MONDAY, APRIL 30, 2007

RECEPTION FOR PARTICIPANTS, FACULTY & OUTSIDE GUESTS
Coburn Dining Room
11:50-12:30 p.m.

AFTERNOON CONCURRENT SESSIONS

Department (s)	Bldg/Room	Presenter	Presentation Time
Poster Presentations	Coburn Dining Room	Michelle Ann Thornhill (CHE)	12:30-1:30 p.m.
		Allorie Smith (CHE)	
		Reilly Eason (CHE)	
		Rhett Barker (CHE)	
		Blake Waggoner, Debi Eley & Justin Montgomery (EGR)	
		Amber Roberts (PHY)	
		Robert Krauss (PHY)	
		Bekah Bothwell, Lorien Pirtle, Brook Chute & Brenn Johnson (PSY)	
		Laura Ladymon & Shari Smedley (SOBA)	
		John Ragon & Brendan Crozier (SOBA)	
		Nick Wilbur & Lucretia Goddard (SOBA)	
		Brandy Hughes & Brittany Sampson (SOBA)	
		Emily Staats & Tianikwa Haywood (SOBA)	
		John “Jack” Smothers (SOBA)	
		Andrew Ainsworth & Fred Fisher (SOBA)	
		Brett Jenkins & Laura Lund (SOBA)	
		Emily Orten, Erica Thomas, & Sherika Goodman (SW)	
		Barbara Reynolds & Carrie Jones (SW)	
		Katrina Parker, Candra Pennington, Emily Watlington (SW)	
		Katie Daniel, Kirby Maxwell, Julie Mitchell & Amanda Pennington (SW)	
		Jennifer Tharp, Kasey Cobb, April Moore & Janelle Musser (SW)	
		Suzanne Short, Alisha Cochrane, Lindsey Wallach (SW)	
		Dusty Ruehling, Patty Moyers, Lauren Goley, Liz Cannava (SW)	
ART/COM/MUS	D-3	Ariel James Gee (ART)	1:40 p.m.
		Josh Wilkerson (ART)	2:00 p.m.
		Brynn Miller, Ruthann Pike & Lindsay Shephard (ART)	2:20 p.m.
		Bradley James Carter (ART)	2:40 p.m.
		Chad Karnes (ART)	3:00 p.m.
		Allison Steele Benson (ART)	3:20 p.m.
		Alison Ball, Kat Douglas, Nic Pfost & Beth Saxe (COM)	3:40 p.m.
		Kelley Groover (MUS)	4:00 p.m.
		Beth Saxe (MUS)	4:20 p.m.
SOBA/SW	BAC-44	Matthew Gentry (SOBA)	2:00 p.m.
		Katie Daniel, Kirby Maxwell, Julie Mitchell & Amanda Pennington (SW)	2:20 p.m.
		Emily Orten, Erica Thomas & Sherika Goodman (SW)	2:40 p.m.
		Barbara Reynolds & Carrie Jones (SW)	3:00 p.m.
		Katrina Parker, Candra Pennington, & Emily Watlington (SW)	3:20 p.m.
		Jennifer Tharp, Kasey Cobb, April Moore & Janelle Musser (SW)	3:40 p.m.
		Dusty Ruehling, Patty Moyers, Lauren Goley & Liz Cannava (SW)	4:00 p.m.

Department (s)	Bldg/Room	Presenter	Presentation Time
BIO	PAC A-7	John Lee	1:00 p.m.
		Kevin Tosh	1:20 p.m.
		Jill Konkol	1:40 p.m.
		Luke Self	2:00 p.m.
		Justin Hutto	2:20 p.m.
		Heather Higdon	2:40 p.m.
		Scott Harden	3:00 p.m.
		Trey Thompson	3:20 p.m.
		Amanda Blankenship	3:40 p.m.
		Kenneth Lewoczko	4:00 p.m.
		Adam Foote & Noah Stearns	4:20 p.m.
		Joshua M. Hall	4:40 p.m.
	PAC B-27 (poster presentations)	Daniel Cathey & Will Hayden	11:00-11:50 a.m.
		Phillip Mitchell & Luke Self	
		Dustin Scott & John Lee	
		Hunter Stepp & Kenneth Lewoczko	
		Callie Bodnarchuk & Jada Butler	
		Reilly Eason & Adam Foote	
		Missy Ratliff & Morgan Neese	
		Jessica Guastadisegni & Kayli Anthony	
		Kevin Tosh & Edric Gaylor	
		Ashley Oldham & Allen Williams	
		Rhett Barker & Jennifer Hamman	
		Katy Williams, Laura Byrd & Marion Hocutt	
		Josh Hall & Trey Thomson	
CHE/PHY	PAC A-9	Sarah A. Conway (CHE)	1:00 p.m.
		Wesley H. Stepp (CHE)	1:20 p.m.
		Nathan Eckley (CHE)	1:40 p.m.
		Alydia Murrya (CHE)	2:00 p.m.
		Andrew McBride (CHE)	2:20 pm.
		Kelley Tate (CHE)	2:40 p.m.
		April Daigle (CHE)	3:00 p.m.
		Michelle Ann Thornhill (CHE)	3:20 p.m.
		Allorie Smith (CHE)	3:40 p.m.
		Reilly Eason (CHE)	4:00 p.m.
		Rhett Barker (CHE)	4:20 p.m.
		Robert Krauss (PHY)	4:40 p.m.
CSC	PAC C-17	Ben Goodwin	1:00 p.m.
		Jeremy Cathey	1:30 p.m.
		Kendal Hershberger & David Moses	2:00 p.m.
		Matthew Hammond	2:45 p.m.
		Matthew Dawson	3:15 p.m.
		Ben Townsend	3:45 p.m.
		David Moses	4:15 p.m.
CHR	JEN 325	Joshua Brian Krebs	1:00 p.m.
		Andrew Helms	1:20 p.m.
		Nicole Tosh	1:40 p.m.
		Alex Carr	2:00 p.m.
		Brent Parrish	2:20 p.m.
		Jessica Schranz	2:40 p.m.
		Kyle Clark	3:00 p.m.
		Matthew Elia	3:20 p.m.
		Landon Preston	3:40 p.m.
		Melody Pickerill	4:00 p.m.
		Joshua Tackett	4:20 p.m.

Department (s)	Bldg/Room	Presenter	Presentation Time
DMS	JEN 225	Dustin Martin (DMS-CSC)	1:00 p.m.
		Keith Young (DMS-COM)	1:30 p.m.
		Matthew Diggs (DMS-COM)	2:00 p.m.
		Jande Jackson (DMS-COM)	2:30 p.m.
		Aaron Hardin (DMS-COM)	3:00 p.m.
		Tyson Cadenhead (DMS-ART)	3:30 p.m.
		Drew Winter (DMS-ART)	4:00 p.m.
		Daniel Lindley (DMS-ART)	4:30 p.m.
EGR	PAC D-52	Justin Montgomery, Debi Eley, Jackie Deasy, Rabo Garba, Christian Christensen, Rachael French & Cassie Lutrell	1:30 p.m.
		Joshua Armacost, Joshua Brooks, Kerri Harwood, Debi Eley & Rabo Garba	2:00 p.m.
		Josh Shrewsberry	2:30 p.m.
		Jasmine Huang, Josh Shrewsberry & Rabo Garba	3:00 p.m.
		Blake Waggoner, Chris Singleton, Jasmine Huang, Jeremy Cathey, Kyle Swafford & Ruth Yates	3:30 p.m.
		Jeremy Sullivan, Josh Shrewsberry & Zack Jackson	4:00 p.m.
LAN/TESL	PAC D-53	Brianne Kobeck (LAN)	1:40 p.m.
		Bethany Hobbs (LAN)	2:00 p.m.
		Candace Todd (LAN)	2:20 p.m.
		Laura Dancy (LAN)	2:40 p.m.
		Craig Clark (LAN)	3:00 p.m.
		Katie Daniel (LAN)	3:20 p.m.
		Kimberly Walter (TESL)	3:40 p.m.
		Bethany Hobbs (TESL)	4:00 p.m.
		Brianne Kobeck (TESL)	4:20 p.m.
		Allysha Martin (TESL)	4:40 p.m.
ENG/HIS/PSC	PAC C-6	Nellene Benhardus (ENG)	1:40 p.m.
		John Crawford (HIS)	2:00 p.m.
		Rachel Campbell (HIS)	2:20 p.m.
		Chelsea Freemon (PSC)	2:40 p.m.
		Lawrence Derrick Lambert (PSC)	3:00 p.m.
		Joshua Pettigrew (PSC)	3:20 p.m.
		Alex Scarbrough (PSC)	3:40 p.m.
		Jordan Scott, Nathan Tilley, Meg Duke, Jenica Vandiver & Katherine Evans (PSC)	4:00 p.m.
	Student Lounge	Creative Writing: Ruth Barnes, Ben Glass, Ben Goodwin, M.J. Houston, Wes Stepp, Jared Swinney, Josh Abbotoy, Tiffany Collins, Matt Kingsley, Katherine Kipp, Brett Logan, Racheal Presnell, Sarah Stinson, Andrea Turner, & Tyler Whetstone	3:20-4:30 p.m.
		Other Student Poets (Sigma Tau Delta): Andrew Gray, Katherine Kipp, Renee Roberson	
ICS	PAC D-48	Loreto Maria Cervera Delgado	2:00 p.m.
		Mary Meimei Zhang	2:20 p.m.
		Cara Yates	2:40 p.m.
		Laura Tidenberg	3:00 p.m.
		Robyn Head	3:20 p.m.
		Nicole Tosh	3:40 p.m.

ABSTRACTS

ART

Fire as a Potential and Actual Dynamically Integrated as a Sculptural Artistic Element
Presenter: Ariel James Gee
Faculty Advisor: Lori Nolen

Fire is fascinating. It inspires fear and dread in the world, for it destroys everything it touches and claims thousands of lives. Yet, it symbolizes faith hope and love. It means life to and food to all of humanity. It holds so many references that can't be stripped away. We love firefighters and loathe arsonists. We are thrilled by pyrotechnics and fireworks but warn children who play with matches.

I don't know if there is one aspect of fire that is more valuable as an artistic subject. I know that many aspects are important to an understanding of fire. Every person brings with them their experience of fire, which changes my work drastically. By working with fire, I gain the opportunity to pursue my questions of fire intimately. I seek to glean its secrets and unearth truth buried in mankind or revealed by God only through the nature and/or experience of fire.

Comparing Philosophies as Represented in the Paintings of Cecily Brown, Thomas Kinkade, and Makoto Fujimura
Presenters: Brynn Miller, Ruthann Pike &
Lindsay Shepherd
Faculty Advisor: Christopher Nadaskay

Our research project will be an exposition of the way that three different contemporary artists with very distinct styles view art-making, and the way each of them perceive the varying roles that the visual arts can play in our world. There are many different ideas regarding art currently circulating in today's "art world." Therefore, part of what each art major at Union must attempt to understand through their work is their particular conception of what art ought to be.

We will exhibit and discuss works by the fresh London artist Cecily Brown, the highly-marketed American artist Thomas Kinkade, and internationally-known Japanese painter Makoto Fujimura. Such dissimilar artists were selected in order that the contrast between their viewpoints might more clearly show the different extremes of the philosophies which currently exist. We selected three painters so that the lack of variation in medium would serve to stress these extremes of idea, and also because oil paint is the medium that we ourselves use. These philosophies do not merely shape the final appearance of a piece of art, but provide insights as to how the artist perceives their world. The hope of the artist is that somehow, by viewing this art, the viewer's awareness of their own world may be changed.

Drawing: Lost Art Form?
Presenter: Bradley James Carter
Faculty Advisor: Christopher Nadaskay

The Contemporary world of art exhibits a vast array of mediums, but Drawing seems to be missing from the contemporary mind's eye. This project attempts to re-discover Drawing in today's artistic community; to answer questions such as "What has happened to Drawing as an art form?" and "Is Drawing still practical and compatible in the Contemporary art society?"; and seeks to find Drawing's place in history and role in the present-age and beyond. The technique of drawing will be explained and described utilizing both past and present applications to create a general "definition" of Drawing as an art form. A brief look at art history will be taken. This will be followed by a glance into modern-day art culture, seeking what Drawing has become and what role it now plays in art. Drawing is not dead; it is in fact vital to- and the basis for all art.

Memory
Presenter: Chad Karnes
Faculty Advisor: Lee Benson

For my graduating exhibit I explore the visual of the Japanese Zen garden as a metaphor for memory. Within the gallery I delineate the space such that most of it is inaccessible representing the part of our memory that is dead that no longer impacts us or was never important enough to be remembered. Within this field I have placed vessel forms: low flat bowls and taller forms all holding living grasses. The forms themselves are proxies of things you would find in the Japanese garden such as boulders, hedges, and trees. These forms represent the parts of memory that still impacts us in the present, our living memory. It is this that makes us who we are.

The History of Reactionary Design
Presenter: Josh Wilkerson
Faculty Advisor: Jonathan Gillette

The goal of my presentation is to show the history of reactionary art and to illustrate how those examples apply to the work I am creating for my senior exhibition. I will present my study of design history and compile examples of graphic design that was intended and created for the purpose of responding to a social issue. Some examples I will present include the spread of Nazi propaganda and the design work of El Lissitzky, the Distijl movement, and the Dada movement. I will show how these movements were created in reaction to social issues and were used to express a political or social viewpoint.

In my show, I am creating graphic design pieces that are in reaction to current, cultural issues. I will make the correlation between these examples and my work. I will also show how the works I am creating are similar and different from these works from design history.

Fashion Forward Ceramics
Presenter: Allison Steele Benson
Faculty Advisor: Lee Benson

Once you start playing dress up you never really stop, you just start using different clothes, what people might call "normal" clothes, in more modern ways. My ceramic process, I have found, reflects this attitude and practice more than I thought. I create forms that are classically feminine and then adorn and accessorize their surfaces with details of reinvented fashions. It's all a matter of translation. Realizing what inspires you and figuring out a way to channel that information, translating its aesthetic appeal into something for your particular medium. Being able to tap into the fashion vein for me has provided me with endless inspiration for my ceramics, having centuries of styles and icons to reference.

BUSINESS ADMINISTRATION

Television's Impact on Perceptions of the Moral Intensity of Sexual Harassment
Presenters: Brett Jenkins & Lauren Lund
Faculty Advisors: Darin White & Kenny Holt

On average, Americans spend over twenty-eight hours a week watching television (Carla, 1998). Research by the American Psychological Association has shown that certain types of television programs can negatively impact viewers' perceptions of the moral intensity of various ethically questionable acts (Sweeney, 1992). Moral intensity is defined by Jones (1999) as "the extent of issue-related moral imperative in a situation". The objective of this study is to show that repeated exposure to prime time television shows containing significant sexual harassment content will shift viewers' perceptions of the moral intensity of such acts in a negative direction. This hypothesis will be tested utilizing a survey involving two hundred-fifty random students from a university in the southeastern part of the United States.

Cinema Ads: A Unique Advertising Medium in a Highly Competitive Environment
Presenters: Laura Ladymon & Shari Smedley
Faculty Advisor: Darin White

Over the last five years, the increased popularity of attending films has given advertisers a unique opportunity to reach consumers with their advertisements. Going to the movies is the number one adult leisure activity and cinema ads are a vehicle to capitalize on this form of recreation. Cinema advertisements are shown prior to the start of a movie as part of a pre-show, and advertisers have an engaged, captive audience; therefore, advertisers are provided with the potential to make an excellent return on their investment by using cinema ads. To date, little ***r***esearch has been conducted which examines the reach and effectiveness of cinema ads. This study examines the effectiveness of cinema ads on movie-goers using retention as an indicator of an ad's value. The results will be based on a survey of 250 randomly selected movie attendees at a movie theater in the Northeastern region of the United States. The results of this study will enable advertisers to predict the percentage of movie-goers who will remember advertisements viewed prior to the movie which will in turn illustrate the effectiveness of cinema ads for advertisers.

Moral Failure of the Celebrity Endorser: A Cross-Cultural Comparison of the Impact on Consumer Perceptions
Presenters: John Ragon & Brendan Crozier
Faculty Advisor: Darin White

In the past year worldwide corporate spending on sports advertisement exceeded $12.4 billion (Harrow, 2006). With billions of dollars being spent on celebrity endorsers, corporations bear considerable financial risk. This study seeks to provide analytical evidence showing the relationship between an endorsed athlete, the endorsing company and consumers' perceptions of that relationship from a cross-cultural perspective. Previous research has shown that a sudden shift in the moral image of a celebrity endorser has a negative affect on consumers' perceptions of the products and services they endorse. This study will seek to determine if cultural differences between the United States and the United Kingdom moderates the negative impact in such situations.

Consumers' Perceptions of Celebrity Morality: Implications for the Products They Endorse
Presenters: Nick Wilbur & Lucretia Goddard
Faculty Advisor: Darin White

This study looks at whether or not a sudden negative shift in the moral image of a celebrity endorser has a negative affect on consumers' perceptions of the product being endorsed and whether the same happens to the celebrity's image when the product's image shifts. The Meaning Transfer Model supports the basis for these ideas by showing that the meanings people hold of a celebrity are transferred to the products he endorsers (Erdogan, et al., 2001). This phenomenon is able to occur as a result of the association links that form between the celebrity endorser and the product. As the two are repeatedly paired, consumers begin to subconsciously think of one when encountering the other. This creates a path for negative information about the celebrity to be transferred to the product and vice versa (Till, 1998). After testing these theories, our results show that when a celebrity endorser's image suddenly becomes negative, this has a significant negative affect on consumers' perceptions of the product's image. However, our results show that when the situation is

reversed, the celebrity's image is not significantly affected by the product's negative image.

Need for Touch: The Woman's Heightened Response to Touch on Purchasing Behaviors
Presenters: Brandy Hughes and Brittany Sampson
Faculty Advisor: Darin White

When a consumer is able to touch a product before they purchase, it can influence their purchasing behavior and attitude towards the product. Prior research has proven that consumers who touch products because they feel it is in fun and engaging will be more willing to purchase the product. This article is designed to look at the gender aspect of consumers, to see if a woman's responsiveness to a touch element will be heightened more than a man's responsiveness. The authors of this article believe that women will be more responsive to the touch element and that touch will generate an increase in purchase intentions to a greater degree in women than in men. The method employed will be in a survey format. The subjects of the study will be college students ages 18 to 22. Some of the surveys will have a touch element along with a message to gauge the responsiveness to the advertisement. Then, the students will be asked a series of questions to determine if they would purchase the product.

Relationship Between Conflict Management Style and Employee Satisfaction: An Empirical Study
Presenters: Emily Staats & Tianikwa Haywood
Faculty Advisor: Darin White

This research focuses on the affects of conflict management style on employee satisfaction. Employees are the main assets of a corporation, which can provide the greatest tools that a company needs to maintain a healthy and thriving workplace. The research was directed at a southern university where it was found that employee satisfaction is affected by the conflict management style. Rahim's interpersonal conflict management styles were used for this study. These five styles are intergrading, obliging, avoiding, dominating, and compromising. These styles are based upon the relationship between concern for self and concern for others. By using Rahim's modes of interpersonal conflict management, we have theorized that compromising or integrating management styles will lead to a higher level of employee satisfaction rather than dominating, avoiding, and obliging. Furthermore, as the correlation unfolds in this study it will become apparent that maintaining a conflict management style that fosters employee satisfaction will benefit the company as a whole.

Perceived Characteristics and Abilities of an Effective CCCU Academic Unit Leader
Presenter: John "Jack" Smothers
Faculty Advisor: Darin White

This study uses an Internet survey of 125 full-time professional school faculty members at 59 Council of Christian Colleges and Universities (CCCU) schools to examine perceptions of characteristics and abilities vital for effective Christian academic unit leadership. It also examines crucial success measures for judging an academic unit head's effectiveness. Implications for faculty, department heads, and university administrators are addressed.

Capability and Freedom in Social Evaluation: The Normative Economics of Amartya Sen
Presenter: Matthew Gentry
Faculty Advisor: Walton Padelford

It seems almost trivial to assert that public policy should be evaluated in terms of its effects on human well-being. However, how can those effects be most accurately assessed? In normative economic analysis, well-being is often defined in terms of incomes or utilities, but such measures probably fail to fully account for the complex realities of human existence. Thus, a deeper question remains: in what terms can we best assess the true impact of socioeconomic systems on individuals as human beings?

One economist who deals extensively with this question is the 1998 Nobel laureate Amartya Sen. Rejecting traditional metrics like incomes and utilities, Sen defines advantage in terms of substantive freedoms—the actual capabilities of individuals to act as they choose. This revised understanding of human well-being in turn has significant implications for social evaluation and policy design. By considering and critically assessing Sen's freedom-based theory of human advantage, this paper will seek to gain a more complete perspective on a crucial problem of normative economics.

The Impact of the College Environment on the Formation of Business Students' Ethical Attitudes
Presenters: Andrew Ainsworth & Fred Fisher
Faculty Advisor: Darin White

If you asked people today whether the ethics of business students has improved over the last decade, how many would say it has? Due to recent scandals in the corporate world, most would probably say ethical decision making has declined. There has been a call for universities to focus on business ethics in their courses to help improve the ethical standards of college students. This study seeks to determine how different college environments impact the formation of business students' ethical attitudes. We surveyed 300 business students from three distinctively different college environments: a religious, a private, and a public university. From each university we compared the responses of freshmen and seniors on the acceptability of 15 ethically questionable situations.

BIOLOGY

Effect of Food Source on the Development of Luna Moth (Actius luna) Caterpillars
Presenter: John Lee
Faculty Advisor: Wayne Wofford

In this study, the effect of changing food sources on the development of the Luna moth, Actius luna, was examined. A pregnant female Luna moth was collected from the wild and the eggs were kept safe until hatching. After the caterpillars emerged, they were placed on a primary food source, the sweet gum (Liquidambar styraciflua) leaves. In the middle of the second instar, 20 caterpillars were placed on sumac (Rhus copallinum), persimmon (Diospyros virginiana), and walnut (Juglans nigra) leaves, which are other food sources for Luna moth caterpillars. Of the 60 caterpillars placed on different leaves, only seven completed their larval stage and pupated. These seven were fed walnut leaves.

The Effects of Increased CO_2 on Glyphosphate and Atrazine Toxicity modeled in Brassica rapa
Presenter: Kevin Tosh
Faculty Advisor: Wayne Wofford

Carbon dioxide levels are steadily increasing and are impacting nearly every aspect of life on Earth. This study focuses on the consequences increased carbon dioxide may have on the United States agricultural farming industry by observing the effects of CO_2 on the herbicides atrazine and glyphosphate. This was done by growing Brassica rapa plants in the presence of increased CO_2. The gas was applied once daily by a perforated pipe located just above the plants. Two different concentrations of herbicides, 40.36 g ai/ L and 80.04 g ai/ L were applied to individual plants at the three leaf stage. Plants were monitored for twenty-one days and observations of stem diameter, stem color, leaf curling, leaf color and total plant height were recorded. Our results demonstrated that herbicides have less of an effect on the plants at increased CO_2 levels. This observation has several implications of the future use of herbicides, plant resistance and farming economy.

The Effect of DDT on Glutathione Levels in Mouse (Mus musculus) Liver
Presenter: Jill Konkol
Faculty Advisor: Wayne Wofford

DDT, or dichlorodiphenyltrichloroethane, is an organochlorine insecticide that has been banned in the United States since 1972 due to its detrimental effects on wildlife and potential health risks to humans. In developing nations, the chemical is still considered valuable and used to control pests such as malaria-carrying mosquitoes and crop-destroying insects. Due to its ability to accumulate in the environment and bodily tissues, DDT is considered a persistent threat to humans, though studies of its actual physiological effects are inconsistent. In this study, the interactions of DDT with glutathione (GSH), which plays critical roles in metabolism and detoxification in the body, were examined. Three groups of six mice each received weekly intraperitoneal injections: one experimental group received 20 µg DDT/kg body wt in corn oil, a second experimental group received 200 µg DDT/kg body wt in corn oil, and a control group received injections of corn oil only. After four weeks of exposure, the mice were sacrificed and the hepatic glutathione levels of the livers were determined using a spectrophotometric assay. For each of the three groups, a mean value of GSH concentration was calculated; however, a univariate analysis of variance revealed that the means for the three groups were not statistically significant.

The Effect of the Size of the Tank on the Growth and Development of Goldfish (Carassius Auratus)
Presenter: Luke Self
Faculty Advisor: Wayne Wofford

Fish are one of the most common household pets due to their aesthetic nature and easy maintenance. It has been speculated that the size of a tank that fish are kept in can affect the growth and development of the fish. Too small of a tank can often lead to overcrowding and the fish can suffer from the "one-fish-too-many" syndrome. An environment as such can cause physical, chemical, and behavioral changes in fish. The potential for a fish's growth is defined by the genotype of the fish and environmental conditions such as food availability and temperature. In addition, a fish must have adequate space for basic functioning and; therefore, a tank big enough for optimum health for the fish. In this study, the effect of the the size of a fish tank on the growth and development of juvenile goldfish, Carassius auratus, was examined. Twenty-five fish were placed in three different tanks. The first tank contained 10 gallons, the second contained 25 gallons, and the third contained 10 gallons, but had a constant flow of freshwater into the tank (approximately 5 gallons per day). All tanks contained dechlorinated water and had recirculating filters. The lengths of the fish were measured weekly to determine their growth rate. A determination was made from the results to show the effect of fish tank size on the growth and development of goldfish.

The Effect of 17α-Methyltestosterone on the Oxygen Consumption of the Bluntnose Minnow, Pimephales notatus
Presenter: Justin Hutto
Faculty Advisor: Wayne Wofford

Steroids are powerful chemicals that can induce drastic changes in the physiology of vertebrates that are both beneficial and detrimental. In this study, the effect of methyltestosterone on the oxygen consumption rates of the

blunt-nose minnow, Pimephales notatus, was examined. A concentration of 20 µg/L of methyltestosterone was maintained in the experimental tank by dissolving the methyl-testosterone in a minimal amount of ethanol and then adding it to the water. Oxygen consumption was measured once a week over a three week period in a static system using a YSI 51B dissolved oxygen meter with a polarographic Ag/AgCl electrode. The fish exposed to methyltestosterone had a lower oxygen consumption rate than the control fish. The average consumption values were 0.319 ± 0.017 mL O2/ g hr and 0.377 ± 0.018 mL O2/ g hr respectively. The minnows exposed to methyltestosterone also appeared calmer and had a lower death rate. These findings are consistent with previous studies involving tilapia.

Inhibition of the Growth of Sarcina lutea by Extracts of Spearmint (Mentha spicata)
Presenter: Heather Higdon
Faculty Advisor: Elsie Smith

Because of the growing concerns about the development of antibiotic resistance by bacteria, scientists are looking for other classes of chemicals that might inhibit their growth. Extracts of a number of plant species have been shown to have antibacterial properties. In previous studies, it has been shown that extracts of spearmint, Mentha spicata, have an inhibitory effect on the growth of Sarcina lutea. In this study, an attempt was made to determine the threshold concentration of M. spicata extract that would inhibit S. lutea growth. The initial concentrations tested were 1.0 %, 1.5 % and 2.0 % extracts (w/v) M. spicata. S. lutea was cultured on nutrient agar containing the appropriate concentration of M. spicata extract to determine the approximate threshold concentration. The plates were incubated at 37°C. The threshold concentration of extract for inhibition of growth was found to be 1.0 % or below. Subsequently, nutrient broth was used so that the bacterial cell numbers could be determined. This allowed examination of the degree to which the inhibition occurred. It was determined that there was an overall suppression of growth of S. lutea with the increasing concentration of M. spicata.

The Development of an Assay for Measuring the Effect of Acetylcholine, Caffeine, and Nicotine on the Heartbeat Rate of Larval Triops (Triops longicaudatus)
Presenter: Scott Harden
Faculty Advisor: Wayne Wofford

Crustacea of the genus Triops are considered to be "living fossils" because they are nearly identical to those that existed near the end of the Triassic period over 200 million years ago. Unlike modern crustaceans which usually possess a neurogenic heart that is controlled by a cardiac ganglion, it was recently discovered that the hearbeat of Triops longicaudatus is regulated completely myogenically. In an attempt to study the effects of different chemicals on the heart of T. longicaudatus, an assay was developed to measure the heartbeat rate of larval specimens using a variable-rate micro-scale flow-through system under an open-field stereomicroscope with a time-coded video recording device attached to the eyepiece. Video recordings of the heartbeat of Triops prior to exposure to the chemicals were made, followed by recordings while the same Triops was being exposed to 10 mg/L acetylcholine, 10 mg/L caffeine, or 10 ppt nicotine. These video recordings of Triops were analyzed at 59.940 fps using video analysis software to determine the heartbeat rates. This method provided a significant improvement in the accuracy and precision over previous methods of determining heartbeat rates of larval crustaceans and should be equally applicable to other species.

Effects of of Gymnema sylvestre on Mice with Alloxan-induced Diabetes Mellitus
Presenter: Trey Thompson
Faculty Advisor: Wayne Wofford

Alloxan, is a diabetogenic drug that destroys β-cells of the pancreatic islets, reducing insulin production. In this study, alloxan was used to obtain diabetic mice for the purpose of testing the effectiveness of Gymnema sylvestre, an herbal supplement with the effect of neutralizing sugar in the bloodstream and possibly initiating islet neogenesis. Fifteen mice were injected intraperitoneally with 200 mg/kg of alloxan in a 0.9% NaCl. After twenty-four hours, the mice showed blood-glucose levels roughly twice as high as normal mice, confirming the development of diabetes. The mice were divided into three groups. The control group received no herbal supplement. One group received the recommended dosage for the herbal supplement, and another group received five times the recommended dosage for the supplement. The herbal supplement was administered orally through their drinking water. The effects of Gymnema sylvestre on blood glucose levels of the mice were observed.

Color Preference in Fruit Flies (Drosophila melanogaster)
Presenter: Amanda Blankenship
Faculty Advisor: Wayne Wofford

In this study, the color preference of fruit flies (Drosophila melanogaster) was examined. Fruit flies were anesthetized with FlyNap® and placed in Petri dishes. The bottom of each Petri dish was covered with two different colored papers, each covering half of the plate. The flies were presented with pairs of the following colors: white, yellow, blue, and red. After the flies revived, the number of flies on each color was determined every five minutes for thirty minutes. Each color pairing was replicated three times. The total number of flies on each color of the pair was calculated and a Chi-Square Goodness of Fit Test was run

to determine if the numbers on the two colors differed significantly at $\alpha = 0.05$. The null hypothesis was that equal numbers would be found on each color, indicating no color preference. Significant differences in color preference were found for red over white and blue, yellow over red, and blue over white.

Mosquito Diversity and Seasonality at an Enzootic EEE Focus in Tennessee
Presenter: Kenneth Lewoczko
Faculty Advisor: Wayne Wofford

During the summer of 2006, in response to multiple horse deaths and at least one laboratory-confirmed Eastern Equine Encephalitis (EEE) case in a horse in West Tennessee during 2005, a study of the diversity and seasonality of mosquitoes in the vicinity of the Huron community in Chester and Henderson Counties, TN was conducted. Using resting boxes, mosquitoes were trapped every week one to three times per week from June 12 through August 25, 2006. The trapped mosquitoes were then identified to the species level, frozen initially at -20°C and later at -70°C, and stored for later virus testing. This was the first characterization of the mosquito diversity and seasonality in this area, providing valuable population information for future vector-borne disease surveys.

An Assessment of Stream Quality in Selected Streams in West Tennessee: A Collaborative Study with the Tennessee Department of Environment and Conservation
Presenters: Adam Foote & Noah Stearns
Faculty Advisor: Wayne Wofford

An assessment of stream quality in selected streams in West Tennessee was conducted in collaboration with the Tennessee Department of Environment and Conversation (TDEC). The three streams examined in this study were Hunter's Creek, Bear Creek, and Allen Creek. These streams are part of the watershed of the South Fork of the Forked Deer River in Madison County, TN. At each stream site, an assessment was made of stream quality by recording physical characteristics of the stream, taking water chemistry measurements (temperature, conductivity, oxygen content, and pH), and collecting benthic samples of aquatic invertebrates in accordance with the TDEC Biorecon protocol. The benthic samples were preserved in 80% ethanol until they could be separated from the leaf litter and plant material in which they were collected. Then, the aquatic insects were sorted, counted, identified to the family level. The distribution of these families was used to calculate an index of stream quality. Using this index, the streams were classified as non-supporting, partially supporting, or fully supporting.

The Effect Of Carbaryl On The Efficiency of Predation of the Eastern Newt, Notophthalmus viridescens
Presenter: Joshua M. Hall
Faculty Advisor: Wayne Wofford

For decades, scientists around the world have noticed a sharp decline in amphibian populations. These declines are often attributed to anthropogenic influences such as depletion of the ozone layer, global warming, introduction of manmade chemicals, and habitat destruction. Many researchers around the globe have examined the role of introduction of toxic substances such as pesticides and hormones in this decline. Recent studies have concentrated on how these chemicals affect amphibians at the community level. In this study, the effect of the pesticide Carbaryl on the efficiency of predation of the eastern newt, Notophthalmus viridescens on Rana pipiens tadpoles was examined. It was found that Notophthalmus viridescens's ability to prey upon tadpoles was severely inhibited when exposed to sub-lethal levels of Carbaryl for an extended period of time. While in the majority of studies of short-term exposure of N. viridescens to pesticides indicate that there are little or no permanent effects, long-term exposure to Carbaryl does appear to interfere with predation in N. viridescens. This could have long-term population consequences for this species.

Gyrate atrophy: effects and detection methods of a degenerative eye disease
Presenter: Daniel Cathey & Will Hayden
Faculty Advisor: Carol Weaver

The disease gyrate atrophy is a chorioretinal degeneration with an autosomal recessive mode of inheritance. Typical symptoms resulting from this disease are night blindness, loss of peripheral vision, constricted visual fields, cataracts, and blindness between ages 40 and 50. Gyrate atrophy is thought to be caused by abnormal levels of ornithine, an arginine and arginase product. Carrier parents of this disease have normal vision and normal fundus appearance but they have also been shown to have increased plasma ornithine concentrations. Studies of the disease have linked it to chromosomes 10 and X, and probes of chromosome 10 as well as identification of ornithine metabolism hallmarks can be indicators of people at risk for the disease. This poster focuses on the long-term effects, detection techniques, and possible treatments of this genetically inherited disease.

An Analysis of Spinal Muscular Atrophy and the Mechanisms of Increasing SMA Production
Presenters: Phillip Mitchell & Luke Self
Faculty Advisor: Carol Weaver

Spinal muscular atrophy (SMA) is a common fatal autosomal recessive disorder that occurs in infant children. The disease is characterized by degeneration of the spinal

motor neurons which results in muscular weakness and atrophy. Patients are classified into three types determined by the severity and age of onset: type I, the most severe form; type II, the intermediate form; and type III, the mildest form. A deletion or mutation of SMN gene at 5q13 on chromosome five is found in 98% of SMA patients. No effective treatment method exists, although new research shows promise for treating the respiratory symptoms that result from the often deadly disease. This poster focuses on possible mechanisms to increase SMN protein that would allow motor neurons to survive.

Neuronal ceriod-lipofuscinose: Frederick Batten's Child Killing Discovery
Presenters: Dustin Scott & John Lee
Faculty Advisor: Carol Weaver

Juvenile neuronal ceroid-lipofuscinose, more commonly known as Batten disease, is inherited via an autosomal recessive pathway. The gene responsible was identified in 1995 as CLN3 and was mapped to chromosome 16 by demonstration of linkage to the haptoglobin locus. Its localization has been further traced to16p12 by use of a panel of DNA markers; it shows a strong association with alleles of microsatellite markers D16S298, D16S299, and D16S288. Incidences are as high as one in 12,500 births, and there are approximately 440,000 carriers in the United States alone. Diagnosis is often based on visual defects, behavioral changes, and seizures. Progression of the disease is characterized by a decline in mental abilities, increased severity of untreatable seizures, blindness, loss of motor skills, and premature death. This poster will examine CLN3 and its association with chromosome 16 as well as current research being conducted on Batten disease.

Poly-problematic Polycystic Kidney Disease
Presenters: Hunter Stepp & Kenneth Lewoczko
Faculty Advisor: Carol Weaver

Polycystic kidney disease (ADPKD) is a genetic disorder in which cysts form progressively in renal tissues, a problem because it ultimately leads to end-stage renal failure. An autosomal dominant disease, ADPKD is one of the most common human genetic disorders, affecting approximately 1 in every 500 humans from infants to adults. An often implicated disease promoting factor for ADPKD has been the endothelium-derived peptide endothelin-1 (ET-1) and its associated enzyme, endothelin-converting enzyme-1 (ECE-1). PKD1 and PKD2, genes traced to ADPKD, lose their ability to signal correct kidney structure when mutated, and protein folding and synthesis of the proteases that cleave active enzymes are affected, allowing cysts to form. This poster focuses on various gene mutations which play roles in ADPKD.

Neurofibromatosis: Mutants Lead Riot Against the Protein Neurofibromin
Presenters: Callie Bodnarchuk & Jada Butler
Faculty Advisor: Carol Weaver

Neurofibromatosis type 1, or von Recklinghausen disease, is an autosomal dominant genetic disorder affecting 1 in 3500 individuals. The exact position on chromosome 17 of the NF1 gene was pinpointed in 1990. NF1 alters development and growth of neural cell tissues, inducing both tumor and non-tumor phenotypes. Approximately half of the diagnosed cases are the result of spontaneous genetic mutation, endowing NF1 with the highest rate of new mutations of any single-gene disorder. These many mutations cause neurofibromin, the NF1 gene product, to be either absent or nonfunctional. Current research suggests neurofibromas form when a Schwann cell, heterozygous for an NF1 gene mutation, undergoes further mutation to become homozygous. Other cells, such as fibroblasts, perineural cells and mast cells, are most likely induced to proliferate by cytokines. The focus of this poster is to examine how an understanding of mutation mechanisms may lead to more effective therapy.

PIGA and the GPI Anchors Associated with Paroxysmal Nocturnal Hemoglobinuria
Presenters: Riley Eason & Adam Foote
Faculty Advisor: Carol Weaver

Paroxysmal nocturnal hemoglobinuria (PNH), a rare anemia in which red blood cells are abnormally sensitive to lysis by activated serum complement, was one of the earliest hemolytic conditions defined. Because most cell destruction occurs at night, apparent iron granules are often seen as early morning urinary sediment. A molecular characteristic of PNH is the absence of large proteins normally attached to the cell membrane by a glycosylphosphatidylinositol (GPIs) anchor. The synthesis of this anchor is interrupted by somatic mutations of the gene PIGA, which can cause a number of effects such as apoptosis. In contrast, in some individuals, mutated PIGA genes are capable of hematopoeisis and these individuals display a phenotype as well as a genotype for the disease while remaining symptom free. The focus of this poster is to assess the importance of the GPIs and somatic mutations to the incidence of PNH.

Genetic Nomads: CML Caused by Translocating Genes
Presenters: Missy Ratliff & Morgan Neese
Faculty Advisor: Carol Weaver

Chronic Myeloid Leukemia (CML) is a form of cancer involving rapid growth of white blood cells in bone marrow. This mutagenic, malignant disease results from the translocation and fusion of the BCR gene from Chromosome 9 to the ABL gene of Chromosome 22. This BCR-ABL fusion gene, also called the Philadelphia gene, is found in nearly every case of CML. As a result of this

gene fusion, the shape of the protein produced by the ABL gene is altered, leading to the regulation loss of ABL kinase enzyme. As CML progresses through chronic and acute stages, the enzyme uncontrollably produces immature white blood cells, called blasts, which fill and eventually consume bone marrow. Due to the gradual process of CML, the likelihood of incidence increases with age. This poster focuses on the genetics of CML, the effects of the disease, and options for effective treatment.

Looking Through Their Eyes: A Review of the Possible Mutations Resulting in RB1 Gene Inactivation in Retinoblastoma
Presenters: Jessica Guastadisegni & Kayli Anthony
Faculty Advisor: Carol Weaver

Retinoblastoma (RB), a neuroblastic tumor, is the most common malignant intraocular tumor in children between the ages of twelve and twenty-four months. The retinoblastoma gene (RB1) is a tumor suppressor gene located on chromosome 13 at region 14. The usual inheritance pattern of RB is autosomal dominant, and can occur due to any mutation that inactivates both normal alleles. About 40% of RB cases are hereditary, either from previously established or new germ-line mutations, resulting in bilateral or multifocal tumors. The other 60% of cases are sporadic with unilateral disease. Of the sporadic cases, two mutational events occur in somatic cells. This poster concentrates on how knowledge of RB1 gene mutations can aid in developing new treatment possibilities.

The ABCs of Tay Sachs Disease
Presenters: Kevin Tosh & Edric Gaylor
Faculty Advisor: Carol Weaver

Tay Sachs is an autosomic recessive disorder caused by a mutation of the alpha subunit of the beta-hexosaminidase A (HEXA) gene on chromosome 15. Deficiency of hexosaminidase A elicits an increase in GM2 gangliosides in the membranes of neural cells of the central nervous system, causing the patient to die, usually by age 5. Although the signs and symptoms of Tay Sachs are well characterized, the mechanisms by which the cell dies are less understood. Possible mechanisms involve the thapsigargin pathway as well as the TGF-alpha and IL-1 beta pathways. Specific populations, primarily the Ashkenazi Jews, French-Canadians, and Cajuns, carry a higher frequency of mutations for HEXA than the general population. This poster focuses on the clinical aspects of the disease and the molecular mechanisms that cause the symptoms.

Are You on Pace? A Review of Long QT Syndrome
Presenters: Ashley Oldham & Allen Williams
Faculty Advisor: Carol Weaver

Long QT syndrome is a potentially life threatening inherited disease due to prolonged ventricular repolarization of the heart. Long QT syndrome expresses itself in various forms, all of which produce alterations in ionic currents associated with the sodium and potassium channels. Romano-Ward syndrome and Jervell and Lange-Nielsen syndrome represent long QT syndrome's more common autosomal dominant and less common autosomal recessive forms, respectively. All forms of long QT syndrome involve mutations of the LQT1-6 genes associated predominantly with chromosome 11. This poster focuses on current research concerning the genetic makeup of the various forms and genotype-specific treatments of long QT syndrome.

Cockayne Syndrome: The Three-headed Monster
Presenters: Rhett Barker & Jennifer Hamman
Faculty Advisor: Carol Weaver

Cockayne syndrome is a rare autosomal recessive condition that affects one in 100,000 children up to the age of sixteen. Patients typically experience sensitivity to sunlight, cachexia, premature aging, and impaired development of the nervous system. The disease manifests itself in three forms: classical (Type I), congenital (Type II), and late onset (Type III). The onset of Cockayne syndrome is attributed to mutations of the ERCC8 and ERCC6 genes, located on chromosomes 5 and 10, respectively. Gene products are involved in repairing damaged DNA by the transcription-coupled repair mechanism. Organisms such as Escherichia coli have been found to undergo similar transcription-coupled repair, and study of this mechanism in bacteria may lead to a better understanding of Cockayne syndrome's pathogenesis and identification of potential drug targets. The primary focus of this poster is to provide insight into the basic causes, debilitating symptoms, and possible treatments for Cockayne syndrome.

Little People, Big World: The Causes and Treatments of Achondroplasia
Presenters: Katy Williams, Laura Byrd & Marion Hocutt
Faculty Advisor: Carol Weaver

Achondroplasia (ACH), the most common form of short-limbed dwarfism, affects 1:20,000 births. Although the majority of cases are sporadic, all cases have the autosomal dominant trait for a mutation of the fibroblast growth factor receptor-3 (FGFR-3) gene. Achondroplasia is caused by a point mutation resulting from G to A transition or a G to C transversion. Heterozygous achondroplasia is usually non-lethal, but there is an increased mortality rate in children from birth to four years and in adults from forty to fifty years of age. Homozygous achondroplasia is a severe lethal mutation that usually results in death within the first year of life. While there is no pharmacological treatment, research is being done on the molecular level. This poster will examine the physical and molecular attributes of ACH and will analyze treatment options.

Porphyria cutanea tarda: A History of Blood-letting and Vampirism
Presenters: Josh Hall & Trey Thompson
Faculty Advisor: Carol Weaver

Porphyria cutanea tarda, inherited in 20% of cases as an autosomal disease on chromosome one, may also arise sporadically. Sporadic cases are attributed to alcoholism and liver disease, but inherited cases are caused by a mutated gene coding for uroporphyrinogen decarboxylase (UROD), the fifth enzyme in the biochemical pathway for heme synthesis. Iron builds up in the blood, forming porphyrins, photoactive molecules that absorb energy in the visible spectrum. Photoexcited porphyrins in the skin mediate oxidative damage to biomolecular targets, causing cutaneous lesions. An early remedy for this condition was blood-letting, which alleviated symptoms by reducing the amount of iron in the blood. This treatment, combined with patients' high sensitivity to light, led to accusations of vampirism. This poster will examine the effects of the mutated UROD gene and its implications over time.

CHEMISTRY

Hydrogen Bonding in Ortho-Substituted Benzenes
Presenter: Michelle Ann Thornhill
Faculty Advisor: Charles Baldwin

Previous research has identified intramolecular hydrogen bonds involving a C—H donor in highly substituted pyrroles. The major goal of this research project was the search for other chemical structures that might exhibit intramolecular hydrogen bonding involving a C—H donor. It was hoped that these structures would be amenable to systematic chemical modification permitting the study of factors influencing the strength of hydrogen bonding. By using a benzene ring as a scaffold for the intramolecular hydrogen bond complex in the pyrroles, it was thought that a model compound could be synthesized. Ethyl 2-(bromomethyl)benzoate was synthesized by esterification of o-toluic acid with ethanol followed by free radical bromination with NBS at the benzyl methyl. The target compound was characterized by standard physical methods, IR and NMR spectroscopy. Dynamic NMR techniques and X-ray crystallography were employed to study the potential hydrogen bond complex.

Hydrogen Bonding In Highly Substituted Pyrroles
Presenter: Allorie Smith
Faculty Advisor: Charles Baldwin

Dynamic NMR spectroscopy and X-ray crystallography have provided strong evidence that an intramolecular hydrogen bond exists between the 2-bromomethyl hydrogen(s) and the carbonyl oxygen in ethy l-methyl-2-bromomethyl-4,5-diphenylpyrrole-3-carboxylate. This project was conducted to investigate the possible presence of a hydrogen bond in a related highly substituted pyrrole, ethyl-2-chloromethyl-4,5-diphenylpyrrole-3-carboxylate. Initial attempts to synthesize this compound by Paal-Knorr pyrrole synthesis followed by halogen substitution yielded multiple chloro derivatives. An alternative synthetic path based on incorporating the chloro group in one of the reactants was frustrated by the formation of a by-product, 2,3,5,6-tetraphenyl-1,4-pyrazine. The by-product was characterized by infrared spectroscopy and proton NMR spectroscopy. Based on our understanding of the probable reaction mechanism, modifications to the synthetic approach of the target compound should lead to a successful synthesis of ethyl-2-chloromethyl-4,5-diphenylpyrrole-3-carboxylate.

Theoretical Structural and Electrical Analysis of 7-Coordinate and Octahedral Systems Using GAMESS
Presenter: Rhett Barker
Faculty Advisor: Jimmy Davis

Transition metal complexes are of great interest to inorganic chemistry. This research focuses on two interesting computational studies of transition metal complexes using the ab initio code GAMESS. The first dealt with octahedral complexes of first-row transition metals and ligands of the spectrochemical series. Each transition metal was placed within an octahedral field of the following ligands: S2-, OH-, H2O, NH3, and CO and geometry optimizations were performed for all spin multiplicities of the metals. A switching of the ground electronic spin state was observed as the field strength increased. Optimized theoretical bond distances were compared to literature values. The next study focused on calculating optimized structures for first-row transition metals bound to a 7-coordinate ligand, DAPBH. Comparisons with experimental X-ray crystal structures were performed. Special attention was given to compare the bond distances and bond angles of the atoms bound to the metal ion core.

Hydrogen Bonding Studies In Chemically-Tuned Pyrroles
Presenter: Reilly M. Eason
Faculty Advisor: Charles Baldwin

Previous research with the compound ethyl-1,2-dimethyl-4,5-diphenylpyrrole-3-carboxylate has shown that a hydrogen bond exists between the carbonyl oxygen of the carboxyethyl group at the 3-position and the methyl hydrogens at the 2-position in the pyrrole ring. The goal of the current research was the insertion of a methylene group between the carboxyethyl group and the pyrrole ring ostensibly moving the oxygen acceptor away from the hydrogen donor and altering the hydrogen bond interaction. Perturbations to the hydrogen bond would be assessed utilizing dynamic NMR, X-ray crystallography, and IR spectroscopy. To achieve the methylene group insertion, the original synthesis of ethyl-1,2-dimethyl-4,5-diphenylpyrrole-3-carboxylate was modified to synthesize

the target compound, ethyl 2-(2-methyl-4,5-diphenyl-1H –pyrrol-3-yl)acetate. Synthesis of the target compound called for heating benzoin, ethyl levulinate, and ammonium acetate in glacial acetic acid. Evidence that the target compound had been synthesized was not obtained. Instead, all evidence pointed to the synthesis of 2,3,5,6-tetraphenyl-1,4-pyrazine.

Spectral and Crystallographic Studies of Seven-Coordinated Complexes
Presenter: Andrew McBride
Faculty Advisor: Jimmy Davis

Recent research has shown that certain seven-coordinate complexes show catalytic activities in the bleaching of dyes. It has also been shown that the catalytic activities differ with the metal present in the complex. The purpose of this research was to find the physical structure of several complexes with the 2,6-diacetylpyridine bis(benzoylhydrazone) (DAPBH) ligand and first row transition metals and to compare these structures to determine if there is any direct correlation between the physical arrangement and the catalytic activities of the complexes. This was accomplished by synthesizing the metal chloride or nitrate complexes. Crystals were formed by dissolving the complexes in methanol and evaporating off the solvent over the course of several days. The complexes were characterized using UV/visible spectroscopy and x-ray crystallography. The x-ray structures were found using a NONIUS KAPPA-CCD x-ray crystallography instrument (Southeast Missouri State University) under low temperature (100K) conditions to reduce the thermal vibrations.

The Bleaching Effects of Seven-Coordinate Compound Catalysts on Pinacyanol Chloride Dye
Presenter: Kelley Tate
Faculty Advisor: Jimmy Davis

Our civilization, as it is currently operated, is believed to be unsustainable because of our rapid disposal of non-renewable resources. As a result of this concern, green chemistry, which is defined as the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances, has begun to be studied to find possible ways to decrease pollution production. An area of major pollution because of its widespread use is the production of paper. This research explored the possibility of using several different seven-coordinate compounds as potential green chemistry catalysts which could be used in the bleaching of wood pulp. Eight metal compounds were synthesized, using either DAPBH or DAPTT as the seven-coordinate macrocyclic complex. The bleaching effect of each metal catalyst on hydrogen peroxide and pinocyanol chloride dye was observed using ultraviolet-visible spectroscopy in varied pH values. The most efficient compounds were then tested for repeatability.

Development of a Branched Chiral Selector Adsorbent with (S)-Naproxen Termini
Presenter: Sarah A. Conway
Faculty Advisor: Sally Henrie

Research was conducted with the goal of finding improvements in the process for separating enantiomers. It is known that both branching and terminating stationary phases with chiral selectors improve separations of enantiomers. This research focused on merging these two enhancements through synthesizing a branched chiral stationary phase terminating with (S)-Naproxen. To synthesize this adsorbent, a bromo-triester was first attached to a 3-aminopropyl functionalized silica gel. The ester termini were then converted to carboxylic acids. In previous research, the triesters were converted to carboxylic acids using 4 N sulfuric acid and refluxing for 2 hours. However, an optimization study found that using 1.5 M hydrochloric acid and heating at 50^{o}C for 30 minutes yielded better results. (S)-Naproxen was reacted with borane-THF to form an alcohol which could then be coupled with the anchored tri-acid via a Fisher-esterification reaction creating the desired branched chiral selector adsorbent.

Degreaser Reduction and the Creation of an Instrumental Procedure to Test for Hydraulic Oil on Parts
Presenter: Nathan Eckley
Faculty Advisor: Sally Henrie

Delta Faucet uses an aqueous based degreaser parts cleaning system to remove oil and grease from machined parts. As part of their effort to reduce waste water, Delta Faucet investigated the feasibility of replacing their large degreaser with a few smaller ones. To assure that the smaller degreaser units were effective, Delta Faucet required that the machined parts be tested for cleanliness before and after degreasing. This test consisted of finding the amount of oil and grease on all the machined parts at Delta Faucet by the use of a gravimetric method. A new gravimetric procedure was created to increase time efficiency. Using this new procedure, the smaller degreasers were shown to be adequate. In addition, a new FTIR instrumental procedure was developed to replace the time consuming gravimetric procedure.

Development of a Branched Chiral Selector Adsorbent with Vancomycin Termini
Presenter: Wesley H. Stepp
Faculty Advisor: Sally Henrie

Separation of chiral molecules, such as certain pharmaceuticals, has been proven to be effective with the use of macrocyclic antibiotics attached to a single chain spacer arm. It is thought that better separation of enantiomeric compounds can be accomplished by using a highly branched molecule for the site of macrocylic

antibiotic attachment. The macrocyclic antibiotic vancomycin was the molecule of choice used for attached to a branched carboxylic acid functionalized silica gel. Three separate methods were developed using the peptide coupling agent dicyclohexylcarbodiimide (DCC) or diphenylphosphoryl azide (DPPA) and each method produced the silica gel product linked by an amide to a vancomycin termini. By using DPPA's amide coupling mechanism, a yield of 83.49% was obtained, markedly better than the 37.56% and 49.95% yields obtained using DCC. All three methods had their final products analyzed by FT-IR, and it was concluded the compounds synthesized for each procedure were indeed the same.

Development of the Lab Component for a Web-based Non-major College Chemistry Course
Presenter: Alydia G. Murray
Faculty Advisors: Sally Henrie & Marlyn Newhouse

Research was performed to determine the feasibility of a web-based section for a non-major college chemistry course using Green Chemistry experiments. This research included the modification of existing experiments currently used in the non-major college chemistry course taught at Union University as well as parts of the Green Chemistry Laboratory Manual. The experiments from these two sources were modified to allow them to be used for experimentation in a home environment. Most of the revisions made were in response to shipping, cost, and size restrictions placed on some of the chemicals and equipment used in the experiments. After all the revisions were made, a box of necessary chemicals and equipment was assembled that could be shipped to the student. Field testing was performed to ensure accuracy of the experiments using the equipment in the box, and a supplementary teacher's manual was developed.

Molecular Dynamic Studies of the Unusual Thresholds for the Reaction of Al+ and Isotopic H2
Presenter: April Daigle
Faculty Advisor: Michael Salazar

During the past decade and a half, theoretical chemists have attempted to explain the unusual energetic thresholds for the formation of AlH+/AlD+ from Al+ and isotopic H2 published by Armentrout in 1990. In an attempt to reproduce the experimental thresholds, three-dimensional global potential energy surfaces were calculated for the ground state and first excited singlet and triplet states using the multireference configuration interaction (MRCI) level of ab initio theory. A body of simulations which sampled all of the experimental initial conditions was prepared, and their classical trajectories were propagated along the ground state surface with constant comparison to the first excited singlet surface. A total of 11,419,380 simulations, propagated on the MRCI surface, were completed within 16.9 cpu days on 18 cpus. The thresholds for formation of the products were examined, and compared to the experimental thresholds. An analysis of the thresholds will be given.

CHRISTIAN STUDIES

In the Wilderness: The Foundation of Existentialism in Enlightenment Thought
Presenter: Joshua Brian Krebs
Faculty Advisor: Brad Green

My paper explores the connections between the primary themes of Enlightenment thought and those of Existentialism. The search for autonomous reason must drive mankind to sever the past and break away from true community. When people deny the influence which history and community have on their identities, they lose transcendent reality—all that they have is here and now. By desiring the freedom to change who they are and what they are, humans negate community and become nothing more than interchangeable parts in the modern machine. Existentialism grows when people deny that they have a particular place in a universal community, with particular gifts and a particular role.

The Lapsarian Debate in 17th Century Theology
Presenter: Andrew Helms
Faculty Advisor: Brad Green

Seventeenth century Reformation theologians during the era of the Synod of Dort avidly followed the intricate theological argument about the logical order of the decrees, or decisions, within the mind of God. This debate was about God's motives and considerations in deciding that certain events would happen in the history of redemption. The question was not, "Which of these decisions did God think of first, second, third, etc.?" Rather, it was, "What is the logical order in which we are to think of these decisions as existing in the mind of God?" The participants in the debate were very concerned with God's motives, his goals, the different aspects of how his plan all fitted together. These theologians were trying to answer the question, "Did God reprobate certain people apart from any consideration of their sins?"

Christian Perspectives on the Covenant: Supersessionism and Engraftment
Presenter: Nicole Tosh
Faculty Advisor: David Gushee

I will be exploring the various avenues that Christians accept when describing the relationship between Christians and Jews as well as the relationship between God and the Jews with regard to the coming of the Messiah. I will research such ideas as supersessionism and engraftment and the foundations for these beliefs based on Scripture, particularly Old Testament language that is used in the New

Testament to describe the Church. In order to do this I may rely on my Greek knowledge to help me understand the nuances behind the word usage in the New Testament. I will also discuss the different theories behind the covenantal relationships between God and both Christians and Jews because covenantal relationships seem to coincide with various beliefs that have arisen to explain how Jews fit into the salvific experience since the coming of the Messiah.

The Structure of Philemon
Presenter: Alex Carr
Faculty Advisor: George Guthrie

The Structure of Philemon is a structural analysis of Paul's letter to Philemon, Apphia, Archippus, and the church. I will discuss the four units found in this letter and how each unit (and verses) relates to one another. This presentation will demonstrate the unity of the letter as well as the skill in which Paul wrote.

Third Reich to Modern-day Israel: A Comparative Study Between Holocaust Policies and Present Treatments of Palestinians
Presenter: Brent Parrish
Faculty Advisor: David Gushee

A comparative study between the Nazi policies specifically towards the Jews during 1933-1945 and the modern-state of Israel's policies towards the Palestinians since the second Intifada. Focusing on the systematic persecution of the minority population of Jews in Eastern Europe and today's Palestinians, this paper will provide a detailed history and the subsequent implementation of those policies restricting human rights, the responses by international powers and organizations, and finally a centrist approach to responding to the current Israeli occupation of Palestine drawing from lessons learned from the Holocaust. This paper seeks to provide a mediating voice in the political and religious clout encircling the current Israeli and Palestinian conflict, focusing primary on human rights through a post-Holocaust perspective.

Understanding Infant Baptism
Presenter: Jessica Schranz
Faculty Advisor: George Guthrie

Infant baptism is a tradition in the church today and was instituted by Christ during His time with the apostles. However, during the Reformation infant baptism received opposition and as a result two main positions emerged: one was infant baptism - supported by those who argued that infants are in need of God's grace and possess non-verbal faith. The other was believer's baptism – supported by people who think those who articulate faith can receive the sacrament. The church divided over the dispute, but infant baptism remained a predominant part of Christian doctrine. This presentation explores a brief history of infant baptism, discusses various biblical and theological arguments supporting it, and explains the Christian community's role in the life of baptized infants. In doing so, those who agree with infant baptism will find support for their position and those who disagree will find understanding.

Semantic and Structural Analysis of 1 Peter 5:1-5
Presenter: Kyle Clark
Faculty Advisor: Mark Dubis

The purpose of this project is to examine the semantic and structural relationships within the Greek text of 1 Peter 5:1-5. It seeks to examine how the different propositions and subunits relate to each other in order to clarify the flow of thought within the passage and thereby illuminate the author's intention. This project will employ an analytical method developed by SIL International. To assist the analysis, Dr. Guthrie's flow diagramming method will be employed as a foundation upon which to build the structural and semantic analysis. This pericope bears great relevance to those who wish to go into church leadership roles.

Theological Reflections on the Meaning of Nakedness in Light of the Holocaust
Presenter: Matthew Elia
Faculty Advisor: David Gushee

Throughout nearly all Holocaust narratives told from the perspective of a survivor, one particularly disturbing aspect of the Final Solution ("Die Endlösung") reappears. In addition to the unimaginably cruel physical atrocities enacted against the Jews and other victims, deliberate psychological brutality was often employed in the Nazi quest for a European continent free of Jews and other "undesirables." One of the most significant methods was the intentional demand that Jews be stripped of their clothing, both during the "selections" and medical examinations as well as immediately prior to execution, whether by way of the gas chambers or mass shootings. For the few who emerged from the Holocaust alive, the interpretations of this forced nakedness varies widely.

Despite the consistent motif of nakedness throughout nearly all Holocaust memoirs, few, if any, scholars have devoted a significant effort in this particular facet of Holocaust history in any considerable depth. Therefore, this research project aims to explore the meaning and role of nakedness in the Holocaust at two levels: first, the reflections and interpretations of the survivors themselves as told through narratives; second, the biblical and theological treatments of nakedness in both Jewish and Christian thought.

Finding Faithfulness: Towards an Economic Ethic for Evangelicals
Presenter: Landon Preston
Faculty Advisor: George Guthrie

We live in a culture consumed with consumption. On a daily basis, the average American is confronted with hundreds of advertisements, all attempting to lure the potential customer towards a purchase. Not only are we surrounded by a culture which prizes possessions, our own economic system rewards materialism. So what is the Christian to do? Within the spectrum of evangelicalism, a wide range of beliefs influence the spending patterns of Evangelicals yet a combinatorial model of three current sub-models for financial stewardship appears to most closely align with Scripture. This paper proposes a model that advocates an economic ethic for Evangelicals formed from the strengths of the Evangelical Right, Left, and Centrists. This ethic involves a free-market economy with an aggressive work ethic, value of private property, high view of Scripture, concern for the poor, and a vigilant watch against the negative aspects of capitalism.

Finding An Appropriate Mission Methodology: A Critical Reflection for a Redemptive Approach
Presenter: Melody Pickerill
Faculty Advisor: George Guthrie

My paper will be more or less in two parts: the first half will primarily cover the historical methodology of missions, and the second half will dissect the possibilities for cultural engagement. I will begin with a brief analysis of the historical approach to missions, which was culturally imperialistic in its nature. I will touch on the definition and origins of the interchangeable terms of "paternalism", "imperialism", and "colonialism" in this regard. This will lead up to the 20th century reaction to paternalism, taking note of the indigenous church movement at the turn of the century, to the mid-century emergence from fundamentalism with Pope John Paul II's use of the term, "Inculturation" (defined in Redemptoris Missio 52 as the on-going dialogue between faith and culture). Examples will be presented that depict the negative/positive approaches I will be analyzing and emphasizing. I would also like to briefly touch on the involvement of socio-linguistics in the matter, specifically Wycliffe Bible Translation.

The Role of Individualism, Introspection, and Pilgrimage in the Mid to Late Seventeenth Century Religious Life and Thought in the Writings of John Bunyan and Rene Descartes
Presenter: Joshua Tackett
Faculty Advisor: Randall Bush

John Bunyan's Pilgrim's Progress is hailed as one of the greatest Christian works of all time. It is also a landmark in the individualism it portrays, the importance of introspection, and the role the pilgrimage plays in the Christian life. Rene Descartes similarly displays an important role for the individual, particularly by his famous statement, "I think, therefore I am." This also shows the importance of introspection, but from a more philosophical outlook than with Bunyan's Christian. This paper explores the importance individualism, introspection, and pilgrimage plays in the writings of Bunyan and Descartes, and then seeks to connect it the broader world of the Seventeenth Century.

COMMUNICATION ARTS

A Closer Look at Regional Inter-Faith Association (RIFA)
Presenters: Alison Ball, Kat Douglas, Nic Pfost & Beth Saxe
Faculty Advisor: Jim Veneman

Regional Inter-Faith Association (RIFA) is an area organization whose identity is found in community compassion. As stated in its purpose, RIFA is an effort between local leaders and area churches, supporting ministries and churches, identifying the needs of people, securing resources, and providing programs to meet those needs. RIFA has built a reputation through combining the resources of many area churches, individuals and business resources to provide services for people with the most critical and basic needs. The purpose of this research project is two-fold. First, the class members will produce material that will assist RIFA in future resource-gathering efforts. Next, it will give the members of the Social Documentary class an insider's perspective of the organization, along with an opportunity to get to know those who benefit from its ministry, and a unique chance to see from another perspective.

COMPUTER SCIENCE

Building a Prospective Student Database for the Continuing Studies Department
Presenter: Matthew Hammond
Faculty Advisor: Jim Kirk

How can a person keep track of more than 800 people initially, and thousands more in the future, all of whom are interested in what the Department of Continuing Studies has to offer? How can a person be nearly anywhere in West Tennessee and have access to information about potential students? This project tries to answer these questions and more implementing a database-driven website using ColdFusion. This project will allow recruiters to access information to keep in contact with people who are interested in the department. It will also allow the recruiters to send information based on the person's enthusiasm about joining one of the many programs offered. Finally, it will allow the department to track the status of each person until they become a student. It will support the advancement of the Department of Continuing Studies into the future as the department expands to meet the needs of people in West Tennessee and the world.

Developing an Interactive Training Tool for the METI Human Patient Simulator
Presenter: Ben Townsend
Faculty Advisor: Jim Kirk

This project involves the development of an interactive training module for the Union University Nursing Department. The purpose of the module is to familiarize the undergraduate Nursing faculty with the department's quarter-million dollar METI Human Patient Simulator (HPS). This is important because many of the faculty, particularly those on the Germantown campus, are still unfamiliar with the HPS and the potential for its use in training nurses. The module will be in the following three parts. The first is an introductory segment including a list of features, the second is on the start-up and shutdown procedures, and the main part is specifically to show the faculty how to train their students using the HPS. The module will have an interactive menu with audio voice-over, pictures, and video.

Campus Kiosk
Presenters: Kendal Hershberger & David Moses
Faculty Advisor: Jim Kirk

As campus continues to grow and new buildings are constructed, it will become increasingly difficult for first-time visitors to campus to find their way around. However, technology can be used to help these visitors get directions. This project involves designing and programming a computer kiosk to be located on campus. At the kiosk, visitors can choose their destination on campus and the computer will show a graphical representation of campus with directions to the destination from their current location. The program will be built using Flash and ActionScript.

PHP-based Image Recognition and Retrieval of Late 18th Century Artwork
Presenter: Ben Goodwin
Faculty Advisor: Jim Kirk

Content-based image retrieval refers to the automatic process of retrieving specific images from a collection by low-level features like color and shape obtained automatically from the images themselves. This project creates a simple, yet practical application of this developing field. It involves designing a system where a user can log in to a search portal and upload a query image whose artist and title are both unknown. The system will perform an automated search through an indexed database for possible matches and show the relevant information for the images that most closely match the sample image. This project will utilize a combination of PHP, Perl, and MySQL to create, index, and search through a database of Western artwork.

The Two Click Wonder: A Convenient Modification of the Windows File Open/Save Dialog Box
Presenter: Matthew Dawson
Faculty Advisor: Jan Wilms

This research project involved a modification of the capabilities of the windows file Open/Save dialog box. Sometimes a user needs to open a document that is buried deep within a tree of folders by manually navigating the chain of folders inside the application's file open dialog box, even though he may have an explorer window open to the folder containing the file. Thus a utility was written which allows the user to set the target directory of an Open/Save dialog box by clicking on the explorer. This program was written in C and interacts with Windows using the Win32 API. A backdoor technique was used, in which paths are "grabbed" from address bars in explorer windows and "pushed" into edit boxes in file Open/Save dialogs. Causing the file Open/Save dialogs to properly recognize simulated return key presses proved to be one of the most challenging and recurring problems of the project. It was discovered that several varieties of file open/save dialogs exist, each requiring a different approach to the return key problem. Most difficult were the variety commonly found in Microsoft Office applications, which used "Rich Edit" controls instead of traditional edit box controls.

Teaching an Old Dog New Tricks: An Introduction to Parallel Computing With High Performance Computing Clusters (HPCs)
Presenter: Jeremy Cathey
Faculty Advisor: Jim Kirk

Computer hardware and software have seen important advances over the past few decades, but the era of computers running a single sequential processor now appears to be coming to an end. For at least fifteen years, supercomputers have been using thousands of processors in parallel. Even single-processor personal computers have been using parallelism in the form of pipelining or, in the case of the ubiquitous Intel Pentiums, parallel Arithmetic Logic Units in a single processor. Now multi-core and multi-processor personal computers have become common. This project demonstrates an affordable approach to high-performance computing known as cluster computing. In this approach, moderately fast computers are networked together to function as a single machine, working in parallel to solve problems that would be difficult for a single sequential processor. I will show that even older, inexpensive machines in parallel can outperform a single, more expensive computer solving a problem sequentially.

Online Pronunciation Dictionary
Presenter: David Moses
Faculty Advisor: Haifei Li

For years, the Internet has served as an excellent resource for providing information and definitions for words. However, where would one go to actually hear the pronunciation of a given term? Audio pronunciations of Dictionary.com are limited to subscribers, Wiktionary's sound is in an obscure .ogg format, and Merriam-Webster's site rarely provides new words or colloquial terms. Our solution is to build an online pronunciation dictionary that runs on open source tools such as Apache, PHP, and MySQL; allows users to hear and record sound on any platform with Java applets; and has content generated by its own users following the successful methods of Wikipedia. This project will fill a much-needed role in the Internet universe. We will demonstrate the system during the presentation time.

DIGITAL MEDIA STUDIES

Personal Information Manager Web Application
Presenter: Dustin Martin
Faculty Advisor: Cam Tracy

Managing one's flow of information has become a difficult task as our lives become ever more complicated. The goal of this project is to provide a method of storing and managing the information we receive throughout the day and provide easy access via any computer with web access. This web application will be able to store many different forms of information such as to-do lists, notes, and other text based information. In addition, it will also be capable of storing files of various types such as images and documents as well as many other file types. The application will leverage the power of the Ruby on Rails to provide service to multiple users in a safe and secure fashion.

Keith's Portfolio
Presenter: Keith Young
Faculty Advisor: Cam Tracy

With advancements in computer technology and faster Internet connections, the world is moving more to an online community, where people can practically do and find anything they need. You can pay your bills online, work at home online and even go shopping for clothes and food online. Keeping these ideas in mind, a flash based portfolio website is ideal for my future employment in successful selling myself to the "Digital Media" industry. The main objective of the website is to feature all the projects, whether graphic design or website design, accomplished while in school. It will feature an "About Me" section and my Resume.

Diggs Deep Online: A Portfolio Website
Presenter: Matthew Diggs
Faculty Advisor: Cam Tracy

As a Digital Media Studies major I am exposed to a vast array of mediums of communication that utilize the computer as its main tool. Diggs Deep online will incorporate many different types of media including audio, video, still images, graphics and text. Diggs Deep online is a website that will contain my portfolio of photography, graphic design, documentaries and journalism. The website will be database-driven and will employ ColdFusion. The site will be easily updated through a password-protected backend, where I can add, update, or delete media from the site. Diggs Deep Online will also utilize Flash for displaying video media and some of the navigation.

The Church Website: A Redesign
Presenter: Jande Jackson
Faculty Advisor: Cam Tracy

As I look at churches websites, I am truly sad. Now that we are in the 21st century, it is imperative that Christian realize our competition is the world. I believe that in order to reach the world we need to use all our resources to spread the Gospel. This project is a redesign of a website for a growing church in the suburbs of a major metropolitan area in the north. I desire to make this a great website and not necessarily a good church website. I want to make this a website where people can access information easily, but also make it a very well designed site. I plan on refining it to meet current web standards with clean CSS and Flash elements.

Through the Eyes of Others
Presenter: Aaron Hardin
Faculty Advisor: Cam Tracy

"Through the Eyes of Others" will be a DVD of several narrative photo stories. Each story will depict the stories, specific life experiences, or ideals and views of particular people that I have grown to know recently. While the focus of the piece is on the individual story, there will be clean, well-designed DVD authoring, including groups of menus in an easy to navigate hierarchy. I will use DVD Studio Pro to structure the DVD navigation.

Graphic Novel Presentation
Presenter: Tyson Cadenhead
Faculty Advisor: Jonathan Gillette

The purpose of this presentation is to demonstrate the power of still images and type as a visual storytelling medium. Over the course of the semester, I have been involved in the creation of a complete graphic novel, which will tell a story in a new and innovative manner. This presentation will be the culmination of the illustration and storytelling techniques that I have learned during throughout my college experience. The graphic novel will be available in both printed form and a computer media presentation format for the presentation. It is meant to challenge the viewer spiritually, philosophically and sociologically.

DMS Seminar
Presenter: Drew Winter
Faculty Advisor: Jonathan Gillette

I will use the art gallery to bring my works together into a story that may express different meanings to each viewer. The combination of graphic design and illustration will be my approach, and "Silence" will play the major theme of the show. My research is on the overlooked things manifested into what they really are which can only be seen with open eyes. I am attempting to show what silence has to do with listening, which simply requires attention, because with God, things that are not will nullify the things that are (1 Cor. 1:28).

Picturing the Unreal through Simulated Reality
Presenter: Daniel Lindley
Faculty Advisor: Jonathan Gillette

Through the medium of the computer, I will present a series of images and films that are entirely digital that play off of our ideas of realism. I will reference the classical formats of landscape, figures, still-life, and abstract expressionism. I will as subtlely as possible blend in both subject matter and technique the concepts of real and fantasy, the digital and the photoreal. This is to show the relevance and the capabilities of the medium. These will be presented in large format, very high resolution images.

ENGINEERING

Seeing Africa
Presenters: Justin Montgomery, Debi Eley, Jackie Deasy, Rabo Garba, Rachael French, Christian Christensen & Cassie Luttrell
Faculty Advisor: Jeannette Russ

Beyond the beauty of South Africa lays a burden that is growing exponentially – the burden of visual disability. Along with many other disabilities, extremely poor uncorrected eyesight creates a barrier to economic and social development. Visual problems are ever increasing among South Africans, especially those living in rural areas, due to the lack of medical care. One article states that there are only 25 optometrists available to serve 38 million people.

Knowledge and technology are available to improve the quality of life for those suffering with various forms of eye complications. The purpose of the project 'Seeing Africa' is to identify and develop plans for implementing an appropriate technology in South Africa to decrease the number of people suffering from various visual disabilities.

Estimations & Engineering: A Questionable Combination?
Presenters: Joshua Armacost, Joshua Brooks, Debi Eley, Kerri Harwood, & Rabo Garbo
Faculty Advisor: Don Van

Engineering is a fundamental field for the progress of mankind, but can engineers be trusted? Estimations and assumptions are a necessary part of the engineering method & such assumptions can be helpful or hindering. For this presentation, we intend to explore whether these 'shortcuts' are truly helpful and time-saving, or are dangerous and risky. Through examples in thermo-fluid dynamics and multiple-process systems, we hope to show how errors can be caused through interpolation methods, rounding, omissions and questionable assumptions. We will also discuss methods of counteracting dangers caused by these errors with concepts like 'factor of safety' and improved interpolation and data analysis methods.

Improving Faraday's Flashlight
Presenters: Blake Waggoner, Debi Eley & Justin Montgomery
Faculty Advisor: Jay Berheisel

A Faraday Flashlight is a mechanically powered flashlight based on Faraday's law of induction. The law states that an electric current may be induced in a coil when a magnet in motion produces a change in the magnetic flux through the coil. A do-it-yourself version can be built in a tic-tac container. The design of the flashlight will be analyzed to find possible improvements. Design elements such as the magnet size, circuit design and L.E.D type will be varied in order to understand their effect on the flashlight's performance. The primary performance measures will be the flashlight's brightness, charging time and ability to store a charge. Although an understanding of the underlying scientific principles is important, this project's focus is practical improvement of the design. A series of experiments with the varied design elements will reveal which have the most significant effect on performance and what design produces optimum results.

Powerful and Practical Applications Using VBA and the Microsoft Suite
Presenter: Josh Shrewsberry
Faculty Advisor: Jeannette Russ

This presentation will demonstrate how the Microsoft suite of products can be used to efficiently and professionally keep track of quantitative program assessment data – without purchasing specialized software. Access, Excel, PowerPoint, and Outlook are used to create a customizable system that manages data, generates graphical reports, and e-mails applicable reports to students and professors. With the exception of initial data setup, the entire process is fast and automatic, and initial data setup can be highly

automated through the use of Visual BASIC macros. We are successfully using this system to archive data and to generate individualized reports for students, professors, and administrators. This automatic reporting of results allows students to identify strengths and weaknesses, allows professors to assess effectiveness on a course-by-course basis, and allows administrators to identify areas for program improvement. This system is a key part of overall program assessment, because it provides prompt feedback with portable software.

Perfecting the Performance of a Water-Rocket
Presenters: Jasmine Huang, Josh Shrewsberry & Rabo Garba
Faculty Advisor: Jay Bernheisel

The objective of this project is to develop an optimal design of water rockets by studying the effect of several variables on performance. A water rocket is a form of model rocket powered by stored compressed air instead of a chemical propellant. Water acts as both reaction mass and as an expansion nozzle. The design variables to be studied are bottle size and material, liquid volume and type, air pressure, and bottle enhancement (wings, nose weight). The performance measure of each water-rocket will be its horizontal range. Different arrangements of variable settings will be tested. Performance with different settings of individual variables will be compared to determine the optimal settings for this variable. The overall optimal design of the water-rocket will then be developed by combining optimal settings of all design variables.

Designing a Water Purification Business Suitable for Swaziland
Presenters: Blake Waggoner, Chris Singleton, Jasmine Huang, Jeremy Cathey, Kyle Swafford & Ruth Yates
Faculty Advsior: Jeannette Russ

One of the many African people groups in need are the inhabitants of Swaziland. About 45% of Swaziland's population is infected with HIV and life expectancy is about 30 years. For a solution to this problem to be feasible, it must be looked at from several angles. The humanitarian, economic and technological sides of a project must all be considered with care. By working together, the members of a social work class and an engineering economics class will address these issues in order to present a solution that can realistically be implemented and maintained. A lack of access to clean water is a major problem that affects all areas of life and is widespread in Swaziland as well as many other regions. Providing a reliable source of clean water will further the progress being made in many areas, especially in health, agriculture and sanitation.

Autonomous Robot Design
Presenters: Jeremy Sullivan, Josh Shrewsberry & Zack Jackson
Faculty Advisor: Jeannette Russ

Utilizing concepts from their engineering coursework, the team has designed and constructed an autonomous robot to compete in the 2007 IEEE Southeastern Conference Student Hardware competition. In accordance with the competition guidelines, the robot will catch up to twenty-one dropped ping pong balls and fire those balls through a vertically aligned ten-inch hoop. The robot's actions will be dependent upon its ability to receive and display a code transmitted via an infrared signal. The design process has included elements of several branches of engineering, including digital logic, electronics, material science, dynamics, power, and kinematics of mechanisms. The team will present their work in designing and constructing the robot, as well as their results from the competition. There will also be a live demonstration of the robot's capabilities.

ENGLISH

"a long return from camping in the bottomland"
Presenter: Andrew Gray
Faculty Advisor: Roger Stanley

"a long return from camping in the bottomland" is a narrative poem, utilizing largely prosaic verse as well as pseudo-stanza. It concerns the thoughts of a camper returning from a week alone in the woods. Throughout its fairly lengthy progression, roughly 28 page-length lines, it explores the nature of freedom, commenting on love and

The River
Presenter: Katherine Kipp
Faculty Advisor: Roger Stanley

"The River" is a poem that was inspired by "The River" and "Revelation," both by Flannery O'Connor.

"On Thursday"
Presenter: Renee Roberson
Faculty Advisor: Roger Stanley

"On Thursday" is a free verse poem, an inward reflection on death and the impermanence of reputation. The epigraph references The Bell Jar by Sylvia Plath, stating "I saw the years of my life spaced out along a road in the form of telephone poles, threaded together by wires…the wires dangled into space, and try as I would, I couldn't see a single pole beyond the nineteenth." The poem opens with the narrator looking out over a graveyard. The following four stanzas are the narrator's musings on the graveyard, and the people that lie buried there.

"Like Two Doomed Ships that Pass in Storm": Universal and Personal Forgiveness in "The Ballad of Reading Gaol
Presenter: Nellene Benhardus
Faculty Advisor: Roger Stanley

In "The Ballad of Reading Gaol," Wilde pleads with his Victorian audience to forgive murderers instead of executing them. He forms this appeal through describing the imprisonment and execution of a guardsman. In recent research, the role of the guardsman has been explained as both a symbol of mankind's common weakness and a direct metaphor for Wilde and his homosexuality. Each of these viewpoints limits itself to one side of a dichotomy between the desire for personal and universal forgiveness. In this paper, I argue that both readings of the poem are too limited. Rather, Wilde uses an appeal for universal forgiveness to petition for his own personal forgiveness.

Creative Writing Reading
Presenters: Ruth Barnes, Ben Glass, Ben Goodwin, M.J. Houston, Wes Stepp, Jared Swinney, Josh Abbotoy, Tiffany Collins, Matt Kingsley, Katherine Kipp, Brett Logan, Racheal Presnell, Sarah Stinson, Andrea Turner & Tyler Whetstone
Faculty Advisor: Patty Hamilton

Students from Introduction to Creative Writing will read selected original poems, short stories, and creative nonfiction pieces.

HISTORY

"Speak Softly and Carry a Big Stick:" How Theodore Roosevelt Changed American Foreign Policy
Presenter: John Crawford
Faculty Advisor: Keith Bates

Once Theodore Roosevelt reached the presidency, he marked the beginning of a dramatic shift in American foreign policy through his aggressive intervention in Latin American countries and his desire to see America assume its rightful place among the world superpowers. He achieved an expanded foreign policy by his ability to take advantage of historical circumstances and by creating situations that increased America's influence abroad. Roosevelt's foreign policy decisions, in particular the building of the Panama Canal and the voyage of the Great White Fleet around the world, became the basis for American foreign relations for the next quarter of a century.

The Seussian Influence on World War II
Presenter: Rachel Campbell
Faculty Advisor: Keith Bates

The condensed version of my paper and presentation consists of the explanation on the life of Dr. Seuss during the time of World War II. It is a study and explanation on six of his political cartoons in which he created before and during the war. The theses of my paper is that Theodor Seuss Geisel did more for American culture and thought than just what most people realize with his work in children's literature. He was an innovative man of his time who tried to encourage thought and action from his readers to support the war, the troops fighting, and the American government. My paper examines his ideas and opinions about the war through studying some of his political cartoons of the time.

INTERNATIONAL & INTERCULTURAL STUDIES

Third Culture Kids and the Process of Identity Formation
Presenter: Mary Meimei Zhang
Faculty Advisor: Cynthia Jayne

As the world becomes more interdependent, the movement of people between borders will increase substantially. Children, who accompany their parents in these moves between cultures, are significantly affected by the cultural and social shifts which they experience during their developmental years. Although there are a growing number of studies directed at helping adults facilitate intercultural communication, studies of how these moves between cultures influence the formation of the child's identity is not studied as much in comparison.

This study hopes to address this more hidden but important aspect of globalization. As more children are required to develop an intercultural identity, more will also face the confusion of not being able to totally fit into one culture or another. This study will look at how these children can form healthy identities that will enable them to participate within the cultures that they are culturally marginal to and prevent them from forming identities that facilitate alienation from their family, peers and the larger society.

In Spain, Democracy has a High Price
Presenter: Loreto Maria Cervera Delgado
Faculty Advisor: Cynthia Jayne

The purpose of my research project is obtain a better understanding of the variations in policies and procedures of Spain´s former President, José María Aznar, and the current President of Spain, José Rodriguez Zapatero; as well as to explore how the March 11th bombing of the Madrid train in 2004 has effected the government, the society, the cultural identity, the cultural interaction, and the perception of what Spain used to be and what it is becoming.

The bombing of the train in Madrid in 2004 had an exponential effect on the future of Spain and its unity of associa-

tion with the Spanish nation and culture. The core of this study is to find the dissimilarities of Spain pre-bomb and post-bomb, and their effect on international policy, domestic policy, the people's identity and their intercultural relationships.

Profiting at the Defilement and Dehumanization of Others?: Germany's Legalization of Prostitution
Presenter: Cara Yates
Faculty Advisor: Cynthia Jayne

In 2002, socialist Germany legalized prostitution to improve the treatment of women working in the sex industry. Germany wanted to boost the legal standing of prostitutes by giving them unemployment benefits, health insurance, and a pension. Alarmingly however, it is estimated that at least 60% percent of Germany's prostitutes are immigrants not necessarily protected by law.

The issues raised are complex culturally, intellectually, ethically, and spiritually. They raise concerns of historical understanding, economic impact, and justice as well as differences in cultural understanding, values, and beliefs. The goal is to develop a Christian response to address the problems of prostitution and sex-trafficking, to show why there needs to be more thinking, writing, and research on the issue of sex work, and to use this thesis to advocate for women in prostitution. Intercultural understanding and a strong interdisciplinary approach will give holistic insight into the problem and provide a foundation for change.

Female Genital Mutilation
Presenter: Laura Tidenberg
Faculty Advisor: Cynthia Jayne

I would like to study the significance and impact that Female Genital Mutilation (FGM) has on developing countries; namely Kenya. I have personal interest in FGM as I have experienced multiple ceremonies for young girls. Growing up my family lived among the Masaai tribe in Tanzania. I will first begin by explaining what FGM is and what parts of the world are currently practicing it. I want to uncover the misconceptions that cultures have about the practice and show the true effects that happen to the girls in the long run. I will focus on Kenya and Tanzania as this is where my experience lies. I will take a human rights stance on the subject and explain how this practice is in direct violation of a woman's rights. There are different organizations that support the fight against FGM and they will be useful to turn to for opinions and statistics. Some examples of these organizations are the United Nations, International Justice Mission, and Amnesty International. The world needs to be educated in this matter and realize that FGM transcends borders and is a global issue. My own personal experience will be critical as it will show the correlation between ignorance and not knowing that it is wrong, to the realization of human rights and that these girls are violated.

Multicultural Diversity in a Pre-K Setting
Presenter: Robyn Head
Faculty Advisor: Phillip Ryan

This presentation focuses on an ethnographic case study conducted at a corporate-owned pre-K school in the Southeastern United States. The organization specializes in child development and education and partners with corporate clients in the community to offer child development centers as part of employee benefits packages. This research focuses on the role that multicultural diversity plays in this child development company's corporate and classroom environments. This presentation will include an overview of the research site, data collection methods, and findings.

Implications of Manifest Destiny on the Native Americans
Presenter: Nicole Tosh
Faculty Advisor: Cynthia Jayne

I will be researching the attitudes of the Anglo settlers in the United States towards the indigenous Americans and the harmful causes of those attitudes. Many factors contributed to the removal of Native Americans from their territory and these factors will be analyzed as well as the immediate implications they had among the Native Americans. I will also study the theological and political framework that contributed to Manifest Destiny as well as how it developed over time among the Anglo American population.

Furthermore, I will explore the Indian Removal Act, which many consider to be a byproduct of the expansionist movement. This includes key people, such as Andrew Jackson, and Chiefs Ross and Ridge of the Cherokee tribe. The Indian Removal Act resulted in tens of thousands of displaced Native Americans from the Southeast and unfortunately, thousands of deaths due to disease and exhaustion.

LANGUAGE

Arabic Influences on the Spanish Language
Presenter: Brianne Kobeck
Faculty Advisor: Cynthia Jayne

Since Spain has often been controlled by a variety of foreign powers, the Spanish language and culture have been influenced by many other civilizations, one of which is the Arabs. This paper will explore the history of the Spanish language by highlighting the lexical, phonological, and political influences of the Arab culture on the language. Finally, this will conclude by analyzing how the expulsion of the Arabs from the Iberian Peninsula aided in the rise of the Castilian, or modern day Spanish language.

Los desaparecidos y la búsqueda de la justicia
Presenter: Candace Todd
Faculty Advisor: Karen Martin

During the 1970's and 80's terrorist dictatorships came to power in Argentina and Chile. These right-winged dictators began to implement a time of so-called national cleansing, called the Dirty War, in which they sought to eliminate all perceived threats to their claim to power and to national security. In order to accomplish their goals, the dictators ordered the arrest, imprisonment, torture, and execution of thousands of people whom the dictators believed to be enemies of the state. The dictators directed these efforts against people perceived to be Marxists, Leftists, or Socialists. These people came to be known as the Disappeared. This presentation will seek to examine the situation of the Disappeared in Argentina and Chile by exploring the political context of the countries, the implementation of the Dirty War, and the various means that have been employed in order to seek justice in response to these human rights violations.

Las Fronteras de la Chicana
Presenter: Bethany Hobbs
Faculty Advisor: Karen Martin

This research project will analyze the concept of border space along the Mexican-U.S. border. In this place of conflict, where struggle is constant, confusion is unavoidable, and there is a battle between separation and connection, the Chican@ culture has emerged and has become a topic of discussion in many academic circles. Taking into consideration the notion that a border is not limited to those of political nature, this research project will develop the concept of the border space through an examination of the struggle for power that is found in the historical border, the spiritual border, the economical border, and the theoretical border. The theme of identity of the Chicana will also be discussed in the context of this struggle through literary analyses of Chicana literature, by authors like Susan Cisneros and Gloria Andalzúa. The manner in which these writings have broken borders in regards to gender roles, politics, education, and religion will be discussed, as well. Because these authors have acknowledged and drawn attention to the differing and often marginalized life-styles of the Chicana, their works have helped to break the borders set up by the systems around them.

Masked Motives: The Real Reasons for the Spanish Conquest
Presenter: Katie Daniel
Faculty Advisor: Karen Martin

God, glory, and gold—the three-fold banner of the sixteenth century conquistadors to the unknown Americas was evident. To many, these pursuits are natural, seemingly noble, and even harmless, especially when bearing God's name and spreading the Christian faith were proclaimed to be the forerunning quests. However, the trinity of their quest was imbalanced. Avarice, power, and pride guided their missions, and the name of God was forgotten as they ravaged new lands and peoples. God became little more than an afterthought.

This project will analyze the motives of the conquistadors, seeking to show that religion was simply a pretext for the conquest. Through analyzing records of both the conquistadors and those around them, it will manifest how religion was merely a justification for the dishonesty and the brutality that explorers and their troops imposed upon the indigenous peoples.

Human Trafficking in Latin America
Presenter: Laura Dancy
Faculty Advisor Julie Glosson

The average individual believes that slavery is an archaic problem that modern-day society has risen above. If slavery does still exist, surely it happens only in underdeveloped countries, and certainly not in our own state. The fact of the matter, however, is that slave-trade is the third most lucrative organized crime today, and before long, it may surpass arms and drugs for first place. Not only is this a huge problem that effects nearly every country on the globe, but two cases of girls trafficked from Mexico for forced prostitution have recently been uncovered the in suburbs of Memphis and Nashville. This research project will focus specifically on the trafficking of sex-slaves and the involvement of Latin America in this grave injustice. It will discuss the process of trafficking, Latin America's vulnerability, the difficulty in correcting the problem, and the action that needs to be taken to fight against modern-day slave trade.

Ernesto "Che" Guevara
Presenter: Craig Clark
Faculty Advisor: Julie Glosson

The study will chronicle the life of the Argentinean revolutionary, Ernesto "Che" Guevara. I will study his life in detail from his formative years in Argentina till his death in Bolivia in 1967.

During his eventful life, Guevara sought a united Latin America, one without oppression and poverty and he fought hard in his quest to gain this. He is best known for his time in Cuba under Fidel Castro's left wing government. Therefore, this period in Che's life will make up the main part of the presentation. However, it also studies the man behind the famous face which has been immortalized in posters and t-shirts around the world looking at what motivated him to live his life as he did his ultimate goals and how he eventually met his demise.

MUSIC

An Eye for Music: Perception of Intervals in Color and Sound
Presenter: Kelley Groover
Faculty Advisor: Joshua Veltman
For centuries, philosophers, scientists, musicians, and artists have theorized about the connection between color and sound. Contemporary artist, Katherine Lubar, has posited the existence of "color intervals" around the artist's color wheel that are analogous to musical intervals. She suggests that the relative consonance of dissonance of a musical interval is mirrored by its counterpart in color. This paper presents the results of an experiment with human subjects designed to test Lubar's ideas. The experiment also concurrently tested another hypothesis inspired by Aristotle's musings of more than two millennia ago: a musical interval and a color interval built on the same Pythagorean ratio will lead to the same perception of consonance or dissonance. The results of this experiment are discussed in the context of theories on the relationship between color and sound by such famous thinkers as Aristotle, Newton, Goethe, and Munsell.

Performance Issues in The Passion According to St. John by J.S. Bach
Presenter: Beth Saxe
Faculty Advisor: Joshua Veltman

The Passion According to St. John was originally used to commemorate the passion of Christ in Bach's church, St. Thomaskirche of Leipzig, Germany. First presented on Good Friday of 1723, this liturgical work has regularly been performed ever since. Over the course of time, performing forces and practices have changed due to evolving social and gender norms as well as advances in instrumental construction and playing. The long performance history of The Passion generates specific challenges for its modern interpreters. This paper will address the challenges women face in singing parts written for boy soprano and make falsetto voices. It will also discuss the choices performers must make to cope with the work's original Baroque instrumentation, tuning and style. Finally, the paper will address accusations of anti-Semitism that have been directed against The Passion.

PHYSICS

It's All Greek to Me
Presenter: Amber Roberts
Faculty Advisor: Kyle Hathcox & David Ward

Physics is a wonderful word. Not only does it encompass every law that governs our natural world, but it also exudes a feeling of untamed power, incredible knowledge, and (in most cases) intrinsic fear. My research has been dedicated to the instruction of physics at the high school level. One blessing bestowed upon us scientists is our prevalent obsession with "toys". These demos and mini-experiments scattered haphazardly around our work areas can often illustrate principles much more comprehensible than a long, drawn-out lecture. The innate curiosity of science-fascinated students has led some to the point of self-education. You don't need a lot of fancy equipment to illustrate a principle. Physics does not have to be expensive – it just needs to be understood. My focus has been to put together as a series of mini-labs that can be taken down and executed by a student at their desk or at home. Each box is labeled with its own Greek letter, and all supplies are provided

Non-invasive Quantification of Liver Iron Content by Using MRI: Error Analysis and Optimization of Methods
Presenter: Robert Krauss
Faculty Advisor: Kyle Hathcox

Sickle-cell disease (SCD) is a serious illness most commonly treated with chronic blood transfusions, which can lead to iron accumulation in the body. Treatment of this iron overload is dependent upon the accurate measurement of body iron. Liver biopsy is the standard method of determining total body iron content, but is invasive, and can be confounded by other liver complications. Efforts have been made to develop a non-invasive gradient echo (GRE) T2* multiecho MRI technique that can measure iron content at high speed. Studies in the liver have shown a correlation between relaxation time and iron content, but it appears to be a difficult-to-approximate multi-exponential function. The goal of this study was to create a phantom that simulates normal liver that would allow direct comparison of the phantoms to biopsies in the future. A secondary goal was to optimize the T2* technique for use with the phantoms.

POLITICAL SCIENCE

Child Labor in India: Exploiting the Innocent
Presenter: Chelsea Freemon
Faculty Advisor: Kevin Cooney

According to the International Labor Organization (ILO) there are currently over 200 million children between the ages of 5 and 17 employed worldwide in some form of child labor. The highest concentration of child workers can be found in India, in the form of agricultural labor, industrial labor, as well as a high number working in the worst forms of child labor, including bonded labor, domestic servitude, prostitution, and armed conflict (i.e. child soldiers). This paper will examine the economic, social and political reasons child labor is so prevalent in India in particular, if and why the economy is so dependent upon child workers,

and what the economic implications of ending child labor would be for India. The importance of developing more effective strategies than simple "rescue missions" by outside organizations will be stressed, highlighting the importance of education and provision of alternatives for these millions of children currently employed and exploited.

Public Deliberation and Educational Funding in Jackson-Madison County
Presenter: Lawrence Derrick Lambert
Faculty Advisor: Kevin Cooney

Applying articles from academic journals, historical news pieces from The Jackson Sun, and personal interviews with county officials intimately acquainted with the educational system in Jackson-Madison County, I seek to better understand the dynamics at work among the County Commission and School Board, link those realities with the broader concepts of public deliberation, and thus prescribe their use in concrete terms on the local level. The hypothetical supposition of my work is that the lack of public deliberation/deliberative democracy present regarding the issue of school funding in Madison County (a) exacerbates the intractability of the problem while (b) radicalizing those on both sides of the issue. While a concerted effort to dialogue would not immediately or easily resolve the issue, it would serve to ground discord in substance while enhancing the prospect of resolution. My work seeks to better understand the dynamics at work between the School Board and County Commission, and explore the prospects for deliberative forums on a theoretical level as well as a practical level.

The Favelas
Presenter: Joshua Pettigrew
Faculty Advisor: Kevin Cooney

Favelas are shantytowns that form on the fringe of cities in Brazil. My research is going to discuss how and why these favelas form, what their interaction with the government is, and why some local governments are starting to recognize favelas as entities, providing them with deeds, utilities, etc. This paper is meant to be informative while also bringing forth important ideas on how to effectively manage and progress these favelas so as to reintroduce them to society. Current problems will be looked at as well as local solutions that are being tried, as well as new ideas that may help the favelas.

Metropolitan Government: Why do Madison County and City of Jackson Residents Support or Oppose the Idea of Consolidated Government Between the City of Jackson and Madison County?
Presenter: Alex Scarbrough
Faculty Advisor: Sean Evans

This research project is based on a cross-sectional survey of randomly selected county and city residents of voting age in Madison County. This survey aims to pinpoint the reasons why citizens oppose or support the idea of metropolitan government. Several hypothesis suggest citizens will oppose metropolitan government because they believe it will decrease the power of their individual vote, it will be less effective at meeting their needs, and because they will lose the sense of community they derive from living in either Jackson or Madison County. Additional hypothesis suggest citizens will support metropolitan government because it will lead to improved efficiency, coordination of services, and improved opportunity for business expansions.

Views Regarding the Successes and Failures of the Jackson-Madison County School System
Presenters: Jordan Scott, Nathan Tilley, Meg Duke, Jenica Vandiver & Katherine Evans
Faculty Advisor: Sean Evans

With the prospect of metropolitan government in the future for Madison County, it is important to examine consolidation efforts from the past and present. This research project is designed to determine the successes and failures of the consolidated school system in Madison County by studying the results of a telephone survey of 400 local voters. We hypothesize that most voters believe that there is currently a low quality of education due to unsafe schools, unqualified teachers, inadequate facilities, and the insufficiency of school choice in the district, along with other factors. These views, however, will likely vary based on race, income, having school age children, and sending children to private schools. The research will also address possible solutions to the perceived problems such as stricter discipline in schools, increased funding, vouchers, and unitary status.

PSYCHOLOGY

Self-Reported Effects of Sleep Hygiene on Academic Performance in a Sample of College Students
Presenters: Bekah Bothwell, Lorien Pirtle, Brook Chute & Brenn Johnson
Faculty Advisor: Jinni Leigh Blalack

Sleep hygiene was defined as the practice of these sleep methods: sleeping in a good sleep environment, practicing a consistent wake/sleep cycle, avoiding caffeine within five hours prior to bed, and avoiding exercise within three hours prior to bed. Research has shown that the practice of good sleep hygiene can impact students' academic performance. To support previous findings, undergraduate students enrolled in Introduction to Psychology courses for the fall 2006 semester at Union University participated in this study. Pretest and posttest surveys were administered to determine both a sleep and an academic score. Between tests, a student researcher-made instructional video concerning sleep hygiene was presented. Data from the two surveys was analyzed to see if the knowledge of sleep hygiene increased the practice of healthy sleep hygiene or if such

practices were correlated with self-reported satisfaction of one's academic performance. There was a slight difference found from pretest to posttest.

SOCIAL WORK

Making Good Cents: Fair Taxation in Tennessee
Presenters: Emily Orten, Erica Thomas & Sherika Goodman
Faculty Advisor: Theresa Blakley

Tennessee's unfair taxation policies create a situation in which providing for a basic need such as food becomes harder to achieve than supporting a habit such as smoking. Senate Bill 93 and House Bill 114 propose to alieviate this problem by calling for a 3% reduction on Tennessee's food tax while increasing Tennessee's cigarette tax by 40 cents per pack. Currently, Tennessee's food tax is the highest in the nation at 8.35%, while Tennessee's cigarette tax of 20 cents per pack is the fourth lowest in the nation. These bills seek to change that. We must be advocates for this kind of change which benefits all.

Monsters in the Bed, Not Under It: Fighting Child Sex Servitude in Tennessee
Presenters: Katie Daniel, Kirby Maxwell, Julie Mitchell & Amanda Pennington
Faculty Advisor: Theresa Blakley

Tennessee is a gateway state for children who are forced into sexual servitude, and there is no current legislation in Tennessee that addresses the atrocity of sexual servitude of a minor. The purpose of this project is to inform about the crime of sex servitude and the moral obligation citizens and elected government officials have to fight against this horrendous crime. Through raising awareness and supporting legislation in favor of making this a criminal offense, this can be achieved. This research project shares Tennessee's need for the passage of Senate Bill 0013 and House Bill 1100—"Tennessee Anti-Child Sexual Servitude and Trafficking Act of 2007," which would propose a new criminal offense: "sexual servitude of a minor." This project focuses on the need for this legislation as well as the importance and varying aspects of advocacy.

Remembering Those Who Can't: Demanding Best Care Practices for Tennesseans Affected by Alzheimer's
Presenters: Barbara Reynolds & Carrie Jones
Faculty Advisor: Theresa Blakley

Healthcare professionals caring for persons with Alzheimer's Disease are not adequately trained to interact with their patients. In 2005 45.4% of nursing home residents suffered from some form of dementia (Harrington, et. al., 2006). Health care professions report a lack of training in geriatric education, especially in Alzheimer's Disease (Goins, et. al, 2003). Alzheimer's Disease robs a person of their memory, personality, motor functioning, and relationships. Without knowledge of the disease, caregivers are not qualified to communicate with or to direct daily living activities for persons with this degenerative disease. House Bill 1971 and Senate Bill 0826 propose to establish a Tennessee Alzheimer's Disease Tack Force to review current standards of care for persons with this life altering disease. We advocate for the passage of this bill as a first step to improvement in quality of life for those living with Alzheimer's Disease.

Susie Flynn for President: Demanding Health Insurance for ALL American Children
Presenters: Katrina Parker, Candra Pennington & Emily Watlington
Faculty Advisor: Theresa Blakley

The United States of America is the richest nation in the world and yet 9 million children have no health insurance coverage. Every 46 seconds, another baby is born without health insurance in the United States. We support All Healthy Children of 2007, asserts that the United States government ensures comprehensive health and mental health care for ALL children in America. Withholding health insurance from the nation's children is socially unjust, doing untold harm to families. A child's poor health will negatively impact all of a child's future well-being, including education. We demand that every child, of all economic strata, receive insurance that gives access to comprehensive health care. This proposal will decrease the nation's child mortality rate, improve the well-being of families, and strengthen the fabric of our nation. Ensuring all children have equal health care benefits is an achievable, smart and right goal (Children's Defense Fund). Our children are our most valuable resource, and our country cannot afford to wait another year before taking action.

Resolved for a Legal America: In Support of Resolution SJR0013 For a Faster and More Accessible Naturalization Process
Presenters: Jennifer Tharp, Kasey Cobb, April Moore & Janelle Musser
Faculty Advisor: Theresa Blakley

In support of Resolution SJR0013, our project informs Tennesseans about the benefits of immigration in our state. Beneficial facts most often get overlooked because of negative feelings, myths, and misinformation surrounding immigration at this time in our country. We are determined to set the record straight. Immigrants are helpful to our economy because they pay property and food taxes. A majority of immigrants are not criminals, and more than 75% of immigrants learn to speak English well within ten years of arrival. Immigrants have the right to live a life free from fear of discrimination. We plan to advocate for immigrant persons by meeting with legislatures and educating citizens of Tennessee regarding the benefits immigrants bring to our state.

Blood Diamonds: No Longer a Diamond in the Rough
Presenters: Suzanne Short, Alisha Cochrane & Lindsey Wallach
Faculty Advisor: Theresa Blakley

Thousands of Africans are being brutalized and murdered in the diamond mining industry. To the great harm of innocent civilians, rebel groups in countries such as Sierra Leone and the Democratic Republic of Congo fund civil war through illegal diamond exportation. Human rights organizations such as Amnesty International, World Vision, and Global Witness have decreased diamond-funded terrorism in West African countries. The Kimberly Process Scheme, which involves the inspection of rough diamonds that are internationally imported for the diamond market, is one way to stem the tide of diamond-fueled terrorism. A federal law, the Clean Diamond Trade Act, further supports and enforces the Kimberly Process in the United States. However, the Kimberly Process and the Clean Diamond Trade Act do not go far enough to stamp out this global injustice. We assert that public awareness and congressional attention are vital to stop trading human life for diamonds.

Drifters in the Night: Housing Hoboville
Presenters: Dusty Ruehling, Patty Moyers, Lauren Goley & Liz Cannava
Faculty Advisor: Theresa Blakley

Homelessness in America is perhaps the greatest social welfare problem affecting our nation today. The Department of Housing and Urban Development (HUD) estimated that there were as many as 754,000 homeless persons in 2005, including those living in shelters, transitional housing and on the street (Report: 750,000 Homeless 2007). In Jackson, Tennessee homeless persons with no where else to go huddle together in dark corners of the city in a location that has become known as 'Hoboville.' A need exists to help these invisible people who are on the streets and to provide for them a safe haven. This vulnerable population needs access to basic necessities such as food, clothing and shelter, as well as safety from people who threaten to harm. We assert that there must be an overnight shelter for homeless persons in every city in Tennessee to provide aid and assistance for their successful future self-sufficiency and their contributions to society as productive citizens. By accomplishing this, Tennessee will set the precedent for other states to follow as all human beings deserve to have their basic needs met.

TEACHING ENGLISH AS A SECOND LANGUAGE

The Borders of the Chican@ Student
Presenter: Bethany Hobbs
Faculty Advisor: Phillip Ryan

This research project will analyze the concept of border space along the Mexican-U.S. border. In this place of conflict, where struggle is constant, confusion is unavoidable, and there is a battle between separation and connection, the Chican@ culture has emerged and has become a topic of discussion in many academic circles. Taking into consideration the notion that a border is not limited to those of political nature, this research project will develop the concept of the border space through an examination of the struggle for power that is found in the historical border, the spiritual border, the economical border, and the theoretical border. The focus of the project will then be on the area of education, as an explanation of the Chican@ student will be developed by looking at studies conducted within the border area. Ideas such as the identity of the Chican@ student in the United States, their role within the classroom, and the way power-structures have contributed to the ability for these particular students to perform in an educational setting will also be discussed.

Perspectives of Critical Assessment: Elana Shohamy on Politics, Economics and Social Class
Presenter: Allysha Martin
Faculty Advisor: Phillip Ryan

Incorporating a Marxist and Freirean theoretical framework, this presentation explores the socioeconomic and political aspects of assessment in a variety of educational contexts, including the language classroom. Included in this presentation is a focus on the research and writings of Elana Shohamy, a language professor at Tel Aviv University, whose research focuses on this critical approach to language assessment. A critical approach and reflection of assessment is crucial for any participant in education and society; thus, this presentation will explore the effects of assessment and why our culture needs to reevaluate their perceptions of assessment.

Language, Thought, and Culture
Presenter: Kimberly Walter
Faculty Advisor: Phillip Ryan

In my presentation, I plan to address the interplay of language, culture, and individual thought. To what extent do they reflect and affect one another? I will frame this discussion around the continuum of viewpoints surrounding of the Sapir-Whorf hypothesis of linguistic relativism, and will use it to encompass language and culture differences from an international level to national, regional, and even personal dialectic and idiolectic levels which address the plurality of modern Englishes. Then, from a practitioner's view point I will address the implications of these theories and findings on teaching students of English as a Second Language.

Language Policies in the United States
Presenter: Brianne Kobeck
Faculty Advisor: Phillip Ryan

In the United States, citizens' and immigrants' linguistic rights have often been challenged as a result of the debate over establishing English as the official language of the country. This paper will analyze the history of the English only movement in the United States, including the rationale and motives for English only mandates; the class based and economic power structure underlying such initiatives; and the resulting implications for nonnative speakers of English in this context.