifteen hours of service to the Kentucky Department of Fish and Wildlife Resources. My service-learning project involved adding more wildlife habitats to rivers and lakes. These new habitats will help fish reproduce as well as give them a better chance at survival. In addition, habitats provide anglers with better places to fish. By going out and collecting fish and looking at their current habitats, I have realized that the fish populations in our area are decreasing. At this point in time the fishermen are catching fish quicker than they can reproduce. Knowing this has provided me with a new perspective on the importance of wildlife habitats.

Gretchen Noel Kilby - Economics
Mentor: Dr. David Eaton
Does Socio-Economic Status Impact the Choice of Religious Denomination?
As economist we often feel bound by the limitations of our methods. Religion is one area that is often economically untouched. There are three areas of behavior between religion and economics that I am going to try to converge. 1. To understand the socio-economic characteristics of various Christian denominations to determine if different enominations attract adherents of different socio-economic status. 2. Find the pattern of behavior of those who switch denominational affiliation to determine if switching behavior is related to changes in socio-economic status. 3. To understand the impact of inter-faith marriage on women's labor and marriage choices.

Nandeesh Karmakonda – Chemistry
Mentor: Dr. Daniel Johnson

Monitoring Histone-Derived Peptide Methylation with Microchip Micellar Electrokinetic Chromatography

Methylation is one of the important post-translational modifications of histones that, along with phosphorylation and acetylation, comprise the "histone code". This code, a well-defined series of specific histone tail modifications, is important in protein recruitment, protein-protein interactions, chromatin structure, and, subsequently, in transcription. As a result of their role in transcriptional control, then, histone methyltransferase (HMT) enzymes have become interesting targets for pharmaceutical interventions in diseases like cancer. Of importance to the development for small molecule inhibitors or activators of HMTs is the availability of cheap, rapid, and accurate assays of HMT enzymatic activity. Among possible assay methodologies, microfluidics-based methods hold significant promise due to their reduced biochemical consumption, capability of parallel measurements, and subsequent amenability to high-throughput screening. Indeed, microfluidic assays for phosphorylation and acetylation (and other modes of enzymatic activity) have been successfully demonstrated already. This presentation details the development of a microfluidic assay for methylation using electrophoretic methods on a microfluidic chip. Unlike phosphorylation and acetylation, methylation does not result in a difference in charge between substrate and product. As a result, substrate/product separation was achieved via micellar electrokinetic chromatography. Different peptides, derived from N-terminal histone tails of histones H3 and H4, were employed as substrates for methylation reactions. In order to ultimately create a chip-based assay for HMT activity, separation conditions were first validated following chemical methylation. Dependences of assay performance on peptide character, micelle composition, and the nature of separation buffer were observed.

Vidyasagar Kummarikunta - Chemistry
Mentor: Dr. Bommanna Loganathan
Organohalogen Pollutants in Sediment and Fish Samples Collected from Clarks River, Kentucky

Organohalogen compounds such as polychlorinated biphenyls (PCBs), chlorinated pesticides and polybrominated diphenyl ethers (PBDEs) are well known environmental contaminants, bioaccumulate and biomagnify in food chain and cause harmful effects in wildlife and humans. Earlier studies on these contaminants in western Kentucky region were mainly focused on Kentucky Lake, Lake Barkley sediment and biota. However, very limited information is available on the levels of these persistent pollutants in Clarks River sediment and fish. The objective of the present study is to explain the levels of PCBs, chlorinated pesticides and PBDEs in Clarks River from sediment and fish samples by using gas chromatograph equipped with electron capture detector (GC-ECD). Several species of fish and sediment samples were collected from selected locations in the Clarks River. Standard analytical procedures were followed to measure the PCBs and chlorinated pesticides from fish and sediment samples. The results revealed that detectable concentration of PCBs were found in all sediment and fish samples. The total PCB and chlorinated pesticides concentrations in Clarks river sediment samples found in the range of 0.03 ng/g dry weight to 1.29 ng/g dry weight. Total PCB concentrations in Clarks river fish ranged from 1 ng/g dry weight to 57 ng/g dry weight. Chlorinated pesticide concentration in fish ranged from 0.04 ng/g dry weight to 36.8 ng/g dry weight. The levels of PCBs and chlorinated pesticides in Clark's River fish were below the Food and Drug Administration (FDA) established limits for human consumption.

Cristin Laird - Psychology
Mentor: Dr. Keith Dooley
The Relationship of Gender Identity and Selection of Friends

The purpose of this study will be to examine whether people select potential friends based on a similar or complementary gender identity in relation to their own gender identity. This concept will be applied to both same sex and opposite sex potential friends. Subjects will be given the Bem Sex Role Inventory as a means of self-reporting their own gender identity. Then, they will be given a modified version of the Personal Attributes Questionnaire and asked to select traits they seek in a potential friend and or would offer to a potential friend. Subjects will be randomly assigned to answer the Personal Attributes Questionnaire with regard to a potential friend of the same sex or opposite sex.

Charles Lee – Geosciences, Geoarchaeology
Mentor: Dr. Kit Wesler & Dr. Lara Homsey
What Projectile Points Tell Us: A Study of Projectile Points of the Savage Cave Site in Logan County, Kentucky
This poster will attempt to show what projectile points tell us about the people who lived in Savage Cave Site (15Lo11). Savage Cave is an archaeological site that is located in Logan County, Kentucky. Five acres around the entrance of the cave is owned by Murray State University. The focus of the research project is on what time periods the cave was occupied. Projectile points from the Carnegie Museum excavations of 1966-1967 were studied. A total of 139 of the 261 projectile points from these excavations were looked at and classified into twelve different categories. A wide range of dates for this site were derived from looking at these points. This site shows occupation from around 8000 BC to around 1300 AD.

Todd Levine – Biological Sciences (post doctoral)
Mentor: Dr. David White
Describing Reproductive Ecology: Female Reproduction In An Endangered Mussel
Variation in reproductive success is crucial to predicting population sustainability and strongly influences the potential for evolution via natural selection. For example, population viability analyses require information about the variation in reproductive success among individuals. Variation in reproductive success among individuals provides the underlying mechanism for evolution mediated by natural selection. Discrepancies in reproductive success among individuals influence both the conservation status of populations and their evolutionary trajectories. We examined reproduction in a population of critically endangered freshwater mussel, Texas hornshell (*Popenaias popeii*). Individuals were marked with shellfish tags and reproductive status was observed by gently opening each shell to determine whether individuals were brooding larvae. At minimum, mark-and-recapture surveys were conducted three times during the height of reproductive activities in May and June. Because P. popeii do not possess obvious external sexual dimorphism, females were identified as those individuals gravid at least once since 2005, when we began surveying the population for reproductive individuals. By counting subsamples of larvae spontaneously released into tanks, we determined that fecundity ranged between 120,000 and 225,000 glochidia. The proportion of sampled individuals that were gravid in each year ranged from 0.40 to 0.51. Some individuals became gravid in all 3 years, but many did not. Another potential source of variability in reproductive success is the ability of mothers to deliver glochidia to appropriate fish hosts. These features represent substantial variation in reproductive investment across the study period and among individuals, suggesting that drift could occur relatively rapidly in this species.

Jonathan Lewis – Organization Communication, Grant Mathis - Chemistry, & Juan Arias – International Affairs & Public Administration
Mentor: Dr. Roger Weis
Health And Wellness Fair
The Health and Wellness Fair was a program through the Racers for Christ program of the University Christian Student Center organization on the campus of Murray State University. The program allowed two members and one non-member of the Racers for Christ to provide information, demonstration, and knowledge to the members of the group. The Health and Wellness Fair allowed for students to learn and apply what they have learned in order to facilitate and execute a more healthy and productive life. The program format consisted of one session with three different parts. Each part of the program had a different speaker who had researched and informed themselves heavily in order to be as assertive and knowledgeable about their parts as possible. The first part consisted of nutritional advice for healthy living. The second part consisted of an overview of physical activity, ways to become physically active, and what is needed to live a physically active lifestyle. The third part consisted of the benefits of healthy eating, living, and physical activity. There are many great and beneficial reasons to live a healthy and active lifestyle that we wanted to extend to the entire Racers for Christ group.

Dongjiao Liu & Hao Jiang – Biological Science
Mentor: Dr. Kate He
Predicting the Spatial Distribution of an Invasive Plant,* Lonicera japonica*, Based on Species Occurrence Data from Two Watersheds in Western KY and TN
The invasion of alien plants has serious ecological and economic consequences. Geographic factors including human disturbances and habitat characteristics such as land cover, terrain, water and soils play an important role in plant invasion. However, the spatial distribution of most invasive plants is poorly documented, the path of dissemination is sketchy and the mechanism of spatial dispersal is mostly unclear. This project examines and compares the spatial distribution of a successful invasive plant, Japanese honeysuckle (*Lonicera japonica*), in two watersheds of similar size but ecologically distinct in Western Kentucky (Ledbetter Creek) and Western Tennessee (Panther Creek). The occurrence data of Japanese honeysuckle and nine environmental variables were collected and measured from a total of 283 random plots at the two watersheds. A spatial logistic regression model was developed to identify the factors that contribute most to the spread of this invasive plant. Our results show that the spatial distribution of this invasive plant appears to be different at the two watersheds. The Ledbetter Creek watershed with heavier anthropogenic disturbances has a greater distribution of Japanese honeysuckle than the forested Panther Creek Watershed. The spatial regression model indicates that the distance from the main road, soil moisture, light intensity, and plant species richness of each plot were significantly correlated with the spatial distribution of invasive species at the Ledbetter Creek Watershed. However, elevation was the only significant factors in relation to the spatial distribution of Japanese honeysuckle at the Panther Creek Watershed. Furthermore, our results suggest that the invasion risk is strongly linked to anthropogenic disturbances.

Robert Long-Mendez - Integrated Studies
Mentor: Dr. Ann Beck
Welcome Foreign Student Through Recreation
The spring 2009 semester my Introduction to Recreation and Leisure Services we were required to complete a 15-hour Service-Learning Project. Projects were to be completed at area facilities that provide recreation and leisure services. Each student is also required to keep a reflection journal and submit a poster for Scholar's Week. Service-Learning is when a student provides an outside organization, which applies topics covered in class, with meaningful service. Through this the student can gain something that a classroom setting could not provide, or experiential learning. I chose to participate in the English as a Second Language program. They pair you up with a foreign student and you meet for an hour or two and practice conversation skills. To take this a step further I decided to explore recreation and leisure opportunities in this area with this student. Through this project I learned the importance of recreation and leisure, especially through the eyes of a foreign student and that the various levels of government provide most of the free and cheap recreation and leisure opportunities. This project has given me a good friend from China. As we explored these opportunities in and around Murray we found much in common. I gain much comfort knowing that I could have this with someone from literally the other side of the planet. I also help a foreign student feel welcome in this part of the world and come to appreciate Murray as I have.

Seth Lovan, Brian Diffenderfer, & William Mitchner – Outdoor Recreation
Mentor: Dr. Roger Weis
Basic Aid Training (BAT)
Our project was completed with help through the American Humanics program here at Murray State and The American Red Cross. Our poster presents a project that was done for a Service Learning project at the Calloway County Middle School on November 18th, 2008. Our project delivered information that the students as citizens in the community needed to know about basic first aid and response to disasters. Done in large part with experience that we as a presenting group had in the Emergency Medical field, our presentation stressed the importance of taking the time to step back in situations, analyze, and make appropriate decisions that would keep a situation from accelerating to more dangerous and complicated levels.

Amanda Main - Wildlife Biology
Mentor: Dr. Maeve McCarty
Island Biogeography

A general approximation for the number of species in islands is given by the equation S=CAZ, where S is the number of species of a given taxon found on the island, and A is the area of the island. C is a parameter that depends on the taxon and biogeography region. Z is also a parameter that changes very little among taxa or within a given taxon. The theory of island biogeography proposes the number of species found on the island is determined by immigration, emigration, and extinction. Over time extinction and immigration result in an equilibrium level of species richness. There are a few influencing factors such as the size of the island, climate, and human activity. The species curve is an approximation of real curves obtained by censuring local mainland bird faunas. The individual curve measures the number of individuals found in the various species-abundance classes. When combining these curves you can find the equation log S = 0.263 log J/m + 0.317. If an island's climate is more or less uniform you can use the linear equation J=pA, where p is the density of individual organisms. When you substitute the previous equation into this one you get S=CA0.263. This is the framework of Preston's canonical hypothesis. To discover the species richness on an island there are a few equations that can be applied that factor in the number of species and area of the island.

Amanda Main - Wildlife Biology & Philip Berardi – Biological Science
Mentor: Dr. Howard Whiteman
Treefrog Population Dynamics

Amphibian populations are in global decline due to pathogens, habitat destruction, and pollution. Due to their close dependence on water, amphibians are good bio-indicators of the health of wetland areas. Three tree frog species are native to Western Kentucky: *Hyla Avivoca*, *Hyla cinerea*, and *Hyla chrysoscelis*. All three species do not migrate more than 5 km. Houses, roads, and dry seasons keep these populations stationary. For all three species, not much is know about population size, local migration trends, or lifespan. Murphy's Pond is a bald cypress swamp nature preserve which is home to all three species. In this research, we wish to individually tag frogs and track their movements toward and away from the pond seasonally. To determine the age of frogs caught, we will use histology to analyze the rings in the bones of toes clipped upon capture. Hopefully with the knowledge gained, an idea of the health and stability of frog populations can be obtained.

Michael Marsh – Organizational Communication, Marcus Wilson & Ashley Rawlings - Sociology
Mentor(s): Dr. Roger Weis & Ms. Jan Basile
Drop It Week!
"Drop It Week!" was a five-day long process where college students were given the chance to get involved with the local thrift store Angels Attic. In this program, donation bins were placed in specific dormitories (residential colleges) under approval from the dorms Residential Director. Students were then given the opportunity to donate any articles of clothing to the donation bins in their dormitory. The format of this program consisted of two different processes: the Pre-implementation Process and the Implementation Process. In these processes, members of the formed committee created flyers, a public service announcement, and other forms of advertisements. Then, the committee placed the donation bins inside dormitory lobbies to ensure students will be aware of the programs activities. After donations bins were full, the committee would pickup articles of clothing from bins, and brings them to Angels Attic.

Andrew Mattmiller, Christina Jackson, Bradley Oliver, Dan Varonin, & Kevin Witbrodt – Biological Sciences
Mentor: Dr. Alexey Arkov
Using The Fruit Fly As A Model System To Understand Germline Development
Many human genes associated with diseases have their counterparts in the fruit fly *Drosophila*. Therefore, studying genetics of *Drosophila* is likely to provide insights into the genetic causes of human disorders. Our study focuses on the identification and analysis of novel genes and their products that control development of reproductive cells and tissues (germline). During development the germline cells give rise to sperm and egg and therefore ensure continuity of the life cycle. We have isolated new mutants that affect germline development and are in the process of detailed characterization of the mutant genes. In addition, our data indicate that germline development has a unique metabolic profile and we study proteins that are responsible for the unusual metabolism in the germline. Results of our study are likely to be medically relevant and may improve our understanding of human genetics and development.

Corey McBee - Political Science & Public Relations
Mentor: Dr. Ann Beck
The Effectiveness of Parties in Legislative Body Leadership Elections
This work will examine the effectiveness of parties in deciding legislative body elections. In it I will present a rational choice argument for the collective action problems legislative bodies face when selecting their leaders. The focus will be on the 2009 Tennessee state speaker of the house election.

Sean McElwain - Liberal Art
Mentor: Dr. Barbara Cobb
Study of Free Trade on Jamaica / Unindustrialized Nations
Examine the effect that the injection of free trade had on Jamaica's degrading economy, and possibly the effect free trade would have on other unindustrialized nations.

Cara McHugh – Theatre & Political Science
Mentor: Dr. Ann Beck
Fact vs. Fiction
My paper will debate if the film *JFK*, the film or play *Frost/Nixon*, and the play *Information for Foreigners* rely on entertainment tactics to produce a high gross rather than simply relaying the true political history to dependent audience members.

Elizabeth Nicole Mills - Geosciences
Mentor: Dr. Haluk Cetin
Analysis of Historic Aerial Photographs for Archaeological Sites Within Fort Campbell, Kentucky-Tennessee
Europeans initially settled the lands that fall within the Fort Campbell Military Reservation in the late 1700s. Through time, scattered outposts and homesteads gave way to the development of rural communities and organized towns. This development ceased in 1942 when the United States Department of War established a training facility in the area. Initially designated Camp Campbell, the development of this military complex began with both the construction of military facilities and the demolition of nearly every structure predating the camp. Prior to the establishment of the camp, the Department of War acquired aerial reconnaissance photographs of the area. This poster presents the results of a systematic survey of aerial photographs collected by the United States Department of War in 1941. These photographs have preserved a record of the Great Depression Era cultural landscape and are a useful tool for modern researchers. The photographs, as well as records for previously documented historic features within them, were examined using ArcMap 9.3. This survey resulted in the identification of over 1300 historic structures and nearly 340 miles of historic roads. The resulting data were combined with various historic documents, photographs, landowner maps, and modern archaeological data in order to provide a comprehensive research tool for archaeological investigations.

Jessica Moore - Vocal Music Performance & Chemistry
Mentor: Dr. Randall Black
The Castrati in Opera
During the 1600 and 1700's in Italy, thousands of young boys were castrated annually in hopes to preserve their soprano singing voices and help them escape their impoverished lives. This presentation intends to examine the Castrati and their effects on opera. It will examine the history of castration, emasculation, and of eunuchs from antiquity, and how the practice gained popularity in 17th century Italy for the sake of music. Additionally, it will explore the lasting legacy that the Castrati singers have left on the world, from the Travesti roles of the classical era to modern day pop music.

Katelyn Morosky - Political Science
Mentor: Dr. Ann Beck
Globalization of Bailouts
In lieu of the present U.S. Stimulus bill and our economic crisis, a broad view of other major world economies in their past efforts in a bailout plan is being examined. Based on the perceived future success and the means in which the bailout monies were distributed an evaluation on where America fairs compared to the results of other countries that faced similar economic distress. A more concentrated focus may be shifted when looking at Germany's post World War II economy, should enough similarities be drawn between Germany and the United States in their first years post the Iraq invasion.

Alex Muller - Special Education
Mentor: Dr. Kelly Roger
Hoofbeats of Hope, Inc.
During the 2009 spring semester, students enrolled in REC 101 - Introduction to Recreation and Leisure Services were required to complete a 15-hour service learning project. My service-learning project involved volunteering at Hoofbeats of Hope, Inc. in Puryear; TN. Hoofbeats of Hope, Inc. is an organization that provides therapeutic horseback riding for people of all ages. Through my project I was able to help individuals with physical or mental disabilities and in turn I created a trusting bond and maybe even friendship with these individuals. I was in direct contact with individuals and animals during my hours. I was able to be around riders and their families as well as help with equine care.

Calla Murdock - Nursing
Mentor: Dr. Jessica Naber
Stress Level and Management Skills of Admitted Baccalaureate Nursing Students
This study is to review the stress levels and the stress management skills of baccalaureate nursing students who have been admitted to the baccalaureate nursing program at a rural public university. Subjects (n=95) answered a questionnaire to gather information about stress levels, causes of stress, stress management skills, and the use of these skills. The results were analyzed using descriptive statistics. Stress levels through the program and stress levels by gender were also analyzed using analysis of variance (ANOVA). There was no significance with the stress levels by semester (p= .051), showing that each semester of subjects all had high stress levels. There was significance when stress levels were compared by gender (p= .007), showing that female subjects had higher stress levels than male subjects. Subjects also responded that students should be taught stress management skills upon admission into the program (n=86, 90.5%). This study found that while baccalaureate nursing students have high stress levels each semester in the program, stress management skills should be taught to help students identify causes and manage their stress.

Makayla O'Neill - Political Science
Mentor: Dr. Ann Beck
National Security Changes: The Response after September 11, 2001
United States' national security policies have changed drastically to reflect the changes in the international environment. These national security polices include advancing effective democracies to cure the ideology of terrorism and building structures and institutions within the United States that are needed to carry out the fight against terrorism.

James Osborne - Political Science
Mentor: Dr. Ann Beck
A Comparative Evaluation of the British and German Electoral Systems
The British electoral system works well in a country the population is fairly homogenous. It is the author's thesis that in non-homogenous countries a mixed member system such as is employed in Germany would be more responsive to the whole.

Ryan Parish - Geoarchaeology
Mentor: Dr. Tom Kind
A Chert Sourcing Study: Visible/Near-Infrared Reflectance Spectroscopy at the Dover Quarry Sites, Tennessee
Chert sourcing (provenance) studies are a promising area of research within the field of Archaeology. Native Americans utilized chert (flint) to craft many of their stone tools necessary for survival. This component of their material culture is often the only thing that remains of past occupants. Chert provenance studies use a variety of techniques to trace a stone tool back to its original place of procurement. This information can then be used to study prehistoric migration routes and trade networks. In the current study geologic samples of various chert types were analyzed using a new non-destructive technique called Visible/Near-Infrared Reflectance (VNIR) Spectroscopy. A case study of four prehistoric chert quarry sites in and around Dover, TN was used to test the abilities of this technique. Results demonstrate the potential application of this method to chert provenance studies and may contribute to our understanding of prehistoric life.

Robyn Parker – Liberal Arts, English & Multicultural, Class, & Gender Studies
Mentor: Dr. Barbara Cobb
Race and Identity in African-American Literature
Works of literature from African-American authors often deal both directly and indirectly with the black experience, and its effect on identity development. We can trace changing schools of thought not only through what happens to the characters in these works, but by the setting of the work and the historical context in which it is written. Throughout the twentieth century, as African-Americans strive for legal and social equality, their identity development has worked on its own unique model. However, in that struggle to prove that skin color is an arbitrary determinant for discrimination and prejudice, they have also proven that race, though providing a sense of community to its members, becomes an arbitrary marker of one's true identity.

Justin Parrish – Agriculture Science Technology, Daniel Hayden & Josh Miller – Agribusiness, & Joshua Scott – Agriscience/Agronomy
Mentor(s): Dr. David Ferguson, Dr. Andy Bailey, Bobby Hill, & Tim Lax
The Effects of Fungicide Treatments on Dark Tobacco
This experiment compared seven fungicide treatments with combinations applied at various times. The whole experiment received 0.5 lbs of mefenoxam per acre on June 5th as preplant incorporated. All plots were set on June 10th with the PD 7302LC variety. The plant population was 4900 plants per acre and was set with 40 inch row spacing and 32 inch intrarow spacing. The 1st cultivation and four week treatments were applied on July 8th. Layby (last cultivation) and six week treatments were applied on July 22nd and July 23rd. The eighth week treatment was applied on August 12th. All mefenoxam (RidomilGold) treatments were applied to the soil at 0.5 lbs a.i. /acre. All azoxystrobin (Quadris) treatments were applied at 0.13 lbs a.i./acre as a foliar treatment. The seven treatments were: Treatment #1 was untreated; Treatment #2 was mefenoxam applied at first cultivation; Treatment #3 was mefenoxam applied at first cultivation and Layby; Treatment #4 was azoxystrobin applied at 4 weeks; Treatment #5 was azoxystrobin applied at 4 weeks and 6 weeks; Treatment #6 was azoxystrobin applied at 4, 6, and 8 weeks; Treatment #7 was a combination of two mefenoxam treatments and two azoxystrobin treatments; The first mefenoxam treatment was applied at first cultivation and Layby and then azoxystrobin treatments were applied at 4 and 6 weeks. The yields from the 2008-2009 growing season will be measured and analyzed statistically.

Charles Perdue – Liberal Arts
Mentor: Dr. Barbara Cobb
Green Trucking
Tractor-trailers used to transport finished good and other raw materials continuously burn fossil fuels which are a limited resource and environmentally inefficient. While technological advances are being made that improve the amount of pollution being emitted, not enough of these alternatives are being implemented because of inconveniences (such as installation and maintenance) and the high prices. Because it is impossible to predict when revolutionary scientific advances will occur, there needs to be a gradual change for more stern laws for both trucking companies and governmental programs that use current existing technologies, to ensure that the negative effects on the environment are minimal but the supply can still meet the demand for national goods.

Brooke Phillips – Applied Mathematics & Lauren Schmidt – Mathematics & Computer Science
Mentor: Dr. Maeve McCarthy
The Mathematics of Indian Drums
We will discuss the mathematics of Indian drums with a focus on the tabla and mridangam. These drums have evolved over many centuries and are the only known drums with harmonic properties, making them in some sense the ideal drums. We will discuss solutions of the wave equation modeling the vibration of these drums. We will formulate an optimal design problem for the mridangam drum, in an attempt to determine if the historic ideal drum is mathematical optimal.

Joseph Powell – Major Undeclared
Mentor: Dr. Kelly Rogers
Murray-Calloway County Parks and Recreation
Students enrolled in REC 101 - Introduction to Recreation and Leisure Services were required to complete a 15-hour service-learning project. My particular project involved volunteering my time for Murray-Calloway County Parks and Recreation. I volunteered every Friday completing whatever tasks the Park Maintenance Supervisor assigned to me. By just showing up and working, I was making a difference in the way the park looked and the way it was kept up. With volunteering my time at the parks I have noticed a couple of things that tie in with the course objectives for REC 101. One is recognizing the different types of recreation and leisure activities along with the demographics of the people served. At the park people play disc golf, bring their kids to play on the playgrounds, and also play baseball on the fields. With the park being free and accessible almost any time, about everyone from every kind of background comes to the park. The second thing is that I realized the importance of leisure and its role in this society and in my own life. People like to have fun. It relieves stress and enables one to relax. Working for the parks of Murray- Calloway County has taught me that even the smallest amount of work makes a difference.

Tessa Powell - English Literature
Mentor: Dr. Kelley Wezner
Beyond the Breast: Frances Burney's Mastectomy
In August of 1810, Frances Burney developed pain in her right breast. After several consultations and examinations, M. Dubois and other surgeons diagnosed Burneys ailment as cancer of the breast, and proscribed a full mastectomy. During this period, operations were performed without anesthesia and under the control of males; moreover, doctors were viewed as harmful, greedy, and irreligious and therefore disreputable. Although fearful, Burney endured the operation with great courage, and recovered to live until the age of 88. Despite her admission that she could not even speak of this terrible business without nearly again going through it, Burney describes the horrific operation in full detail in a letter to her sister. This discrepancy raises questions about Burney intent in disclosing such a personal experience of helplessness and exposure. Burney relives the operation to gain control over the situation and her body. She uses the letter as a form of therapy to cope with her fears of the unknown, and she documents the procedure accurately, providing an example and historical account of eighteen-century physic. Most importantly, though, Burney writes the letter to gain back her femininity after it has been physically removed.

Rui Qu – Journalism & Mass Communications
Mentor: Dr. Debbie Owens

Women in Television News in China: Presence, Story Assignment and Source Selections

A content analysis of 20 episodes of *CCTV News* during a period of 6 months shows that women are treated discriminately in television news in China. Although women predominate the newscasts as reporters, female correspondents are segregated in story assignments. They are less likely than males to be assigned to cover "harder" news. Men are more likely than women to be quoted as expert sources. There is no significant difference between male and female reporters in their selection of men or women sources.

Tara Radtke - Elementary Education
Mentor: Dr. Sharon Gill
Loris Alert: Living the Rush
This project primarily involves writing and illustrating a piece of informative fiction suitable for use in the elementary classroom. The story, which I am tentatively calling Loris Alert, Living the Rush, will feature a small, arboreal primate of Southeast Asia known as the slow loris. The sad truth is that lorises are often captured - albeit illegally – and sold on the black market. Some are purchased under the false pretense that they would make good pets, while others are bought for various body parts which are used in traditional local medicine as cures and charms. As a result of such negative human interactions, the slow loris is listed as endangered on Appendix I of the Convention on International Trade in Endangered Species. The purpose of this project is to raise public awareness and support for the conservation of the slow loris. The story is factual, as I will include information attained through research and experience. Through my artwork and use of alliterative, rhythmic language, I hope to create a visually and emotionally appealing piece of literature capable of attracting children of all ages. In the event that my book is published, I expect the majority of the proceeds to go toward the protection of the slow loris.

Kasey Ray - Spanish
Mentor: Dr. Susan Drake
The Impact of Indigenismo in Ecuador Portrayed through the Literary Aspects of Jorge Icaza
For hundreds of years the Incas have dominated the culture and art of modern day Ecuador. The Spanish destroyed the native population. Fast forward to twentieth-century Ecuador the indigenous people owned no land, were not respected by the population, and were degraded by the Ecuadorian government. During the 1920s and 1930s governmental power of Ecuador was in the hands of the military government. The government wanted to integrate the native population into the general population. The Indian society was the object of exploitation in Ecuador. From these inhumane acts of exploitation came indignities who were not Indians but could empathize with the indigenous people and fought to preserve the native culture. 1920s and 30s was crucial time of social, political, and economic injustice in Ecuador. A movement portraying the injustice and cruelty towards the Indians arose called Indigenismo. Indigenismo consisted of the indigenistas denouncing and protesting the abuses of the Indians in Ecuadorian society. Jorge Icaza is an indigenista, who could empathize with the natives and express the injustice, misfortunes, and mistreatments of the indigenous population in Ecuador through his literary works. Icaza expresses his emotions about what is happening to the Indians in Ecuador. This presentation will explore the literary technique of expression as Icaza denounces what was happening to the Indians and how they were mistreated in Ecuador.

Kayla Reno - History
Mentor: Dr. David Pizzo
Italian Colonialism in Africa: Ethiopia in Liberal and Fascist Italy, 1890s to 1941
While conquest was first attempted in the 1890s after the Italian occupation of Eritrea, it was decisively thwarted at the Battle of Adowa in March 1896. Here, the Ethiopians crushed the Italian forces, prevented colonization, and retained their independence. Most importantly, they humiliated the Italians, tarnishing their reputation as a European power, and providing the fuel which would later serve as their motivation and incentive in the violent conquest of the Ethiopian people. Their defeat ushered in the signing of a provisional treaty in October 1896. For the next thirty years, relative peace reigned in the area, and the Ethiopians enjoyed their independence. However, as fascism spread throughout Europe, and Italy fell under the rule of Benito Mussolini, the desire to avenge their bruised ego resulted in the Second Italo-Ethiopian War (1935-6). During this war, atrocities were committed and yet in the end, it was these actions which facilitated the final capture of Ethiopia as an Italian colony. It was at the conclusion of the War that Mussolini reached the zenith of his popularity, and was praised by leaders the world over. Furthermore, Mussolini was fascinated with the idea of a second Rome which he hoped to recreate. While the saw the Pope as a threat to his power, he also hoped to use him to expand his sphere of influence, and to recapture the glory that is so often associated with Roman civilization.

Evan Roberts & Kala Foy - Chemistry
Mentor: Dr. Edie Banner
Development of Functionalized N-Heterocyclic Scaffolds for Application in the Synthesis of Amphibian Alkaloids
An unexpected outcome of a reaction unveiled an efficient method to synthesize N-Cbz-L-prolinol from N-Cbz-L-glutamic acid in one step. This reaction warrants further investigation as this compound is an important chiral N-heterocyclic substructure (pyrrolidine) found in numerous natural products that exhibit bioactivity. This compound, and derivatives thereof, can be quite costly, thus optimization of this method would allow for the efficient and inexpensive production of prolinol derivatives from inexpensive amino acids. Further investigations into the scope of this reaction are underway to develop novel N-heterocyclic scaffolds that can be utilized in the synthesis of natural products.

Daniel Roe & Hailey Cook – Organizational Communication & Cheryl Tilley – Business Administration
Mentor: Dr. Roger Weis
Thanksgiving Bingo
Thanksgiving Bingo puts a holiday twist on the bingo game for the residents of Hickory Woods Retirement Center. Three students enrolled in Dr. Weis' nonprofit service learning class planned and implemented a program for senior citizens to enhance their health through mobile agility, fast thinking and hand-eye coordination. Thanksgiving Bingo allowed the residents to socialize with the younger generation by reminiscing on past memories of their childhood and families. The format of the program consisted of a friendly game of bingo and each winner was able to choose a prize from the basket of treats provided by Janice Howard. After several sessions of bingo, the residents were served refreshments brought by the students. Also, the residents enjoyed eating pound cake and drinking apple cider all while talking with the students. We want the older generation to feel valuable and appreciated by today's younger generation, if only for a couple hours.

Matthew Rowe, Brent Kelley, & Steven Beck - Occupational Safety and Health
Mentor: Dr. Tracey Wortham
Metal Fabrication Shop MSD Exposure
This presentation will include an analysis of ergonomic issues at a Metal Fabrication Shop in Western Kentucky. Three members of OSH 663 Applied Workplace Ergonomics visited the site to evaluate potential ergonomic risk factors for musculoskeletal disorders in Cutting, Bending, Forming and Loading Metal using techniques such as the NIOSH Lifting Equation, 2D Biomechanics, Liberty Mutual's psychophysical manual handling tables, Rapid Upper Limb Assessment, Strain Index and ergonomic checklists. An overview of the findings along with recommendations for reducing ergonomic hazards will be presented.

Leah Sallee – Occupational Safety & Health
Mentor: Dr. David Fender
Seatbelt Survey 2009
The American Society of Safety Engineers Student Section in the Occupational Safety and Health Department developed a research project looking at seatbelt compliance on the Murray State University campus. There were people posted around campus at various locations and times for several days. Vehicles were observed to see if people were utilizing their seatbelts. In the case there was a passenger, he/she was also observed. The type of tag displayed was also noted (blue, red, brown, green, university vehicle, est.). This was done in conjunction with public safety and the results were then also shared with them.

Jacob Sanders - Nursing
Mentor: Dr. Dana Manley
The Impact of Evidence-Based Practice on Pain Management Outcomes, Registered Nurses' Awareness of EBP, and RN's Overall Perception of Pain Management
Pain is a common experience by clients admitted to acute care facilitates. Pain management is a primary responsibility assumed by registered nurses caring for these clients. Effective interventions aimed at promoting evidence based practice related to pain management have the potential to improve evidence based practice utilization and pain management for clients. Methods. The purpose of this study was to see if an evidence-based practice (EBP) intervention will improve pain management outcomes, the RN's awareness of EBP, and the RN's overall perception of pain management. A quasi-experimental time series design was utilized. The intervention program consisted of a series of research based pain management practices that were conducted weekly for 4 weeks. Data collection tools consisted of a Clinical Effectiveness and Evidence Based Practice Questionnaire and a Knowledge and Attitudes Survey Regarding Pain Tool. Statistical analyses using computerized statistical analysis software (SPSS) and Excel are in progress. Preliminary findings are reported. Results. A convenient sample of 25 females and 1 male RN from two medical-surgical units participated in the research. The average age was 40 with an average of 9 years of RN experience with a range of 1 to 34 years of experience. Level of education consisted of 76.9% of RNs with an Associate Degree in Nursing, 19.3% with a Bachelor of Science in Nursing, and 3.8% unreported. Data included monthly pain management outcomes routinely collected by the facility. Discharged clients rated the statement, Staff did everything to relieve my pain as always, sometimes, usually, or never. These outcomes revealed no statistically significant changes in the control unit but there was statistical significance in the intervention group. Remaining statistical analysis is in progress on the Clinical Effectiveness and Evidence Based Practice Questionnaire and a Knowledge and Attitudes Survey Regarding Pain Tool with results to be available at Scholar's Week poster presentation. Implications The results of this study have clinical significance and implications for professional practice. Through the intervention, the RN's overall awareness and utilization of EBP were increased resulting in improved outcomes when managing the patient's pain. Furthermore, these findings impact practice as improved patient pain outcomes significantly improve the level of care and reduce the institution's costs.

Ryan Schuler – Management & Marketing, Sarah Williams, Chris Griffin, Brandon Jones, & Amber Langston - Marketing
Mentor: Dr. Timothy Johnston
Bristol Broadcasting Co.
The goal of this study was to determine the spending habits of MSU student both in and around surrounding counties and cities. This survey will potentially break down MSU student into target markets which will allow Bristol Broadcasting to better advertise to these markets. Finding from a survey of 150-200 students will be presented.

Michael Schupp – Criminal Justice
Mentor: Dr. Kelly Rogers
Service Learning at Murray City Parks
REC 101 Introduction to Recreation and Leisure Services is a Service Learning Scholars Course. Students must complete a 15- hour project and keep track of their progress in a reflection journal. This is not simply community service however. It is important to incorporate learning into the service project. The project itself must have a positive impact on everyone involved. One must assess which of the skills s/he has that would be beneficial to the project. One must also reflect upon the progress of the project. This project has been good for me because it has provided me with more opportunities to be involved in the community. I have also had the opportunity to help make improvements in the park. In addition, I have met a lot of the city park staff. In conclusion, this service-learning project had been a good experience as a whole and is a good way to learn skills needed in future jobs.

Jessica Simpson - Middle School Education
Mentor: Dr. Pat Seiver
Charting a Route: International Exceptionality
Of the developed nations of the world, students of different countries often show patterns of varying aptitude in distinct fields of study. These aptitudes, when compared internationally, provoke interest as to how and why a particular nation's students excel over their peers in another educational system. Based on international testing in Mathematics, Science, and Language Arts, this paper will examine the instructional methods, attitudes, and philosophies of the top-scoring country or countries in each academic discipline. This paper will explore the hypothesis that national academic aptitudes reflect observable methods, which are, in turn, affected by a society's educational philosophy, instructional techniques, and teacher training. It will then consider the application of those methods and the potential they have to improve upon or modify techniques being used in the United States.

Nathan Smith - Organization Communication
Mentor: Dr. Kelly Rogers
Murray-Calloway County Parks and Recreation Department
During the 2009 spring semester, students enrolled in REC 101 - Introduction to Recreation and Leisure Services were required to complete a 15-hour service-learning project. My service-learning project involved general park maintenance while volunteering at the Murray-Calloway County Parks and Recreation Department. Through my project, I helped with whatever general maintenance tasks that needed to be completed around the park. Due to recent ice storm damage I mostly helped clean up downed tree limbs the first couple of weeks of my service. A positive impact that working at the park has had on me is seeing and understanding how the park system works. My service helped the community by providing a cleaner and safer place for people to enjoy their leisure time.

Meredith Stevenson - Applied Mathematics
Mentor: Dr. Ted Porter
A New Fuzzy Time Series Method for Forecasting Enrollments
In this presentation fuzzy time series are defined. Fuzzy forecasting models for predicting university enrollments by Song & Chissom and Sah & Degtiarev are introduced. We propose a new fuzzy time series model for forecasting enrollment based on the percentage that the enrollment increased or decreased. We compare our approach to the methods Song & Chissom, who simply used enrollment numbers, along with Sah & Degtiarev, who used intervals of increase and decrease. While both of the aforementioned methods used data from the University of Alabama, we will be using enrollment data from Murray State University from 1980 through fall 2007.

Michael Suiter – Public Administration, Lacey Harris - Advertising, & Shannon Turnley – major unknown
Mentor: Dr. Roger Weis
Thanksgiving Food Drive
Thanksgiving Food Drive is a program created in association with Need Line of Murray-Calloway County that set out to collect food to distribute to needy families in the Murray-Calloway County area. The team in charge created flyers and put out collection bins for anonymous participants to leave their foodstuffs. The participants were encouraged to leave traditional Thanksgiving Day foods, such as stuffing and traditional vegetables. Our goal was to improve the health and wellness of needy families in the area. We achieved our goal of helping four families, and ended up sending food packages to five families.

Brett Taylor & Caroline Peake – Organizational Communication, Adam French – major undecided, Latika Hudspeth – Business Administration, Ashlee Pearson – Criminal Justice, & Angela McGahee – Electronic Media
Mentor: Dr. Roger Weis
No Boys Allowed (NBA) / Not for Ladies (NFL)
No Boys Allowed (NBA) is a program for adolescent girls that are held monthly by Main St. Youth Center of Murray, KY. Similarly, Not For Ladies (NFL) is a program for adolescent boys that is also held monthly by Main St. Youth Center. To fulfill the service learning project requirements of YNL 350, two groups of three students each planned events for these two programs. The two-hour-long event held for NBA encouraged abstinence, while in the event for NFL, the group discussed how to treat a lady. The NBA and NFL programs are designed to incorporate discussion of hot topics and pressing issues relevant to adolescents and at-risk youth in our community. Teachings promoting abstinence are meant to affront the high rates of teen pregnancy within the area.

Staci Carver Todd & Pam Bell – Sociology & Shelley Evancho - Psychology
Mentor: Dr. Roger Weis
The Party
"The Party" is a packaged service-learning project organized and provided by the American Red Cross to teach HIV awareness and prevention to teenagers. Pam Bell, Shelley Evancho, and Staci Carver Todd joined together in Dr. Weis' Youth and Non Profit Leadership class to make this presentation at Calloway County high school to Ms. Benson's freshman and sophomore class, to Ms. Lyle's senior class, and to students from Laker Pride Center. The presenter group went through a four-step process to convey the message of HIV awareness and prevention. These steps were: a HIV transmission game, a Power Point presentation on the statistics of HIV contraction, prevention, and transmission, "The Party" 13 minute video and a question and answer session. Based on a summative evaluation, "The Party" service-learning project is a timely and effective presentation to the teenagers at Calloway County high school.

Robert Tokosh - Agriculture
Mentor: Dr. Iin Handayani
Assessing Carbon Pools in Riparian Soils And Sediments of Two Contrasting Creek Ecosystems
Soil organic carbon is one important indicator of ecosystem productivity. Type of ecosystem (i.e., forest vs. agriculture) and time of the year may influence soil organic carbon pools. The objective of this study was to determine the total organic carbon (TOC) and particulate organic carbon (POC) in riparian soils and sediment collected from contrasting watershed ecosystems. Study sites were located in Panther and Ledbetter Creeks, Kentucky Lake. Ledbetter Creek was selected due to heavy agricultural activities, while Panther Creek is located in a forested ecosystem. Soil samples were collected during August and November 2008. Five composite disturbed soil samples were collected from the surface of riparian soils and sediments. Soil organic carbon in Panther Creek varied greatly from August to November sampling time. Panther Creek's August TOC was 70 g/kg and the November was 41 g/kg. Ledbetter Creek has similar amounts of TOC in August and November, but has high amounts of POC during August. During August and November, the POC was 35 g/kg and 26 g/kg, respectively. These values were significantly higher than Panther Creek's average of 20 g/kg in August and 23 g/kg in November. The results show that soil organic carbon pools can change spatially and temporally. These changes may control the ability of riparian soil and sediment to store carbon, as well as process the pollutant.

Robert Tokosh - Agriculture
Mentor: Dr. Iin Handayni
The Effects of Five Forage Grasses on Soil Properties
Grasslands cover a proportional area in the terrestrial biosphere and their importance is critical to help prevent soil degradation. Grasses help to stabilize soil particles, reduce leaching, add organic matter, and reduce compaction. The objective of this study was to determine selected soil properties under five forage grasses in silt loam soils following five years of planting. Specific grass types were selected by field availability in the area of Calloway County, Kentucky. Soil samples were collected from the fields of Bermuda grass (*Cynodon dactylon*), tall fescue (*Festuca arundinacea*), rye grass (*Lolium multiforum*), Johnson grass (*Sorghum halapense*), and mixed grasses at the depth of 0-15 cm and 15-30 cm. After collecting, the samples were measured for soil total carbon, bulk density, and porosity. The results show that the surface soils under mixed grasses have the highest total porosity (62%). The lowest soil porosity (52%) and the highest bulk density (1.2 g cm-3) were found in Johnson grass fields. Bermuda grass fields provide the highest total carbon (31g kg-1) and the lowest bulk density (1.0 g cm-3), while rye grass fields have the least amount of total carbon (13 g kg-1).

Amanda Trites - Geosciences
Mentor: Dr. Haluk Cetin
Identifying Areas of Damage in Calloway County During the January 2009 Ice Storm Using Change Classification of Remotely Sensed Imagery
This project centers on identifying areas of damage throughout Calloway County, Kentucky during the January 2009 ice storm using change classification of remotely sensed imagery. The primary goal of this project is to ascertain any changes between 2004 Quickbird imagery of Murray and its surrounding area and aerial imagery of specific locations throughout the same area obtained in the days following the ice storm in January 2009 that left thousands without power. The change detection methods used to map changes between the imagery, both unsupervised and supervised techniques, are analyzed to determine whether any areas of damage caused by the ice storm can be identified.

Armando Valdes – Outdoor Recreation
Mentor: Dr. Kelly Rogers
Service Learning at Paris Landing State Park
My project took place at Paris Landing State Park, which is run by the State of Tennessee. The Project mainly involved trail maintenance, marking, and some trail making. Trail systems give a good opportunity for people of all ages to get out and enjoy nature in a mostly natural setting. The creation of trails gave me a chance to turn a previously unused area into a place that nature enthusiasts can use and enjoy safely.

Subhadra Vemu - Chemistry
Mentor: Dr. Bommanna. Loganathan
Levels of Endocrine Disrupting Pollutants in Wastewater and River Water Samples from Western Kentucky
Some pesticides and industrial chemicals can affect animal physiology by mimicking the effect of endogenous hormones. Bisphenol-A (2, 2-bis (hydroxyphenyl) propane (BPA), an industrial chemical is a well known endocrine disruptor. Every year, over six billion pounds of BPA are used in the manufacturing of epoxy resins and polycarbonate plastics used in a wide variety of domestic products. Because of BPA's high volume production and extensive use in plastics, there is a widespread environmental contamination and well documented human exposure to BPA. To our knowledge, there exist no studies conducted on BPA contamination levels in western Kentucky regional waters. In this study, we measured BPA levels in Murray Wastewater Treatment Plant (WWTP) samples, Bee Creek (upstream and downstream), Clarks River and Kentucky Lake water. Five sampling events were conducted from December 2008 through March 2009. The samples were analyzed using BPA specific Enzyme Linked Immunosorbent Assay (ELISA). They revealed that measurable levels of BPA were found in all water samples analyzed. Among the samples analyzed, WWTP influent had highest concentration of BPA (Range 134 to 153 ng/L; Mean: 140 ng/L), followed by effluent (Range 105 to 142 ng/L; Mean: 126 ng/L). Upstream Bee Creek contained lower concentration (Mean: 103 ng/L) and downstream (Mean: 134 ng/L), indicating input of BPA from WWTP to the Bee Creek. Clark River (Mean: 116 ng/L) and Kentucky Lake (HBS) (Mean: 133 ng/L) had comparative concentrations to that of Bee Creek or WWTP samples. For loading estimate purposes, 24-hr composite samples were also collected from WWTP. In influent and effluent composite samples, BPA concentrations ranged from 118ng/L to 150ng/L and 119ng/L to 136 ng/L respectively. The WWTP sample results revealed that BPA is not degraded or lost during the wastewater treatment processes. Therefore, significant quantities of BPA enter the receiving waters such as Bee Creek and Clarks River.

Rebecca Vergho - Creative Writing
Mentor: Ms. Ann Neelon
Portrait of a Woman
In the story Portrait of a Woman, meet Fiona, a young girl with great dreams for her life but currently has no life. Enter Francesca, the bossy/chatty girl who magically pops out of a painting that Fiona finds. Very quickly Francesca takes over Fiona's life and gets on her last nerve. In order to get rid of Francesca, the two girls embark on a search to find the source of the magic that produced Francesca. In the process, this becomes a story of friendship and growing.

Brittney Viers – Biological Science
Mentor: Dr. Dayle Saar
The Impacts of Loblolly Pine (*Pinus taeda*) on Native Early Success ional Plant Communities in Western Kentucky, Western Tennessee, and Southern Illinois
Invasive plants have been established in North America for many reasons, agricultural and ornamental purposes being the most common. However, plants have also been introduced for industrial purposes, wildlife food and habitat, and erosion control. Loblolly pine, *Pinus taeda*, is native to the southeast U.S. and is one such tree that has been planted in various locations throughout the Midwest and southeastern U.S. for harvesting pulp wood, forest reestablishment, and erosion control. Pines in general have the tendency to be invasive because of their life history traits, including: their small seed masses, short juvenile periods, and short intervals between large seed crops. Therefore, when planted for monoculture uses, pines have caused natural ecosystem functions to be relinquished. Specifically, *Pinus taeda* has demonstrated that it can spread rapidly outside plantations into early success ional habitats. A further concern is that loblolly pine currently is not listed on conservation watch lists and there have not been studies to determine its effect on native early success ional plant communities in western Kentucky, western Tennessee, and southern Illinois. The purpose of this study was to determine if the homogenization of regenerated loblolly pine has negatively affected native early success ional plant diversity, abundance, and soil characteristics. Seven study sites were chosen, each with an early success ional control transect and a regenerated loblolly pine transect. Vegetation surveys were conducted, soil samples were collected, and canopy cover measurements were recorded in each transects and compared. Results suggest that the soils data differ significantly between control and loblolly pine transects.

Jeff Viniard - Geographic Information Systems
Mento: Dr. Haluk Cetin
Change Detection in Louisiana Wetlands Using Object-Based Image Analysis
The bayous and wetlands of southern Louisiana provide not only a rich ecosystem for plant and animal wildlife, but also shield inland areas from the catastrophic effects of flooding. For a variety of reasons, the surface area of these wetlands has been decreasing for many years, to the detriment of Louisiana's inhabitants. This study will analyze the change in land cover patterns in the area of southern Louisiana as mapped by various sensors in the Landsat program from 1985 to the present. Additionally, special interest will be paid to imagery from before, during, and after the 2005 hurricane season. This will help illustrate how much a single, eventful storm season can change land cover in the coastal areas.

Ryan Walls - Mathematics
Mentor: Dr. Wesley Calvert
A Computable Embedding of Knots to Labeled Graphs
A fundamental problem in knot theory is determining when two knots are equivalent. Mathematicians develop invariants to ease the process of determining equivalent knots. This presentation describes an invariant for knots by defining a function for embedding knots into labeled graphs. Methods of computability theory and model theory are used to demonstrate that this embedding is a computable transformation from the class of knots to the class of labeled graphs.

Jenny Wilkins - Psychology
Mentor: Dr. Ian Norris
Flirting and Jealousy in Committed, Heterosexual Romantic Relationships
Previous studies that have examined flirting and jealousy have looked at how the jealousy a participant feels varies when the characteristics of the jealousy-inflicting situations are manipulated. Men tend to experience more jealousy in the light of a sexual infidelity than an emotional infidelity, and women tend to experience more jealousy in the light of an emotional infidelity than a sexual infidelity (Bassett, 2005; Becker et al., 2004; Berman & Frazier, 2005; Buss et al., 1992; Cramer et al., 2001; Harris, 2002; Yarab, Allgeier, & Sensibaugh, 1999). A couple of these studies looked at flirting behaviors, but it does not seem like there has been much research done that looks at flirtations only. This study will look at the effects of status and attractiveness of a flirter on the jealousy-related emotions of the participant and perceptions of their partners mate value. I propose that male participants will be the most jealous when a high-status male flirts with their mate and that female participants will be the most jealous when a highly attractive female flirts with their mate.

Ethan Williams - Recreation and Leisure Services
Mentor: Dr. Kelley Rogers
Frisbee for the Park
My project allows me to reflect on what I can do to benefit others as well as gain experience by planning and organizing my event. My project is going to be a Frisbee golf tournament at the Murray/Calloway County Park. Its purpose is to raise money for the local park and bring people together in the community. Frisbee Golf is readily available\le and a highly participated sport so the potential impact of this tournament could be huge. It also allows people the opportunity to participate in a leisure activity. This project benefits the community by helping the park raise money along with exercising and socializing.

Kyra Williams - Geosciences
Mentor: Dr. Hulak Cetin
Change Detection Analysis of Erosional and Depositional Features Along the Ohio River Using Remotely Sensed Data
The purpose of this project is to perform a change detection analysis of erosional and depositional features along the Ohio River in the state of Kentucky including a case study of Hickman County. This project discusses the important erosional processes and depositional factors that affect the landscape changes due to rivers' and streams' erosional and depositional threats to river banks. Two Landsat imagery scenes from row19 path33, row20 path33 and row22 path33 collected 5 to 10 years apart were classified for the change detection. The results from the change detection will analyze the amount of erosion taken place on the features and provide examples of how to reduce erosion along river banks.

Michael Windle, Tim Shelton, Joshua Medeiros, Bryan & Propst - Marketing
Mentor: Dr. Timothy Johnston
Murray State Housing Trend Survey
This project is designed to measure student behavior and opinion regarding housing the Murray State Campus. The results of our survey were used to provide recommendations to the housing office that will allow housing to better motivate upperclassmen to remain on campus.

Joshua Woehlke - Secondary English Education
Mentor: Ms. Debbie Bell
The Content and Usage Revision Engine
This presentation reviews an in-progress design-demonstration study of a grading technique for English compositions. The method replaces standard editing marks with reference numbers that point to short, example-driven tutorials in a student manual. When students are unsure of how to correct a marked error, they may open their books to a tutorial that will guide them through the process. As tested, the system contains tutorials for over 100 common content and usage problems. Each tutorial takes approximately one minute to find and complete. The goal is to make the revision process faster, easier, and more effective while providing every student with individualized independent instruction. Preliminary results of the study will be available.

Ashley Wright - Business Administration
Mentor: Dr. Leigh Johnson

Do Incidents Outside the Workplace Create a Hostile Work Environment?

Title VII of the Civil Rights Act of 1964 protects employees from discrimination in the workplace that surface in the form of quid pro quo harassment and hostile work environment. A major issue the EEOC and the U.S. Court System is facing today is whether conduct outside the workplace should be permitted in filing and proving a hostile work environment charge. The Circuit Courts have differing judgments about this issue, producing no uniform protocol for the courts to follow. This thesis will argue that a uniform protocol must be reached concluding conduct in the non-workplace should be admissible in determining a hostile work environment. The fifth circuit found that episodes outside the workplace cannot be admissible in claiming a hostile work environment under Title VII of the Civil Rights Act of 1964 ruling stating a harassment claim, to be cognizable, must affect a person's working environment. The third circuit court also heard a case claiming incidents in the non-workplace generated a hostile work environment but found that these incidents outside the workplace were driven by animus towards a protected class employee by other employees, thus outside incidents do create a hostile work environment. To accomplish conformity, this issue should be heard by the Supreme Court and the Supreme Court should find that incidents in the non-workplace should be admissible when filing hostile work environment claims. Two of the twelve Circuit Courts have heard hostile work environment cases which claimed that episodes in the non-workplace created a hostile work environment.