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Abstracts for 2015 Student Research Conference

Abston, Summer "Architectural Reformation Of Educational Institutions" (Shahnaz Aly)

Children serve as an important factor concerning the future of this world. In order to positively impact our future we must start with education by addressing daily function in schools. The aim of this research is to create an environment that is conducive not only for performance but also for health. This is accomplished by appealing to sensory elements. Studies show that by increasing natural lighting and controlling the acoustics, learning can be improved. Health is a vital aspect in producing an environment for learning. By increasing ventilation and not using hazardous materials, such as VOCs and BPAs, adverse health effects can be averted. Materials can serve a dualistic purpose of appealing through sensory perception and meeting sustainability goals. Additionally, materials can also aid in code compliance. Certain types of glass offer a myriad of benefits for regulation and security advances. Moreover, through better selection of materials, schools can improve their educational environment and prevent sick building syndrome all while becoming more sustainable and accommodating to building codes. This presentation will highlight the topics that were adopted in the design of a high school.

Abston, Summer; Aly, Shahnaz; "Observational Sketching As A Platform To Improve Sketching Techniques" (Shahnaz Aly)

Architecture is a very visual discipline that involves sketching and drawing as a means of visual expression. However, the computer has become the preferred design tool for most designers and architects. Through the transition of traditional to digital drawing tools, programs have become so sophisticated that they virtually require no thought from the user, making hand sketching a thing of the past. The aim of this research is to bring together the ageless art of freehand sketching and modern digital tools to create a balance between the two; preserving the lost art of hand drawing and to realize that digital tools are here to stay by finding the best way to integrate them. Observational sketching enables a student to focus more on the task of visually expressing an observation. Being introduced to free hand sketching and drawing, one would do well to observe the form and shape of existing structures and to interpret these details through their sketches without overloading themselves in thinking of design ideas at the same time as learning the art of freehand drawing.

Adams, Shelby; Anaya, Berenice; Arnold, Jessica; Lowery, Danielle; Herricks, Sarah; "Risky Business? The Effects Of Sensation Seeking Personality Traits On Performance Monitoring And Adjustment." (Brandy Tiernan)

Individuals with risk-taking and sensation seeking personalities are more likely to be impulsive and make poor decisions. Such behaviors have been linked to poor error processing and attentional control. The purpose of the current study was to discover conditions under which "risk takers" become more aware of behavioral outcomes and how this awareness influences the error related negativity (ERN), a component of the event-related brain potential (ERPs) that reflects a distress-related response to control failures. We related self-report measures of risk taking and other personality traits to the ERN elicited during a variation of the Stroop task. The punishment condition resulted in the largest improvement in error processing of those measuring high on risk taking. Our results provide support that risk-taking traits affect responsiveness to errors, and the ERN reflects the influence of the extent of individuals concern with the outcome of events.

Agaba, Peter "The Reality Of Being A Student Athlete (student Athletes Put More Hours On The Field Than Class)" (John Hagaman)

Student athletes contribute greatly to their schools, generating revenue and publicity. They spend a considerable amount of time participating in college sports competing or training. Some people have observed that many student-athletes actually spend more time on the field than in the classroom, prompting the view that student-athletes are more of workers than students and as such should be given monetary compensation. This research paper will pursue that argument by looking at the realities of student athletes in such terms as revenue generation for their schools, work hours versus class hours, and the dim prospects of them becoming professional athletes after college.

Akhtar, Saadia "Diversity Of Mycobacteriophages In Hydrologic Regions" (Claire Rinehart)

The DNA from the genomes of over 700 bacteriophages, specific for the host *Mycobacterium smegmatis*, have been sequenced. Genomes with greater than 50% DNA sequence identity are grouped together into the same cluster. Currently there are 22 clusters. Mycobacteriophage data was taken from the official Mycobacteriophage database (phagesdb.org). The objective of this study was to compare the distribution of Mycobacteriophage cluster diversity across the 21 hydrologic regions in the United States. Mycobacteriophages were sorted into their respective hydrologic regions by their geographical coordinates of where they were isolated from soil samples. The total number of phages for each cluster within each region was expressed as a fraction of the total found in each hydrologic region. The distribution among clusters was then compared between hydrologic regions using an ANOVA. Hydrologic regions with similar distributions were identified by Post-Hoc tests.

Alavi, Farshid "Robust Optimization Design For Whipping Cream Within The Framework Of Six Sigma" (Daniel Jackson)

It is a project-based research. The subject is a food manufacturing company whose product is whipping cream. The problem is a high rate of nonconforming product (measured by DPMO) regarding the variation in cream viscosity and stiffness. The company has a full control over process parameters and raw materials except the blend of emulsifiers and stabilizers used as product additives. The blend is provided by few companies in that area without consistency in their products. Moreover, the supplier does not provide any information about the type and amount of emulsifiers and stabilizers used in the blend. The purpose of this research is to find the optimum combination of emulsifiers and stabilizers. To achieve this purpose, DMAIC model of six sigma has been chosen as a general framework of the project. Robust optimization design (fractional factorial design) and Response Surface Methodology (RSM) have been employed to figure out the optimum combination of emulsifiers and stabilizers. The off-line quality engineering experiment has been conducted using a pilot plant to not disturb the production line and decrease the experimental costs. The independent variables are emulsifiers and stabilizers (5 to 7 factors in three levels), and the response variables consist of overrun, viscosity, and yield stress of whipped cream.

Alipoorabedi, Behraz "The Risk Of Renal Failure In Patients With Diabetes Type 2" (Gretchen Macy)

Diabetes mellitus is the most common cause of end stage renal disease (ESRD) in all countries (Abd-Allha et al, 2014). To identify the risk of renal impairments in diabetic patients the other variables like age (> 45), age at the time of diagnosis of diabetes, the length of diabetes, kidney function at the time of

diagnosis, the level of LDL and haemoglobin A1c (the amount of Hb is bounded by glucose in diabetic patients), blood pressure, family history, smoking and inappropriate blood sugar control must not be ignored (Burrows et al, 2014; Agarwall, 2013). Diabetic patients with hyperlipidemia show the rapid decline of renal function compare with non-diabetic patients. Slight urinary protein excretion (micro albuminuria) is the first sign of nephropathy in diabetics that can be considered as a diagnostic biomarker and predictor among high risk groups. Screening, early diagnosis, proper blood sugar and blood pressure control and low protein diet can prevent and postpone the renal failure and its negative consequences in diabetic patients (Al-Rubeaan et al, 2014). The authors suggested that the blood pressure, albumin excretion are the most important risk factors that can be modified through early diagnosis, correct monitoring and appropriate interventions (Kittipanyaworakun et al, 2013). Objectives: to describe diabetes mellitus (DM) and renal failure (RF), the harmful effects of DM, RF and its negative effects on the other organs, urinary protein excretion and its importance to early detection of RF, and understand what are the risk factors associated with DM that accelerate RF?

Allison, Callie; Harris, Breanna; "Building A Community" (Helen Sterk)

The presence of social media is becoming more central as a platform that engages individuals in a nontraditional manner. Social media has evolved into an important networking resource not only for today's youth, but for organizations as well. An identity online is key in setting oneself apart professionally. Organizations are utilizing social media to increase involvement with their organization, in addition to interacting with their community as a whole. Creating a successful presence on social media requires the support of the entire community. An online platform becomes obsolete if members of the community are unable to engage effectively through the medium. One of the researchers originated the social media platforms for the Western Kentucky University Department of Communication. Through analysis of uses of the platforms, we looked at interactions and dependencies of students and faculty. Specifically, we examined the different levels of involvement with social media held by th

Althausen, Meghan "WKU International Student Teaching Program: Professional, Cultural, And Character Impacts On In-service And Pre-service Teachers" (Fred Carter)

This project focuses on researching the effects of participation in WKU's International Student Teaching Program on in-service and pre-service teachers. The program's effect on teacher's professional decisions made in the classroom and attitudes toward diversity in the classroom were the focus of this research. A mixed method approach of in-service teacher questionnaires and interviews, pre-service teacher's interviews, and analysis of blogs/journals from in-service and pre-service teachers while they were abroad were used in this project. The results of the project have illustrated the benefits of participating in the International Student Program for in-service and pre-service teachers.

ANAYA, BERENICE; TIERNAN, BRANDY; Chambers, Nicole; "Adaptation And Flexibility: The Integration Of Emotion And Cognitive Control" (Brandy Tiernan)

The way in which emotional manipulations distinctly affect cognitive control (i.e., conflict monitoring and goal maintenance) has yet to be determined. Prior work suggests positive affect enhances flexibility and boosts proactive control, while negative affect reduces focus and leads to the use of reactive control and an increased susceptibility to interference. We used event-related brain potentials (ERPs) to examine the influence of emotion on the neural mechanisms of cognitive control related to

performance adjustment (frontal slow wave) and conflict adaptation (conflict SP). Participants performed a variation of the Stroop task where a positive, negative, or neutral word was presented before the stimulus. Behaviorally, the Stroop effect was eliminated on trials preceded by a positive word. Physiologically, affect influenced the level of conflict adaptation for the conflict SP, whereas the frontal slow wave was not sensitive to affect. Results suggest that positive emotion facilitates

Anderson, Jessica "High-speed Metal Forming Processes" (Morteza Nurcheshmeh)

Modern high-speed deformation processes such as Electrohydraulic Forming (EHF) or Electromagnetic Forming (EMF) can improve significantly the formability of modern high strength steels and lower density materials. The use of high strength steels and lower density materials (aluminum, magnesium) in automotive body and chassis structures is an excellent way to reduce vehicle weight. However, the increase in material strength and the decrease in density are creating a real challenge to automotive parts suppliers who manufacture these components with conventional forming processes, such as stamping or hydroforming. Indeed, higher strength and/or lower density materials are inevitably accompanied by a decrease in formability: this leads to increased manufacturing complexity (cost) and a decrease in product design flexibility. As a result, more advanced forming processes are being explored, such as hot metal gas forming, hot stamping, electromagnetic forming, etc. In this research the material behavior was studied in high-speed metal forming processes, major parameters affecting the high-speed metal forming processes were identified, the limitations of these technologies were listed and the future trends of these technologies is summarized. Obtained results in the research will be used as preliminary data in the follow-on research works.

Anderson, Kailey "Stratigraphic Controls On Cave Passage Development Of Dogwood Cave, Hart County, Kentucky" (Patricia Kambesis)

In the Mammoth Cave area, regional lithologic heterogeneities within the Mississippian carbonate section influence groundwater flow and cave development. The predominant lithology's that express significant geologic control are chert layers within the stratigraphic section. However, other lithologies may also affect groundwater flow and cave development in the region. Dogwood Cave, a small vadose cave formed at the contact between the Big Clifty Sandstone and the Girkin Formation, contains a distinctive exposure of shale called the Elwrin Member that is persistent throughout the cave. The purpose of this study was to determine if the Elwrin Member influenced the development of Dogwood Cave. Geologic mapping established the spatial extent of the Elwrin Member and its relationship to a small, shallow aquifer that is the source of a 5-meter tall waterfall at the terminus of the cave. Integration of geologic mapping data and baseline cave survey data is expected to provide insight into the geologic evolution of Dogwood Cave.

Arnold, Richard; Choate, Robert; "Ir Moisture Assessment Of Common Construction Materials" (Robert Choate)

Thermal imaging offers a more efficient method to conduct home moisture inspections. However, it is necessary to establish a correlation between the saturation content of a material and images captured. A control environment has been constructed to simulate the boundary between a house and its surrounding environment. This environment is partitioned by an OSB plywood sheet. The first section houses a humidifier to provide various humidity levels, the second section houses a computer fan to provide a pressure gradient within the volume. The humidifier is to be left on to create various moisture

concentrations. At each time interval, IR images are captured and a protimeter is used to measure moisture. After analysis, a chart is developed relating different percent moistures to IR images. The goal is to understand how different saturation levels appear in an IR image in relation to ambient conditions. This will lead to reference charts that will allow thermographers to estimate how much moisture is in a material while in the field.

Arvizu, Angela "Fire as A Symbol Of Destruction And Rebirth" (Ann Ferrell)

During August the Festival known as "Burning Man" transforms the barren desert of Black Rock City, Nevada into a city with a population of 65,000 people. After just a week the city is again erased and returned to desert. The festival is known for its commemorative and symbolic burnings of creative art and wood buildings. These artistic structures are located and symbolically destroyed by fire at the center of "The Playa", where the light can be seen from almost any viewpoint. Numerous journals and theses have been written about the festival since its start on 1986. Among other aspects, these written accounts have investigated the spiritual, economic, communal, artistic, and theatrical aspects of the festival. In this paper I will attempt to identify the meaning of burning a structure and its symbolisms for the individuals as well as its creators. I will research the past and the present reasons that fire has been the symbolic force used during festival rituals. Experiencin

Ascensio, Zona "The Effect Of Family Participation In Traditional Culture On American Indian And Alaska Native Youth Suicide Risk" (Darlene Shearer)

Background: The American Indian/Alaska Native communities have been disproportionately affected by youth suicide. While remedying this problem through effective intervention is necessary, public health workers must consider the unique challenges and cultural perspectives experienced by this population. Integrating traditional culture into public health interventions has been suggested as a way to tailor health education to Native Americans since culture has been shown to be a protective factor against a number of risk factors. Purpose: To determine if participation in Native American traditions is associated with a decrease in suicide risk behaviors in American Indian and Alaska Native adolescents. Methods: A linear regression analysis was used on a sample of 3555 Native American adolescents who attended grades 7-12 in schools on or near reservations in 2009 to 2013 to determine whether there is a significant relationship between known personal suicide risk behaviors and higher rates of participation in American Indian traditional ways of life. Results: This study determined that greater family participation in traditional culture was associated with a decreased amount of suicide risk behaviors. As a participant's family increases participation in the Native American way of life, the adolescent participant's suicide risk decreases by nearly a point on a 133-point suicide risk scale. Conclusion: Given that family participation in traditional culture was found to be a protective factor against suicide risk behaviors, this analysis provides some evidence that family-targeted, culturally-based interventions may be appropriate to reduce youth suicides in this population.

Austin, Brita "Food Forest In Urban Public Areas" (John All)

Effective sustainable agriculture is a growing concern, and as populations increase, there is a continuous need to increase food production. This research will work to counter urban problems with food production and availability by using Food Forestry, a type of dense food production, in public spaces. Food Forestry is currently utilized across the globe, and has been for thousands of years. Some local examples include the Beacon Food Forest of Seattle, WA, the George Washington Carver Edible Park in

North Carolina, and the Kalihiwai Permaculture Food Forest in Hawaii. Seven layers make up the Food Forest to maximize the capture of the sun's energy and increase yield. The layers are Canopy, Low Tree, Shrub, Vertical, Herbaceous, Rhizosphere, and Soil Surface. It will last hundreds of years, as it is a self-sustaining food supply that mimics a real forest. Advantages are gained in pest control, weed control, and fertility without chemical means. I will use these elements to design a

Austin, Greg; Michimi, Akihiko; "The Effect Of The Affordable Care Act On Physical Therapy" (Christian Williams)

Introduction: With the implementation of the Affordable Care Act (ACA) in 2010, many medical specialties prepared to see reimbursement rates altered. Not impervious to this trend is the field of physical therapy (PT). This change in reimbursement structure could impact the effectiveness of PT treatment. Under this model, a patient may not be able to receive the appropriate number of visits to a physical therapist, resulting in a loss of utilization in the injured area and, possibly, a loss of independence. Methods: A literature review was performed to determine the impact of reimbursement rates on PT. A seven item open-ended survey regarding various aspects of the ACA was sent to physical therapists in the area during November 2014. Results: Results from the survey indicate that while, a large portion of patients are gaining access to PT for the first time, the number of visits allowed has been drastically reduced. Discussion: These results indicate that the ACA may negatively impact the field of PT as reimbursement rates and the number of allowed visits change.

Bailes, Lauren; Lickenbrock, Diane; "Examining Longitudinal Associations Between Parent Personality And Infant Temperament" (Diane Lickenbrock)

The development of an infant's temperament and ability to regulate their emotions is sensitive to aspects of the parent (Rothbart & Bates, 1998). Parental personality, specifically introvert versus extrovert behaviors, may influence the way an infant is able to react, recover, and accurately express emotion (Kochanska, et al., 2004). The current, ongoing longitudinal study involves looking at mother and father personality in relation to their infant's temperament when infants are 4, 6, and 8 months of age. As a part of a larger study, parents completed questionnaires of their personality (BIS/BAS; Carver & White, 1994) and their infant's temperament (Garstein & Rothbart, 2003). Preliminary results will be reported using the current portion of the sample that has been collected (n=22).

Bailey, Rachell "The Reality Of Prescription Opioid Addiction" (Gretchen Macy)

Prescription painkiller abuse has taken the United States by storm within the last decade. The CDC classifies prescription painkiller abuse as the fastest growing drug problem in the United States and classing the abuse as a health epidemic. Prescription painkillers are very easily accessible, and are also legal. People who abuse prescription painkillers often times are unaware of the severity of their addiction because it was prescribed by a physician. One of the most commonly abused prescription painkillers is Opioids. The primary goal of Opiates is to eliminate and reduce pain while creating calm and euphoric conditions. Naturally occurring opiates come from the Opium poppy plant. The plant contains morphine and codeine, in its purest forms. Opioids are typically prescribed to patients after they undergo a surgical procedure, and are typically only used for a short period of time. Due to the extreme severity of prescription drug abuse, policies are currently being developed and modified. The most well-known policy and procedure in place is the PDMP or Prescription Drug Monitoring Program. The purpose of the PDMP is to monitor the quantity of prescription drugs a patient may be receiving.

Barber, Brooke; Walker, Whitney; "Analysis Of Food Preference To Determine Potential For Seed Predation By Smith's Bush Squirrels And Red Veld Rats In Lowveld Vegetation And An Analysis Of Efficiency Of Three Types Of Rodent Traps" (Michael Stokes)

Large tree species in South Africa face reproductive decline, especially older trees that provide ecosystem connectivity. Management of Balule Nature Reserve, an extensive private nature reserve in South Africa, wanted to investigate the roles rodents play in the recruitment and survival of select tree species. Two of these, marula (*Sclerocarya birrea*) and knob thorn acacia (*Acacia nigrescens*) are dominant, large trees of concern, and red bushwillow (*Combretum apiculatum*) is a smaller and more common, prolific seed producer. We investigated whether rodents, specifically red veld rats and Smith's bush squirrels, potentially play a detrimental role in the reproductive cycle of these trees. Balule Nature Reserve served as the location for sampling sites to capture rodents. Food preference trials were conducted June through August of 2014 to determine if individuals of these two rodent species have the potential to harm recruitment of new seedlings through seed predation. Both species of rodents preferentially fed on marula seeds. In addition, we tested the efficacy of three different trap types for capturing live rodents, information necessary for successful future studies. When given the choice between long Sherman traps, short Sherman traps, and Tomahawk traps, there is statistical evidence for the preference of long Sherman traps. Our work contributes to a growing body of literature about rodents, which are generally understudied in Africa due to the prominence of larger, more appealing animals. These results will help the staff of Balule Nature Reserve to develop a conservation plan for trees.

Barnes, Lorena; Adams, Sarah; Nezirovic, Hana; Bourland, Austin; Morrison, Brittany; Pederson, Lauren; Schroeder, Amber Nicole; "Fake It 'til You Make It: Examining Applicant Facebook Distortion" (Amber Schroeder)

Research has found that job applicants are capable of significantly distorting their responses on personality inventories (Viswesvaran & Ones, 1999) through a process known as "faking". In this study we examine the degree to which one can distort a Facebook profile to create the impression of a more desirable (or undesirable) job candidate, as well as predictors of this faking ability. Participants completed a survey that included basic demographics, personality traits, and Facebook impression management orientation (i.e., participant motivation to convey a specific image on their own Facebook page; Jansen et al., 2012). Participants then modified a researcher-created Facebook page in order to create the impression of either a desirable or undesirable job applicant (depending on condition). Each participant's distorted profile was later rated on a) applicant attractiveness to an organization, b) interview likelihood, and c) offer likelihood by researchers who were blind to parti

Barringer, Ellen "Sustainability Interpretive Sign Use On A University Campus: A Matter Of Perspective" (Leslie North)

Interpretive signage and sustainability tours are utilized on university campuses all over the United States to educate campus communities about environmental and sustainability issues and practices. It is assumed that these tours and the accompanying signage are effective tools for educating students, faculty, and staff. Western Kentucky University (WKU) operates the Green Tour, consisting of 10 interpretive signs and tours provided by the WKU Office of Sustainability. The students, faculty, and staff of WKU were surveyed about their familiarity with the Green Tour, their experiences with the tour, and

to what degree they felt they had learned from those encounters. Students who participated in the Green Tour took pre- and post-tests to determine knowledge gain. A further set of surveys and interviews were conducted with staff from other universities who were involved in their university's sustainability tours. Data about the use and educational effectiveness of the WKU Green Tour

Baughn, Cayla "H₂SO₄ Contamination Of Freeman Branch Creek, Alabama From Disturbance Of Geologic Materials During Highway Construction" (Chris Groves)

Pennsylvanian-aged coal-bearing rocks of the southeastern US often contain sulfide minerals, especially pyrite (FeS₂). When disturbed through mining the pyrite can be exposed to weathering by water and oxygen, and the resulting acid mine drainage (AMD) can have relatively high metal concentrations that can precipitate along streambeds. In 2012 residents along Freeman Branch Creek in Eldridge, Alabama observed a new orange and black discoloration along the stream. Geologic maps showed that the Pennsylvanian Pottsville Formation underlying the area contains coal and since surface mining was taking place nearby the site, it appeared likely that AMD was the source of the contamination. Subsequent field investigation suggested instead that recent highway construction disturbing the Pottsville Formation may have enhanced pyrite weathering, highlighting how construction activities in sulfide-bearing geologic materials can influence local water quality.

Beasmore, Nicholas "Concrete Mix Design Studies For Wku's Civil Engineering Concrete Canoe Using Type Iii Portland Cement With Various Admixtures" (Matthew Dettman)

Concrete is a composite material composed primarily of cement, water, and aggregate. Admixtures may be added in order to strengthen the final product's overall design. The focus of this presentation is to present the results of the various admixtures that were added to each testing mix in order to find the best mix design. This final design would be used for WKU's Civil Engineering Concrete Canoe that would be presented in the Ohio Valley Student Research Conference. Results show that mixes with the admixture metakaolin showed greater pounds per square inch strengths, while making the final product lighter than those without metakaolin.

Belcher, Michael "Modeling In Fractional Calculus" (Ferhan Atici)

The main purpose of this research project is to improve the Gompertz curve, and various other Sigmoidal curves to create a more accurate and precise model of tumor growth that can be personalized for each patient. To do this we first calculate the growth rates for mice data which has been provided us by a health care professional in Nashville. The shape of the growth rates will direct us to choose the model which will fit better with the data. We will also use a recent theory which is called discrete fractional calculus to improve the existence models in the literature. The effectiveness of the models will be checked by using some statistical techniques such as sum of residual squares and cross validation method. We will intensively use a software "Mathematica" in our research.

Berger, Mollie "Women's Contraceptive Choices: A Look Into The Women Of Warren And Allen County, Kentucky" (Darlene Shearer)

According to the Guttmacher Institute there are 62 million U.S. women in their childbearing years (15-44). Of these 62 million, 62% are currently using a contraceptive method. Although there is an overwhelming need for contraceptives, not everyone has access to this luxury. This study seeks to gain information on the motivation behind women's contraceptive choices in Warren and Allen County,

KY. A questionnaire was created to be handed out in the clinic waiting rooms of Barren River District Health Department, Allen County Health Department, and Granese & Morgan Doctor's Office. After the completion of this study we hope to be able to identify what motivates the women of Warren and Allen County to choose their current contraceptive method, and to shine a light on the obstacles these women face while choosing a contraceptive.

Berkshire, Danielle "Marketing Trends & Consumer Research In Kentucky & Tennessee Retail Full Service Floral Industry" (Roger Dennis)

The floral market is inherently different from other businesses. A florist must be a designer, a businessperson, and an advisor, advising the consumer on the product needed for a special event in the consumer's life for an appealing price. Retail florists in today's industry are competing against mass-markets that are able to buy and sell mass-produced fresh cut flowers at low prices. They offer little or no design or other services. We postulate that the consumer's expectations are much higher for the services and products delivered by the retail florist than by the mass-market florists. Florists who compete with mass-markets floral departments strive for quality and service upon which consumers can rely. In this study we are looking for a strong correlation in the relationships between repeat consumers and marketing trends. This study will survey florists and their returning consumers in rural and metropolitan areas of Kentucky and Tennessee. Florists will be surveyed regarding their business's annual gross income, target consumers, and other marketing factors. Returning consumers from florists in this study will be surveyed regarding their motivations for returning to their local retail full service florist. Consumers will be surveyed regarding factors such as store appeal, service, and relationship with the florist, or longevity of flowers. Consumers and florists will also be surveyed on demographics such as education, annual gross income, and age. We expect to identify what marketing and promotional trends floral shops need to survive in the modern floral industry.

Bertram, John; Nee, Matthew; "Shaping Porous PDMS Beads With Various Chloride Salts" (Matthew Nee)

Polydimethylsiloxane (PDMS) is an elastic polymer used in a wide variety of applications ranging from pharmaceuticals, to hair conditioner, to analytical techniques such as solid phase micro extraction (SPME). Solid, hydrophobic PDMS beads are made using a mixture of n-heptane, PDMS, and DI-water by a technique called cross-linking. These beads can be used in SPME and possess the ability to attract specific compounds of interest onto their surface when immersed into water-based solution. Thus, a bead with an increased amount of surface area is more desirable since it can adsorb more compounds. It was observed that the addition of a chloride salt, platinum (IV) chloride, into the synthesis process dramatically altered the surface structure by creating pores and concavities of various sizes. Each pore contributes to an increase in surface area, which improves techniques such as SPME. Other, much less expensive, chloride salts such as zinc (II) chloride and sodium chloride were introduced

Bhattarai, Indu; Gani, Nahid; "Thrust Belt Study In The Himalayan Foreland Basin- Nepal: An Integrated Approach Of Remote Sensing And Gis" (Nahid Gani)

River long profile usually preserve valuable information of landscape evolution in tectonically active regions. The Himalayas, one of the most active seismic zones in the world, is characterized by ~20-2 Million years old Siwalik sedimentary rocks deposited at the foothill of the Himalayas, the Himalayan Foreland Basin. The Siwalik rocks are bounded by two east-west trending km-scale thrust belt systems,

the main Frontal Thrust in the south and the Main Boundary Thrust in the north. These thrust belts are dissected by numerous southward flowing rivers. In this research, quantitative river profile analysis of Surai Khola River in Western Nepal is carried out to unveil the tectonic evolution of Himalayas. Tectonic activities associated with river profile anomalies like knickpoints, and abrupt change in river slope and flow directions are studied using Digital Elevation Models (DEMs), Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) and Landsat images in GIS platform. Slope variation is identified using spatial variation of steepness indices of the foreland basin, which will further contribute to the understanding of the development and adjustment of the high topographic landscape of the Himalayas.

Biechele-Speziale, Dana; Madsen, Augustus; Li, Hui; Yue, Jingyi; Gensheimer, Julia; "Thermogravimetric Characteristics Of Coal-derived Graphene Oxide Composites Via Ball-milling" (Yan Cao)

Thermal analysis (TA) techniques investigate thermal stability and potential reactions of studied materials. Thermogravimetric analysis (TGA) is one TA technique used to study these properties of selected materials under a well-controlled temperature profile. This study investigated the thermal stability and chemical reactions of coal, char, and graphite mixed with Potassium Permanganate (PM) before and after ball milling. The ball-milling method for material preparations was conducted under an air atmosphere, and the TGA method for material characterization was conducted under a nitrogen atmosphere. This experiment supports the effectiveness of the ball-milling method for the production of graphene oxide composites from select carbon sources. Thermogravimetric characterization of the ball-milled products shows similarities between graphite-derived and coal or char-derived products. Other advanced spectroscopic characterizations revealed that there were likely formations of layered gr

Bin, Luiza; Yamashita, Amanda; Iwaki, Lilian; Iwaki Filho, Liogi; Ramos, Adilson; Leite, Pablo; "Three-dimensional Analysis Of Pharyngeal Airway Space In Patients Undergone Orthognathic Surgery" (Becky Tabor)

Orthognathic surgery changes features of anatomical structures in head, including in pharyngeal airway space (PAS). This study analyzed the volume change of the PAS after orthognathic surgery using cone-beam computed tomography (CBCT). Thirty patients were divided into two groups: 1) patients undergone maxillary advancement and mandibular setback (n=15) and 2) patients undergone maxillomandibular advancement (n=15). CBCT scans were taken at three stages: T0 (average of 1.5 months before surgery), T1 (average of 1.5 months postoperatively), and T2 (average of 6.7 months postoperatively) and analyzed with Dolphin Imaging & Management Solutions®, 3D version 11.7 software. For statistical analysis, was used ANOVA followed by Tukey test. A significant difference was found between groups in change of the total volume ($p=0.0334$) and the minimum axial area ($p=0.0446$). For the lower volume, there was a significant difference between groups ($p=0.0022$) and between times ($p=0.0254$), with significant difference between the preoperative and the late postoperative ($p=0.0088$). In conclusion, there was a significant difference in the volume of the PAS in maxillomandibular advancement and maxillary advancement with mandibular setback surgery.

Blankenship, Michael; Blair, Morgan; "Artificial Intelligence In Mancala" (Uta Ziegler)

Mancala is a two person board game with African roots. Our computer science project, programmed in Mathematica, uses Artificial Intelligences (AI) for a one player playing option. The three AIs range in difficulty from easy to hard. Each AI utilizes a different strategy and algorithm to move each turn. The

hard AI creates a game tree from the current game state that projects possible moves five turns ahead. Then, the hard AI evaluates the tree using a mini-max algorithm. This algorithm allows the AI to select the best possible move while accounting for possible moves of the opponent. The simpler, medium AI uses three different strategies commonly used by expert players of the game, while the easy AI moves at random.

Bledsoe, Lee Anne; Groves, Chris; Henn, Kenneth; Rowe, Jackie; "A Hydrogeologic Investigation At Patoka Dam, Indiana To Support Dam Safety Risk Assessment" (Chris Groves)

Several dams throughout the US have been built by the US Army Corps of Engineers (USACE) on karst terrains, where especially soluble limestone bedrock has dissolved to form features such as caves, sinkholes and underground rivers. In such karst regions, subsurface hydrology can play an integral role in the condition, operation, and safety of dams, and should be considered during risk assessment. Patoka Dam, near Jasper, Indiana, is situated on a well-developed karst landscape/aquifer system of the Mississippian Glen Dean Limestone, faces significant potential challenges, and recently underwent risk assessment. Multiple groundwater flow investigations using fluorescent dyes and analysis of water table elevations were performed to better understand local groundwater hydrology in the vicinity of the existing water control structures. Spring hydrograph analysis and cave mapping were also utilized in the hydrogeological characterization of the study area.

Bodine, Tyler "Lithostratigraphy Of The Big Clifty Sandstone At The Stampede Mine, Logan County, Kentucky" (Michael May)

The Big Clifty (Jackson) Sandstone Member of the Golconda Formation is a Mississippian (Chesterian) heavy-oil reservoir in the southeastern Illinois Basin. Heavy oil reservoirs, or asphalt rock deposits, have been studied extensively in Edmonson and Butler counties; however, sparse detailed sedimentological or sequence stratigraphic context exists for the Big Clifty in northeastern Logan County. This study offers a high-resolution facies analysis of the Big Clifty at the Stampede Mine, an open pit or strip mine being developed in asphalt rock by USA and Canadian investors. This study aims to understand the interplay between tidally-influenced shallow marine facies and bitumen occurrence with a lesser focus on diagenetic partitioning of the reservoir. Furthermore, this integrated sedimentologic and stratigraphic study will provide a unique core-calibrated solution for geophysical surveys being conducted in collaboration with colleagues at Northern Kentucky University. Core descriptions, downhole geophysical logs, aerial geophysical surveys, and mine pit geological data will provide an unprecedented geological and geophysical dataset of an outcropping heavy oil reservoir. Analogous geophysical studies have been conducted in asphalt rock in Nigeria, but these lack the detailed geologic context which this study affords.

Boldt, Faith "The Importance Of Perinatal And Postpartum Maternal Mental Health" (Darlene Shearer)

The purpose of this poster is to present types of maternal mental health conditions that may occur in the perinatal and postpartum periods. The presentation will describe effects of these conditions on the fetus and child, discuss traditional and non-traditional treatments for these conditions and outline barriers to treatment. Existing and potential Public Health interventions will also be presented.

Bolton, Chase; Nguyen, Khoa; Guffey, Stephen; Daday, Jerry; Kessler, Bruce; Helbig, Tuesdi; "Empirical Study Designed To Help Uncover The Cognitive Processes Behind Stem Learning For Students With

Disabilities" (Leyla Zhuhadar)

The fields of Science, Technology, Engineering, and Mathematics (STEM) are viewed as essential to the economic competitiveness of the United States on the global stage. While vital to the nation's economic prosperity, enrollment in STEM fields at the college/university level has remained relatively stable, despite millions of dollars expended to improve STEM education and retention. Most research focuses on innovations within classroom settings that can improve learning outcomes. We believe additional research is needed examining how the sequencing of courses taken by students can help or hinder their progress toward the successful completion of a STEM degree. We used quantitative analytics, data mining, and predictive modeling on existing data from WKU's Office of Institutional Research to measure the impact of course sequencing on overall GPA, major/minor GPA, retention within the major, retention with a STEM discipline, and graduation rates among seven cohorts of WKU freshman who declared Math as a major in the fall semesters of 2000 through 2006. We discovered a significant relationship between course grade and attrition for several Math courses. Additionally, a survival analysis showed that much of the attrition happened during the second and third year of school, suggesting that the wipe-out forces may have been stronger during this period. This pilot research project will serve as the foundation for a larger research project, where our analytical model will be tested using students enrolled in all STEM disciplines at WKU and at other college/universities.

Botero, Sara; McDonald, Benjamin; "Graphene-inorganic hybrids With Cobalt Oxides Polymorphs For Electrochemical Energy And Electrocatalysis Applications" (Sanju Gupta)

The development of novel with multi-dimensionality and functionality become indispensable for diverse technologies. This study lays the groundwork for investigating new methods of storing energy by combining the electrochemical properties of graphene (supercapacitive) and cobalt oxides (pseudocapacitive). We investigated the hybrid nanomaterials by utilizing graphene-based systems coupled with transition metal oxides (i.e. nano-/micro- cobalt(II) monoxide; CoO with periclase (rock salt) and cobalt(II,III) oxide; Co₃O₄ with spinel structures) as high-performance electrochemical electrodes for alternative energy, electrochemical sensing and electrocatalysis. To accomplish this, we design and synthesize these hybrids by direct anchoring of CoO and Co₃O₄ on graphene oxide (GO) and reduced graphene oxide (rGO) via mixing dispersions of the constituents resulting CoO/GO, Co₃O₄/GO, CoO/rGO and Co₃O₄/rGO. This approach affords chemical/ physical attachment and expected to have coupling leading to enhanced surface reactivity and durability by creating tailored interfaces with the constituents' cobalt (Co) and oxygen (O) atoms. We used a range of complementary analytical techniques to characterize structural and physical properties include electron microscopy combined with electron diffraction, x-ray diffraction, atomic force microscopy, Fourier transform infrared and resonance Raman spectroscopy with Raman mapping. They revealed surface morphology/topography, local (lattice dynamical) and average and local charge transfer due to the physically (or chemically) adsorbed cobalt oxide and helped to establish microscopic structure-property-function correlations. The latter also allows determine charge transfer by plotting variation in prominent Raman (i.e. 2D versus G) bands. The present findings are indicative of high-grade quality hybrids to further electrochemical and electrocatalytic properties.

Bramschreiber, Siera; Bramschreiber, Siera; Coffey, Brandon; Mienaltowski, Andrew; "Positive Emotion And Its Impact On Spatiotemporal Vision" (Andrew Mienaltowski)

Past research demonstrates that fearful faces lead to an increase in temporal and a decrease in spatial

gap detection, an effect caused by a flow of input to the magnocellular pathways from the amygdala to the visual system. The amygdala is also active for positive and arousing stimuli, including happy faces. The current study extends past research by presenting happy facial cues just before a gap detection task. Facial stimuli (i.e., happy/neutral faces) were presented in the periphery of the receptive field and quickly followed by a Landolt circle. Half of the participants were asked to detect a temporal gap and half a spatial gap. Response accuracy of gap detection was measured using signal detection theory. Consistent with past research on fearful faces, the presentation of happy facial stimuli enhances detection of a temporal gap, but impairs detection of a spatial gap. These findings suggest that positive emotion has a similar impact as fear on the amygdala and visual areas involving attention.

Braun, Anna; Ferguson, Jack; "Donor-acceptor Core-shell Nanoparticles For Organic-based Solar Cells" (Hemali Rathnayake)

Solar cells use an electron donor and acceptor system to capture energy from the sun. This system can be obtained by using films of electron donating and electron accepting materials; however, it is not a very stable process. The process can be improved by using core-shell nanoparticles that have a charged particle in the shell and a functional particle in the core. We used a modified Stober method to covalently bond hydrophilic silsesquioxane nanoparticles to the outside of hydrophobic nanoparticles. The presence of the charged particles on the surface of the resulting particle improves the solubility of the particle and the ability for the particle to transfer an electric charge by acting as an electron acceptor and donor. We plan to use the particles in solar cells by functionalizing the core and shell in an electron donor and acceptor system. This is more stable and works better than two layers of donor and acceptor films on the cell.

Brindley, Hamilton "Adopting Palladian Principles In The Design Of A Contemporary Villa" (Shahnaz Aly)
For architecture to be worthy of praise, it must possess three distinct qualities: beauty, durability, and convenience. These are the words of Andrea Palladio. Our society has come to a crucial point in the development of classical architecture. Much of the art of architecture and the craft of building have become detached from historical reference, resulting in the perception that classical architecture is viewed by some as obsolete and meaningless, thus often being randomly interpreted and being rather poorly designed. This project involved the research and study of Andrea Palladio's Four Books of Architecture, and the ideology of the new Palladian's to create a design of a contemporary Palladian villa. With difficulties posed by the economy, climate change, and the mentality of our generations, both designing and building by Palladio's principles can be a challenge. When designing the mentality of The New Palladian's was adopted, which is the commitment to a refined, sensitive, and contextual building culture dedicated to a modernity that infuses tradition, design excellence, craftsmanship, ecological building and sustainability as a unified whole. This contemporary Palladian villa showcases modernity and sustainability that meets the needs of the 21st century, and yet preserves the historic integrity of Palladian architecture.

Brode, Chad; Garmon, Andrew; Genet, Jeremiah; "Wind Energy Harvesting, Conversion, and Control" (Farhad Ashrafzadeh)

Much of today's electrical power is generated from fossil fuels. These fuels have a number of drawbacks such as their finite supply and the adverse effects they impose on the environment. These effects are compounded by the exponential increase in electricity use throughout the world, and to combat this

we much change as a culture. We must change the behavior and aptitude of people toward more and more energy consumption and reduce electrical power consumption in a number of ways. In this project, our focus is on wind power as an energy source for residential power supply. Wind energy is the fastest growing source of renewable energy. In this presentation, a functional block diagram of a wind energy system is explained. The physics behind each block is presented. A video of the system built at WKU's Department of Engineering will be shown. The constraints of the existing set up will be described and the next phase of the project will be shared.

Brooks, Connor; Goulet, Christopher; "Autonomous Multi-rotor Vehicle Creation" (Michael Galloway)

This project aims at building a multi-rotor aerial vehicle capable of autonomous flight, and in the future will progress to creating algorithms for indoor navigation and searching to be executed by the vehicle. Though autonomous aerial vehicles are often expensive, through building the vehicle from inexpensive individual parts, this project is creating such a vehicle on a \$250 budget. The initial budget for this project is provided by a grant from Western Kentucky University's Student Government Association. This semester's goal is to create a working vehicle capable of flight, initially controlled by a remote operator. By the end of the semester, the vehicle should be capable of simple autonomous flight patterns. The next semesters will focus on integrating sensors on the vehicle and giving it the capability to detect and interact with its environment. Other research areas include coverage algorithms, vehicle stabilization and movement, wireless communication, and object recognition.

Brown, Audrey; Shewade, Leena; Buchholz, Daniel; "Comparative Study Of Glucocorticoid And Mineralocorticoid Receptor Roles In Xenopus Development" (Noah Ashley)

Stress during an animal's early development can lead to cardiovascular disease, diabetes, and neurological disorders during later life. The Hypothalamic-Pituitary-Adrenal (HPA) Axis is the pathway by which stress "programs" endocrine responses, but how hormones and receptors in this pathway lead to later life consequences is poorly understood. The glucocorticoid receptor (GR) and mineralocorticoid receptor (MR) mediate the effects of two major products of the HPA axis, corticosterone and aldosterone. We hypothesized that due to similarity in receptor form, ligands, and expression patterns that GR and MR are functionally redundant. *X. tropicalis* tadpoles stages NF 52 " NF 66(N=4-5) were taken from their home tanks and euthanized using MS-222. Total RNA was isolated from five tissues (hindlimb, intestine, brain, liver, tail), and RT-PCR was run on cDNA for GR and MR to create developmental gene expression profiles. The results showed both GR and MR expression levels correspond to the asynchronous morphogenesis of tadpole tissues. The expression patterns for these receptors support that they both play a role in metamorphosis. To test if these roles are redundant, creation of GR, MR, and 21-hydroxylase knockout lines was started using the CRISPR-Cas9 system. If receptor roles are redundant, loss of one should result in no phenotypic difference from wild types. However, hemi-lateral GR partial knockouts showed slower growth, gill resorption, and iridophore development in tissues lacking the receptor. This does not support redundancy in the receptors, but supports distinct roles. Observations of MR and 21-hydroxylase knockouts in the future will provide better understanding.

Brown, Erika; Anton, Audrey; "Vicious Art Or Vicious Audience?: Understanding The E" (Audrey Anton)

This project focuses on Aristotle's ideas of the effect of art on the moral psychology of youth and vicious people in his work Poetics. Aristotle believes that art is a useful tool in the teaching and

understanding the difference between virtue and vice. This project aims to give clear answers of these questions concerning the development of moral psychology when a youth and/or vicious person is exposed to works of art that may send mixed messages of the good and bad. These issues are not limited to the ancient world, and can be applied to the modern world, as well.

Brown, Sara; Tabor, Becky; "The Importance Of Educating Dental And Dental Hygiene Students On The Correlation Between Vitamin D Deficiency And Dental Caries" (Terry Dean)

Recent studies (U.S. National Library of Medicine) have shown that Vitamin D deficiency is rapidly increasing among the adult population. Vitamin D deficiency has many effects on the body, such as, bone pain and muscle weakness. A strong correlation has been noticed in humans with Vitamin D deficiency and decreased exposure to natural sunlight, which is vital to absorb the Vitamin D they have ingested. Those suffering from milk allergies or are following a strict vegan diet may also have some implication of a Vitamin D deficiency. Some recent studies (Hujoel PP. Vitamin D and dental caries in controlled clinical trials: systematic review and meta-analysis. Nutrition Reviews 2013; 71(2): 88-97) have also shown that there is a correlation with dental caries. This project will explore the correlation between Vitamin D deficiency and caries and will research if dental and dental hygiene students are being informed about this rising issue regarding the link between caries and Vitamin D.

Brummett, Travis "Building A Vertical Cloud" (Michael Galloway)

There are several different implementations of open source cloud software that organizations can utilize when deploying their own private cloud. Some possible solutions are OpenNebula , Nimbus , and Eucalyptus . These are Infrastructure-as-a- Service (IaaS) cloud implementations that ultimately gives users virtual machines to undefined job types. A typical IaaS cloud is composed of a front-end cloud controller node, a cluster controller node for controlling compute nodes, a virtual machine image repository node, and many persistent storage nodes and compute nodes. These architectures are built for ease of scalability and availability. My research will first focus on surveying a few open source clouds, such as Eucalyptus, OpenStack, and Nimbus. I plan to accomplish this by installing each one on set of Dell computers which will have Linux installed. After I survey each, I will tear down the cloud and start again by reinstalling Linux on each machine. Thus, allowing me to start each new survey with a clean slate. After I have completed my surveys, I intend to create an architecture for an educational cloud. This vertical cloud would be composed of a back-end and a front-end. The front-end would be a web interface that would make the use of the cloud simple for students.

Brunstad, Joshua "Urban Legends And Film" (Ann Ferrell)

Social Sciences Urban Legends and Film Author: Joshua Brunstad This study examines the way in which the contemporary legends genre has interacted with the medium of film over time. This paper will discuss the degree to which film and legend interact and have an effect on culture. It attempts to accomplish this by examining films that make use of contemporary legend motifs and narratives. I will examine such films as Black Christmas, When a Stranger Calls, Candyman, and others that make use of these motifs. By doing this, I hope to reach a greater understanding of how film and popular narrative interact.

Buckner, Omega "Keep The Faith" (D'lee Babb)

Abstract Purpose: This project was designed to determine effective structural components of faith-

based nonprofit organizations serving individuals in Louisville, Kentucky and Southern California. Hypothesis: Qualities of effective faith-based nonprofit organizations in Louisville, Kentucky and Southern California will vary. Methodology: Data for this study was collected using qualitative and quantitative methods. The organizations' personnel and program participants participated in detailed interviews and questionnaires were completed by program participants. Findings: Data is being transcribed and coded to determine themes regarding the qualities and effectiveness of the faith-based participating organizations. Similarities and differences between organizations in Kentucky and California are being studied in order to determine elements that can be used to enhance the effectiveness of all faith-based organizations.

Bunch, Justin "Altering Size And Shape Of Novel Platinum Compounds Affect Cellular Toxicity" (Blairanne Williams)

This particular project is essential because it allows for us to gain insight into how altering the structure of a novel platinum compound, which alters the compound's interactions with protein and DNA, can affect its toxicity and ultimately drug effectiveness. For these studies, we introduced novel platinum(II) oxalate compounds that contained differing carrier ligands into individual cell lines. We used both human colorectal cancer cell lines due to the effectiveness of other platinum based compounds at treating these types of cancer. We then established a concentration response curve using Methylthiazol Tetrazolium (MTT) and Lactate Dehydrogenase (LDH) assays to examine cell viability. MTT assays analyze the number of living cells present in a culture as only living cells can convert the tetrazolium salt into a purple dye. LDH assays can be used to examine cell death, which leads to the rupture of the cellular membrane and release of the LDH enzyme. Then, since we suspected each

Burden, Thomas "The Demon Of Andersonville: The War Crimes Trial Of Henry Wirz" (Glenn LaFantasie)

On November 10th 1865 Captain Henry Wirz, the former commander of the Andersonville prison stockade, ascended the gallows outside of the Old Capitol Prison in Washington D.C. Wirz trial and subsequent execution were a direct response to the brutal conditions Union prisoners of war experienced at Andersonville prison in Americus, Georgia. However, the military tribunal which prosecuted Wirz, relied on contradictory, and sometimes fabricated testimony to convict him of war crimes. The primary charges were that Wirz conspired with the Confederate government to systematically kill Union prisoners, and that he personally murdered several unnamed prisoners. Through careful research, encapsulating both primary accounts by former prisoners and Confederate officials of the conditions at Andersonville, and the trial itself, it is apparent that Wirz was a scapegoat whose conviction was meant to symbolize the allegedly unique barbarism of the South and to vindicate the North's supposedly humane

Butler, Phillip; Brode, Chad; Olszewski, Geoffrey; "Poaching Prevention Through Personnel Detection" (Mark Cambron)

Poaching of Elephants and Black Rhinos has risen drastically in the past couple years. Demand for ivory, increasing numbers of small reserves closer to humans, and advancements in poacher's technology are

three reasons for this increase in poaching. Fences can be used to contain the animals within the reserve, but they do little to stop the poachers from entering the borders of the reservation. The close proximity makes it almost impossible to track poachers once they have returned to the crowded urban areas. This makes it imperative that the poacher is prevented from ever locating an animal to target. This means that a method of detection must be developed to detect the presence of these individuals, especially the initial scout looking for the animal. The scouts use a number of methods to relay the actual location of the animal, but the most common is a cell phone. This led us to develop a sensor that passively detects a cell phone which is actively transmitting. Because of the need for the cell phone to be in use to be detected, a secondary method of detection was also implemented. This method consists of infrared trip lasers that will be used at common travel areas. The sensor data and location are then used by wirelessly transmitting an alert signal from the sensor station's microprocessor to the park authorities who can detain the trespasser. When implemented, this system will provide a much needed protective barrier to help ensure the continued preservation of the wildlife.

Byerly, Heather; Houle, Jean-Luc; Makarewicz, Cheryl; "Ritual And Mobility: $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ Analyses Of Bronze Age Khirigsuur Horses From Khanuy Valley, Mongolia" (Jean-Luc Houle)

Khirigsuurs are large stone burial and ritual monuments that served as stages for group activities and social negotiation during the Late Bronze Age (c.1300-700 BC) in Mongolia. Animal remains were routinely interred in satellite mounds associated with primary burial features, in particular the heads and extremities of horses, and often in great numbers. The question remains, however, whether horses selected for interment in khirigsuur satellites were from local or distant herds. Here, we examine the carbon and oxygen isotopes of incrementally sampled mandibular molars from horse heads ritually deposited in khirigsuur complexes located in Khanuuy Valley. Such isotopic data provide first insights into the complexity of social and political networks involved with khirigsuur construction and maintenance.

Calhoun, Nolan; Pulsifer, Elizabeth; Rinehart, Claire; Rowland, Naomi; "Discovery and Comparison of Two Novel Bacteriophages, Enola and Leviathan, Through Genomic Exploration and Bioinformatics Analysis" (Rodney King)

Bacteriophages are viruses that infect bacterial hosts. The total bacteriophage population in the biosphere is estimated near 10^{31} particles and phages can be found anywhere a compatible host can exist. The goal of this research project was to collect environmental samples, isolate, and purify resident phage, characterize their morphology by electron microscopy, and analyze their DNA genomes by DNA restriction analysis and gel electrophoresis. Two novel mycobacteriophages, Enola and Leviathan, were recovered on *Mycobacterium smegmatis* mc2 155. Many differences, including capsid diameter, tail length and plaque morphology were observed. A bioinformatics analysis of the sequenced genomes is currently underway. This will allow the relatedness of the two phages to each other and to previously published bacteriophages to be determined.

Carlin, Taylor; Peter, Thomas; Clarkson, Leiff; Flynn, Abby; "Dominant Vs Non-dominant Trunk And Shoulder Rom In Collegiate Baseball Pitchers" (Jason Crandall)

Shoulder injuries are prominent in baseball pitchers due to continual stress on the shoulder joint, and all muscles involved in pitching. Understanding levels of flexibility in pitchers dominant and non dominant arms will enable proper prevention, and rehabilitation of shoulder injuries resulting from repetitive pitching. The purpose of this study was to analyze collegiate pitchers levels of flexibility in the shoulder

of their pitching arm, non-dominant arm, and trunk region. Then through the measurements determine whether the results correlated with levels of injury. Fifteen collegiate baseball players were examined for upper extremity ROM, and trunk flexibility. The measurements include shoulder flexion, extension, abduction, adduction, internal and external rotation, and horizontal abduction and adduction, using a standard goniometer. To measure levels of trunk flexibility the Upper Quarters functional movement screen (FMS) was used. The tests exhibiting significant differences < .

Carlson, Brian "Visualizing Förster Resonance Energy Transfer" (Wieb VanDerMeer)

FRET (Förster Resonance Energy Transfer) is a natural phenomenon exploited to measure distances between 1-10 nanometers. Often a problem that arises when talking about the orientation factor in FRET is the disassociation between the equations used and the reality of the molecular interactions. Often, it's hard to visualize the angles between the donor and acceptor depolarization factors and the ellipsoidal probability distribution that the acceptor and donor depolarization factors can be represented by. Our goal was to create a tool that could be used for better understanding the orientation factor, kappa-squared, for Förster Resonance Energy Transfer.

Cassin, Patrick "The Mind Of Movies" (Jerod Hollyfield)

Movies and psychology have been linked together ever since the Lumi re brothers screened their first film. In his book "Psychology at the movies," Skip Young writes, "Social Scientists have taken a magnifying glass to many behavioral domains shown in the movies including sex, violence, politics, gambling, gender, motherhood, smoking, drinking." From the first film of a train which scared the audience into thinking they were about to be hit, to George M li s' dream like movies, to any movie in theaters today, psychology has always had an integral part of both the makers of the movie and the audience's mind. In this paper, I will be demonstrating the correlation between movies and the mind of the filmmakers and the audience who watches them. Experts have written works theorizing how movies affect the viewer's mind through the use of the plot and symbols found in them. We may also be able to understand the mind of the director. Through the study of such works as William Indick's "Movies and the Mind: Theories of the Great Psychoanalysts applied to films," Skip Young's "Psychology at the movies," and Bruce Kawin's "Mindsight," I will draw upon how movies and psychology are linked to each other.

Center, Rebecca; Golla, Vijay; "Risk Assessment of Hazardous Materials Transported by Rail through the WKU and Bowling Green, KY Corridor" (Ritchie Taylor)

Hazardous materials are transported through communities by various modes on a daily basis in the United States. Typically, communities have limited knowledge as to the types and loads of hazardous materials transported. A principle method to document hazardous materials transported is to conduct a hazardous materials commodity flow study. Hazardous materials commodity flow studies have been conducted in cities and counties across Kentucky to assess roadway transport. However, these studies rarely document hazardous materials transport via railways, and the associated human health and environmental risks. The objective of this study was to document the types and loads of hazardous materials transported by rail through Bowling Green, KY and in close proximity to Western Kentucky University. Methods were used to assess the potential risks of hazardous materials transported by rail to human health and environment in the study corridor.

Chang, Joanna "Evaluate Me: Effects Of Expecting Rapid Feedback And Beliefs About Ability On Task Performance" (Qin Zhao)

Assessment and feedback play crucial roles in performance. Students anticipating little or no delay in feedback have been found to score significantly higher than those who anticipated longer delay. In addition, Zhao, Zhang, and Vance (2013) found in a field experiment that beliefs about intelligence moderate the performance outcome of expecting rapid feedback. The present study's goal is to replicate Zhao et al. (2013) within a lab setting. Participants were randomly assigned to one of four conditions in a 2 (feedback proximity: rapid or delayed) x 2 (beliefs about ability: malleable or fixed) between-subjects experiment. The dependent variable was performance on three lab tasks: including word anagram, numerical reasoning, and sentence completion problems. Prior to working on study tasks, participants are instructed that they will receive performance feedback either immediately upon completion (rapid feedback condition) or in a week (delayed feedback condition). The beliefs about ability were manipulated with fictitious articles stating that intelligence is either malleable or fixed. A high-stakes testing environment was stimulated via the task demands and the opportunity to earn a \$10 gift card for diligent completion. The entire experiment was administered using Qualtrics. Data collection is currently in progress. The hypothesized results are that for individuals with incremental beliefs about ability, expecting rapid feedback would enhance performance relative to expecting delayed feedback; however, for those with entity beliefs, expecting rapid feedback will impair performance.

Chappell, Caleb "Rare Earth Element Ion Exchange In Synthetic Zorite" (Aaron Celestian)

Rare earth elements (REE) are difficult to separate from each other during their extraction and refinement processes. There are many techniques to do this, but most require time consuming fractional crystallization and/or expensive centrifuge processes. My research is focused on finding new approaches that will allow future researchers to selectively isolate REE. The method used for this study utilizes synthetic forms of naturally occurring minerals known as nanoporous heterosilicates. Specifically, there is much industrial interest, and therefore the focus of this study, in synthetic analogue of naturally occurring sodium titanium silicate hydrate, zorite (known as ETS-4). Like all nanoporous materials, zorite has a large channel structure that allows the absorption of various elements and even small molecules. Zorite is synthesized as a sodium bearing material, which in turn is exchanged with REE into the zorite crystal structure. Confirmation of the exchange is monitored in situ and in real-time using Raman spectroscopy. The ion exchange process does not change the crystal structure of the material. However, overall crystallinity degrades in response to intermolecular forces as the larger REE exchanges for the smaller sodium cation. There are several conformational changes that occur as the ingoing REE moves into the channel system of zorite. These changes show a systematic step-wise movement of cation interaction that ultimately leads to ion selectivity.

Chavis, Danielle; Strain, Jacob; "Small Molecular Donor-acceptor Dyads As Additives For Organic Photovoltaics" (Hemali Rathnayake)

Organic Photovoltaics has been shown to be promising alternative energy resources. Harvesting light from the sun also has the added benefit of being "green". The goal of the research work described here is to synthesize small molecules that can be used in organic photovoltaics to discover increased photovoltaic performance. A series of small molecular donor-acceptor dyads was prepared by multiple synthetic steps that involves Grignard Metathesis, bromination, carboxylation and esterification of 3,6-

dibromo-9-phenylcarbazole, 3-bromophenanthrene and perylenediimide precursor. Structural characterization and elemental compositions were performed using proton NMR, elemental analysis and single x-ray crystallography. Photophysical properties of these dyads in solution and solid state will be performed. The potential applicability as additives in organic photovoltaics will be assessed.

Cherry, Samuel "How Youtube Is Changing Education In Video Editing" (Jerod Hollyfield)

The world of the Internet has changed many ways we do things. Videos and articles are easily accessible to more people than ever. While there is a lot of false information on the Internet, it also contains a wealth of knowledge. Online education and training has a profoundly different style from conventional learning as well as its own set of pros and cons. The Internet also allows for software to be exchanged all over the world. It allows for millions of people to work on worldwide open source projects. Communities have built up around the Internet allowing connection with people who never would have otherwise interacted. These changes are working together to speed up the pace of innovation and bring forth new ideas. I'm going to be exploring how the Internet has affected the world of film through video editing. Specifically I'm going to look at online software, online education and the online communities for video editors. I'll be taking a look at how things have developed over the last few decades and where they may be going. While doing this I'll explain the pros and cons of relatively free tools and education and how they affect a market economy.

Cheser, David "Media Preaches Pro-war, While American Sniper Is Truly Anti-war" (Jerod Hollyfield)

American Sniper, the exact opposite of what the media leads us to believe. Clint Eastwood's film is based on the life and active U.S. Military career of Chris Kyle, who is known as America's most deadly sniper. We can look at the film in two different ways, either it is pro-war or anti-war. The media is making it out as pro-war, America's military is just overseas killing helpless people. While we're saying they're the terrorists, we are the true terrorists. This stated when in fact the film is an anti-war film showing how hard the life of a soldier truly is but also counter balancing with the ideology that what soldiers are doing in the movie is actually needed. The movie is based off of Kyle's biography, American Sniper. It tells the story of Kyle and how difficult it is for soldiers during and after their tours. There are plenty of interviews with Eastwood and Cooper to show that the film is none the less an anti-war film. Cooper states in an interview, "For me, and for Clint, this movie was always a character study about what the plight is for a soldier." The film is definitely anti-war, it shows how this job must be done to protect the Americans overseas and on the home fronts while allowing the viewers to see deep into the struggles that these men and women face during and after their tours.

Chevalier, Caleb "Genesis of a localized tornado outbreak across the Dallas-Forth Worth Metro on 3 April 2012" (Joshua Durkee)

The Dallas-Fort Worth metropolitan area was impacted by a localized severe weather outbreak on the afternoon of 03 April 2012. Scattered supercells developed across the Interstate 20 corridor in North Texas, producing 17 tornadoes in the county warning area of National Weather Service Fort Worth along with large hail. The outbreak was noteworthy because there was little guidance to suggest that such a severe weather event would occur. While a Tornado Watch was issued for the Dallas area about an hour before the first touchdown, forecasts did not anticipate an outbreak. Four tornadoes were rated an EF2 or greater, with one EF3. No fatalities occurred but 30 people were injured. The preceding research investigates which mesoscale features were responsible for the greater-than-anticipated severe weather

activity, and why meteorologists and models alike missed some of the signs pointing to a higher severe threat. To reconstruct the event, model data was retrieved from the North American Regional Reanalysis and mapped through Integrated Data Viewer. Additionally, radar data was downloaded from the National Climatic Data Center and displayed through Gibson Ridge products. Initial research suggests that interactions with storms earlier that day in the Red River Valley resulted in a mesoscale environment becoming more favorable for tornado genesis.

Chityala, Pavan Kumar; Khouryieh, John; Williams, Kevin; "Effect Of Xanthan/ Enzyme-modified Guar Gum Mixtures On The Stability Of Oil-in-water Emulsions" (John Khouryieh)

Polysaccharides are generally incorporated in food emulsions to control their rheological properties and to enhance their creaming and oxidative stability. The purpose of this research was to study the effect of xanthan (XG)/ enzyme-modified guar (EMG) gum mixtures in comparison with xanthan, guar (GG) and xanthan/guar gum mixtures on the physicochemical properties of whey protein isolate (WPI) stabilized oil-in-water (O/W) emulsions containing 20% v/v menhaden oil. EMG was obtained from guar gum by enzymatic hydrolysis using the enzyme α -galactosidase. Emulsions were prepared with a biopolymer concentration range of 0-0.3% for all emulsion types and were evaluated for creaming, viscosity, particle size and microstructure. Creaming was observed for a continuous 20 days period during which emulsions containing XG/EMG gum mixtures showed better creaming stability than emulsions containing XG, GG or XG/GG. At higher concentrations, the emulsions containing XG/EMG gum mixtures were more viscous than other emulsion types. Biopolymer type did not affect the particle size at all concentrations. Microstructural images revealed that increased coalescence of oil droplets occurs at lower biopolymer concentration. The studies indicated that emulsions containing XG/EMG gum mixtures were having higher viscosity and better creaming stability than emulsions containing either XG, GG or XG/GG gum mixtures. The current research is focused on investigating the effect of XG/EMG gum mixtures on the oxidative stability of oil-in-water emulsions.

Clark, Allen; Wichman, Aaron; Grey, Deleon; Penticuff, Logan; "Masculinity Is Reactive: Mortality Salience Causes Increased Masculine, But Not Feminine, Self-stereotyping." (Aaron Wichman)

Abstract Two experiments (total N = 341) had the goal of testing whether reminders of mortality increase men's, but not women's, gender stereotype-consistent responses. Study 1 used an implicit association test (IAT) to show that men's personal beliefs predicted their IAT responses under control conditions, but that under mortality salience conditions, men's perceptions of male gender stereotypes predicted responses. Study 2 showed that men described themselves according to their perceived male gender stereotypes to a greater extent under mortality salience. Gender identity qualified this effect, such that men high in masculine gender identity showed this effect most clearly. In neither study did women show similar effects. These results follow from the idea that men may react to threats by defending their masculinity, and that masculinity is part of a more socially-dependent worldview than is femininity. When men experience threats, they may promulgate and rigidly adhere to their gender role stereotypes.

Clark, Caitlyn "Study Of Energy Efficiency In Two Different Applications" (Robert Choate)

Research has been conducted to better understand how energy is being consumed in commercial and residential arenas. Partnering with Halton Company, a manufacturer of kitchen ventilation systems, has allowed for the creation of a platform which utilizes the capabilities of infrared imaging to ensure that

their products are energy efficient. In addition, a FUSE grant has allowed for ongoing, concurrent research to understand how flaws in a building's envelope relates to its energy efficiency. The outcome of this research will be a relationship which links aperture area and geometry in the building envelope with differential pressure and flow rate. Understanding how these elements correlate will provide an understanding of energy consumption in residential building structures.

Clark, Chandler; Cox, Del; Oliver Butler, Kaitlin; Brode, Chad; "Three-dimensional Printing Of Transradial Prosthetics" (Joel Lenoir)

Advancements in the field of prosthetics are giving individuals suffering from disabilities and amputations hope that one day technology will provide them with a means to return to normalcy. Currently throughout the United States and Southeast Asia, children with amputations and disabilities are denied the opportunity to experience the childhood that so many have taken for granted. Technology failed these children not because prosthetic devices did not exist but because the price of such technology is not affordable. The purpose of this research is to design and test three-dimensionally printed trans-radial prosthetics, with emphasis on reducing cost and increasing functionality within recreational activities, specifically children's basketball. In addition, the prosthetics developed will not only allow for a child to participate but to excel. In order to design trans-radial prosthetics for use in recreational activities, the dynamics of motion and biomechanics of

Coffey, Brandon; Bramschreiber, Siera; Mienaltowski, Andrew; "Impact Of Peripherally Presented Emotional Expressions On Subsequent Target Detection" (Andrew Mienaltowski)

Emotional stimuli capture our attention and influence how we perceive our surroundings. Previous research demonstrates that fearful facial expressions can impair the perception of elementary visual features of a subsequent visual target while simultaneously improving the perception of the target's rapidly varying temporal features. These results have been attributed to amygdalar enhancements of magnocellular visual inputs. The current study extends prior research by examining the extent to which angry and happy facial expressions enhance or inhibit the detection of a temporal or spatial gap in a Landolt circle stimulus. Facial cues were presented in the periphery, and Landolt circle targets appeared next to a fixation. Half of the participants viewed a temporal gap (flicker), and half viewed a spatial gap (absent segment). Responses were measured using signal detection. Overall, participants displayed an emotion-related enhancement for the spatial gap in circle targets when it was preceded by an angry cue and for the timing gap when it was preceded by a happy cue. These findings suggest that subsequent target detection varies as a function of emotion and as a function of the type of perceptual judgment being performed. Consistency and inconsistency of findings with prior research will be discussed.

Coleman, Ryan; Anderson, Shane; Moye, Tim; Buchanan, Steven; "Logan Sheet Tracking" (Stacy Wilson)

Logan Aluminum has a recurring issue with the aluminum sheets inside the rollers "walking" causing uneven rolls at the end of line. This project entails using a high precision laser sensor and control electronics to feedback data to maintenance personnel so that they can make the appropriate adjustments to keep the sheet of aluminum straight as it is being rolled. By detecting the edge of the sheet and setting it as a zero point, maintenance personnel can make adjustments and immediately see localized feedback of their adjustment. The units must be portable, cost effective and user friendly. The interface has not been finalized, but currently as a prototype the modules can be communicated with using a simple web browser over a wireless connection to view the sensor data.

Corley, William "The Effect Of Forewarning On Suggestibility: Does It Depend On Working Memory Capacity?" (Qin Zhao)

Suggestibility occurs when inaccurate information is incorporated into currently existing memories. The present study examined the effect of forewarning on suggestibility, including the influence of WMC. The main hypotheses are that forewarnings will reduce suggestibility compared to the control group and that high-WMC will yield lower suggestibility compared to medium- and low-WMC. A sample of 54 college students has been recruited (The final sample should contain 120 participants). Participants watched a clip of the TV-show 24. Next, participants completed a demographics survey and an OSPAN task to gauge WMC and to serve as a fixed interval. After the fixed interval, participants were presented with a misleading narrative about the film. Prior to being allowed to listen to the narrative, they read a set of instructions and statement about a psychological construct. Participants in the forewarning condition were warned that the narrative is misleading and they read a statement about suggestibility. Finally, after listening to the misleading narrative, participants took a test over their memories of the film. A 2 X 3 ANOVA was conducted. Results showed a main effect for WMC. Post hoc analysis indicated that participants with medium-WMC were more suggestible than low- and high-WMC participants. No main effect for forewarning was present. The current results do not support the main hypotheses, but it should be noted that the data is preliminary. If current trends persist in the data, collecting data from more participants should shift the results in the direction of the experiment hypotheses.

Correa, Paul "The Rise Of Superheroes: Defining Its Own Genre?" (Jerod Hollyfield)

Within recent years, moviegoers have started to notice more and more films with superheroes flying across the screens. What once had better praise on the page of a comic book, now has a higher gross at the box office than before recent times. Some love these superheroes from a sense of nostalgia, others because they enjoy the climactic battles between superhero and super villain. Either way, this large influx of superheroes that made a slow transition to the silver screen has become so popular that one may even say itâ€™s become a standalone genre. I will give my argument that Superhero is its own genre, not only amongst the sub-genres like Western, Noir, or Musical, but possibly even with the main genres like Adventure, Comedy, or Sci-Fi. I will reference to successes like the Marvel Studios films and the much-anticipated DC Comics cinematic universe being produced by Warner Bros. I will also give examples of the trials and tribulations it took for the great caped-crusaders to achieve their own genre.

Corum, John "The Many Faces Of Humanism: Benevolence And Colonialism In Marloweâ€™s Discourse" (Leila Watkins)

Christopher Marlowe is unequivocally one of the most studied early modern playwrights. His controversial plays, bordering on heresy, are often seen as testament to his presumed atheism. However, these assumptions focus only on the plays' conflicts using religious terms, sometimes overlooking the geopolitical implications of the portrayed demographics. In this project, I argue Marlowe critiques not only the religious institutions of early modern England, but the country's colonial endeavors and its associated moral compromises. Using close readings and the comparison of various scholarly perspectives, I conclude that the portrayals of domination and power in Marlowe's plays are meant to question England's tenuous relationship with the Muslim Ottoman Empire and its rivalry with the rising Catholic Spain.

Cox, Del; Lenoir, Joel; "Creating A 3d Model Without Cad: Tools And Tips For Laser Scanning And Photogrammetric Techniques" (Joel Lenoir)

Most engineering students have access to 3D CAD tools to create solid models used for communicating design intent, preparing FEA studies, and facilitating direct digital fabrication. However, some objects cannot be constructed using feature-based CAD. They may be more organic in nature, or might have complicated curves and surfaces that are difficult to generate in a feature-based program. In addition, point cloud data might be available that would require surfacing to adequately represent the part size and geometry. Perhaps the only data available is a series of carefully organized photographs of the object in situ. This paper summarizes six years of faculty and student experiences in collecting and manipulating point cloud data for use in CAD, 3D printing, and digital measurement. A review of common laser scanning and photogrammetric tools will be presented, along with examples of student and faculty projects. Included in the software discussion are options ranging from open- source to freeware to commercial products. Experienced students can generate useful 3D point data fairly easily using laser scanners of various types. Solid surfaced objects in formats such as STP or IGES can be created, but manipulating the data can be difficult and generation of a feature based model slow and tedious. Photogrammetric techniques show promise for generation of models, but the learning curve can be steeper and knowledge of good photographic technique is essential.

Culbreth, Caroline "Examining Cultural Identity In Second- And Third-generation Hispanic Americans" (Kate Hudepohl)

To what extent does a Mexican American identify with Mexico? With the U.S.? How are these identities formulated? Through a series of semi-structured interviews with second- and third-generation descendants of migrants emigrating from Mexico, Colombia, Puerto Rico, Guatemala, El Salvador, and Cuba, I explored what it means to be Hispanic American. The impact of childhood environment, language abilities, peer relationships, and stereotypes were particularly examined. Results suggest the formation of a third, hybrid identity incorporating an internalized American worldview into a more tangible, deliberate Hispanic expression.

Daniel, Amber "Assessment Of Competitiveness And Legal Framework Of Farmers Market" (Dominique Gumirakiza)

I am conducting research through surveys of farmers and farmer's market managers to understand how the farmers that participate in farmers markets and farmers market managers view the competitive structure and legal requirements associated with farmers markets. The purpose of this research is to analyze the competitiveness between the farmers markets, describe the legal requirements that farmers and farmers market managers must adhere to in order to participate in a farmers market, propose new locations in which markets could be placed and identify policies that promote competition among farmers. The expected results of this research is to result in a clear understanding of legal framework of the competitiveness between farmers and make recommendations to enhance the economic efficiency of farmers markets in the state of Kentucky. From this research, policy makers can use the results to improve the legal requirements for farmers in general and farmers' markets in particular.

Daniels, Evan "Edgar Wright And Modern Visual Comedy: Using The Camera To Make The Jokes" (Jerod Hollyfield)

Though he has only directed four feature films, Edgar Wright's unique style of comedy is something that

will certainly keep him around as one of the best comedy directors currently in the movie business. Now, comedy is currently a heavily-saturated genre in Hollywood, but most of those movies do not take full advantage of the comedy spectrum. Most mainstream comedy releases rely on auditory comedy—jokes simply spoken aloud. Some other movies may also resort to using over-the-top slapstick comedy, which may or may not always work. Edgar Wright, however, uses the cinematography and editing of his movies to display some of the most creative visual gags, enhancing his movies to a new kind of creative comedy.

He is most famous for his “Cornetto” trilogy: *Shaun of the Dead*, *Hot Fuzz*, and *The World's End*, and his 2010 stand-alone *Scott Pilgrim vs. The World*. This paper will shed light on the construction and execution of many scenes from Edgar Wright's filmography and how other comedy directors of today can learn from him to enhance their comedy films to avoid getting stale.

Daugherty, Victoria; Perdew, McKenzie; Broeking, Shelbi; Fortney, Casey; Reynolds, Amanda; Saeedi, Manooch; "Working Memory And Creativity" (Jennifer Redifer)

Previous studies have found that students' beliefs about the nature of intelligence influence their self-efficacy, and consequently, their academic performance (Mangels, Butterfield, Lamb, Good, & Dweck, 2006; VandeWalle, Cron, & Slocum, 2001). Conflicting findings about the influence of WM on creativity led us to examine this relationship (Stockum & DeCaro, 2013). After providing informed consent, 368 participants read an article describing creativity as fixed, malleable, or a control article, then completed a survey about their creativity beliefs. Next, participants generated creative metaphors and creative uses for household objects. Finally, participants completed WM and intelligence measures and provided demographic information. Our results indicate that WM correlates positively with one of the creative tasks, but not the other one, providing more evidence that the relationship between WM and creativity is complex.

Davis, Andrew "A Logistic Version Of Leslie Matrices For Population Modeling" (Bruce Kessler)

Ecologists develop population models to help predict the size of future populations, making the accuracy of these models very important. Continuous and discrete exponential models are good for short-term modeling, but do not account for the limited resources that are present in almost every ecosystem. This is why population modelers use the continuous and discrete logistic models to predict future population sizes in ecosystems with carrying capacities. Leslie matrices are also used to model populations, and have the advantage of giving the population size of disjoint age groups within the population, based on birth rates and survival rates for each age group. However, this is a discrete exponential model, with time step equal to the age group interval length, and does not account for carrying capacity like logistic models. Attempts have been made to create a logistic version of the Leslie matrix model, but with limited success. We have developed a Leslie-like matrix model that exhibits discrete logistic behavior with regard to population size, with the advantage of predicting the population size among age groups. The model uses a Leslie matrix, along with a diagonal matrix that contains factors to stabilize the total population size to the carrying capacity and the population distribution to the dominant eigenvector of the Leslie matrix. This model is similar to the discrete logistic model, in that the dominant eigenvalue of the Leslie matrix acts much like the growth rate factor in the discrete logistic model, and exhibits very similar behavior in population modeling.

Davis, Hannah "Kkeeping Bees: Hunter's Honey And Changes On The Family Farm" (Ann Ferrell)

Using his farm as a venue for the performance of personally held beliefs about agriculture and the food industry, Tracy Hunter has transformed his family's traditions into a successful agritourism endeavor. In *Keeping Bees: Hunter's Honey and Changes on the Family Farm*, I discuss Hunter's experiences as a third-generation beekeeper in Martinsville, Indiana, and argue that Hunter's farm's success is reliant on, drawing from Lacan's writings, the tourist gaze (referring to the self-regulation of behavior when people believe they are being watched). Consumers are as affected by the changing food industry as the producers that compose it, and they find Hunter's emphasis on natural products, minimal processing, and local manufacturing appealing. I argue that Hunter in turn appeals to their constructed concept of family farms to create a symbiotic, economically successful relationship between producer and consumer.

Davis, Trevor "Challenges of Living with HIV/AIDS: Photo Analysis of Patient Perception of Needs" (William Mkanta)

Tanzania is one of the countries hardest hit by HIV/AIDS in the Sub-Saharan Africa region. Since early 1980s, different scales of community intervention have been designed to provide care and to address challenges faced by people living with HIV/AIDS (PLWHA). These efforts are of little value, however, if they don't include PLWHA's opinion of needs. This study used photographs taken and selected by PLWHA to identify perceived needs in relation to HIV care and different aspects of disease challenges they face. The research question was: What are the perceptions of PLWHA relative to service needs associated with HIV care? The objectives of this study were to examine health care and social meanings attached to the photos and to elicit narratives from PLWHA about their needs as represented by their photographs. PLWHA identified three major areas of need in HIV care: inability to afford and access necessary nutrient-rich foods that supplement antiretroviral medications; lack of access to medications used to treat opportunistic infections; and lack of adequate HIV education amongst local community providers. All participants in the study experienced one or more of these unmet needs and shared their own unique perspectives on how they have negatively impacted their lives. The findings of this study are relevant in bringing increased awareness of HIV/AIDS needs to both local and global communities. They also present an opportunity to advocate for a meaningful inclusion of PLWHA opinion for improved design, delivery, and monitoring of social and healthcare services provided to PLWHA.

Dawood, Abdulhameed; Jahan, Muhammad; Arbuckle, Greg; "Effect Of Tool Coating During The Sustainable Machining Of Aerospace Material Ti-6Al-4V" (Muhammad Jahan)

Dry and near-dry machining, more commonly known as sustainable machining, are gaining popularity nowadays because of the increasing demand of green and environment friendly manufacturing processes. The objective of the present study is to investigate the machinability of an important aerospace material Ti-6Al-4V under the dry machining using coated milling tools. The dry machining was found to generate lots of heat during the milling of Ti-6Al-4V, as no coolant was used at the tool-work piece interface. As a result, the cutting tool suffered from more tool wear as well as adhesion of work piece material at the tool edge. To solve this problem, the effectiveness of providing different coating materials on the tungsten carbide tool has been investigated. It was found that the adhesion of chips on the cutting tool edges reduced significantly for tools using TiCN and AlTiN coatings. Due to minimal adhesion of the chips, the tool wear was also significantly lower. In terms of surface finish,

Dawson, Richard "Analysis Of Protein Amounts Through Blotting Techniques" (Sigrid Jacobshagen)

Blotting techniques were used in an effort to answer two questions: first, does shearing of DNA by Covaris affect the native conformation of its associated histone proteins, and second, do different strains of algae respond differently to light stimuli because they contain different concentrations of photoreceptor protein? Samples of the single-celled green alga *Chlamydomonas reinhardtii* were used to experimentally determine protein amounts of histone 3 using the dot blot technique. It was found that samples treated with Covaris were about 40% less able to bind a histone 3 antibody than the control indicating that the treatment with Covaris was partly destructive to histone 3. Western blot technique was used to analyze three *Chlamydomonas* strains that reset their circadian clock differently to blue-light pulses. These experiments are expected to show differing amounts of the blue-light photoreceptor cryptochrome in each of the strains as this is hypothesized to be the reason for their different responses to blue-light.

Deacon, Forrest "Gender And The History Of Philosophy" (Alexander Olson)

In this project, I analyze the philosophical idea of essentialism, as reinforced by Plato, and its effects when related to gender. I then draw connections with two anti-essentialist philosophies, William James' and Friedrich Nietzsche's, to display the shift in academic philosophy regarding truth, value, and essentialism. I contextualize Nietzsche's work within his historical and intellectual contexts, in order to show a correlation with the changing intellectual and social movements of the late-19th-and-early-20th centuries and anti-essentialist ideology. However, I argue that, though anti-essentialist philosophers shifted the paradigm from essentialism to anti-essentialism, their philosophies still enforced the binary that existed between the sexes, and thus reinforced the system of gender discrimination. I argue that it was not until the mid-20th century, with philosopher Simone de Beauvoir, that anti-essentialist philosophy was used to dismantle rigid norms.

Dennison, Eric; Burden, Alex; McGee, Alexandra "IEEE Robot Tools" (Stacy Wilson)

Each year, the southeastern region of IEEE hosts a conference which includes an autonomous robot competition for student teams. The goal of the competition is to design and build a robot to simulate games typically played on a road trip by completing four separate tasks. These tasks include: turning one row of a Rubik's Cube 180 degrees, writing "IEEE" on an Etch-A-Sketch, playing Simon for fifteen seconds, and carrying one playing card across the finish line. One important task of the robot construction is solving the individual tasks. Completion of each task will award a number of points depending on the difficulty level and the time taken to complete all tasks. The Simon will be played by using photo resistors for light detection, and two stepper motors for mechanical movement. The Arduino Mega will receive the input for the light sequence through the photo resistors and then repeat the pattern using the stepper motors. The Etch-A-Sketch will require four motors; two will hold the device in place, and the other two will turn the knobs in a specific sequence as to write "IEEE" in capital letters. The Rubik's Cube will be held from the bottom two rows with a parallel mechanical grip, while a stepper motor rotates the top row of the cube 180 degrees. This rotation will be achieved by use of a mechanical device that will be lowered down onto the Rubik's Cube and then grip it from the sides; only on the top row. The stepper motor then will be able to accurately make a 180 degree turn. The playing card will be picked up using an adhesive attached to a vertically lowered arm on the robot, and then carried across the finish line. This poster will detail the design for each of the four game components.

Deshpande, Rohan; Styers, James; "An Analysis Of M.smegmatis Bacteriophages Comets And Deshpanda" (Rodney King)

Bacteriophages are viruses that infect and replicate in bacteria. It is estimated that there are 10³¹ bacteriophages on the planet, making them the most abundant biological entities known. Due to horizontal gene transfer and mutation events, it has been suggested that phage population is very diverse. The purpose of this experiment was to determine if phages grown on the same bacterial host, *Mycobacterium smegmatis*, are genetically diverse. Two bacteriophages were isolated and characterized from soil samples taken in geographically different regions in Kentucky. These newly discovered bacteriophages, named Comets and Deshpanda, were purified to homogeneity and analyzed by a variety of techniques, including transmission electron microscopy, DNA restriction, and gel electrophoresis. The results showed distinct differences in plaque characteristics and restriction sites, despite being isolated on the same bacterial host. This data suggests that bacteriophages isolated from similar samples and grown on the same bacterial host may be genetically distinct. To determine the precise relatedness of phages Comets and Deshpanda, a whole genome sequence analysis would be necessary.

Devine, Steven "Petrographic Characteristics And Links To Weathering And Karst Development In The Haney Limestone" (Michael May)

The Mississippian-aged (Chesterian) Haney Limestone Member of the Golconda Formation in south-central Kentucky is a lesser studied and thinner unit relative to underlying thicker Middle Mississippian units in the Mammoth Cave region. This study involves characterizing and photo documenting nineteen petrographic thin sections of the Haney Limestone Member. Study of these thin sections is documenting petrographic variance which controls rock weathering and reservoir-quality characteristics. Petrographic variances manifest themselves as morphological differences in cave-passage development and formation of associated karst features. The Haney rests atop the Big Clifty Sandstone of the Golconda Formation which is commonly shale-rich near the sharp contact. Overlying the Haney is the Hardinsburg Sandstone along an undulose contact that is locally representative of a paleokarst surface. Typical facies of the Haney range from relatively finer grained dolomitic facies (e.g, mudstone to wackestone) to skeletal/oolitic grainstone to packstone. An upper ramp setting with mobile shoals is the interpreted environment of deposition. Marine phreatic cements occurring as early isopachous rims around grains and meteoric equant low Mg calcite cements representing telegenesis are present. In addition, dolomitization of both grains and original matrix occurs in some of the relatively finer grained samples, and silicification of skeletal grains is common throughout the Haney. These diagenetic minerals contribute to the resistive stratigraphic intervals that play a role in karst development.

DiTommaso, Katie; McKinney, Kelli; Stalcup, Patrick; "Comparison Of Functional Activities On Structural Changes Of The Inferior Patellar Tendon Pole" (Harvey Wallmann)

Purpose: The purpose of this study was to compare the acute effects of static stretching, eccentric, concentric, and a combination of eccentric/concentric exercises on structural changes at the musculotendinous junction of the inferior patellar pole utilizing the Esaote MyLab25 Gold diagnostic ultrasound. Design: A repeated measures 2 x 4 within factorial study design with repeated measures on both factors was used to determine the differences of patellar tendon thickness within groups.

Methods: Twenty-two healthy subjects were screened for any lower extremity deficits or orthopaedic pathology. Twenty subjects (N=20) had a baseline measurement of the anterior posterior inferior patellar tendon performed with the diagnostic ultrasound machine with each participant completing one of the four interventions per week over a four week period. Interventions completed by each participant included stretching, concentric, eccentric, and combined concentric and eccentric exercises. Following eac

Dockery, Andrew "An investigation of the atmospheric environment conducive to intensification of the historic EF-5 Greensburg, KS tornado" (Joshua Durkee)

The tornado outbreak on 04 May 2007 produced a total of 33 tornadoes across the central plains, after being promoted by the Storm Prediction Center with both slight and moderate risks days before the event. Greensburg, Kansas was impacted by an EF5 tornado in the evening hours on 04 May 2007. The tornado hit the town with the population of 1,500 citizens, destroyed 95 percent of it, and killed eleven people. The purpose of this case study is to demonstrate what key mesoscale and synoptic factors led to this EF-5 tornado. This case study re-evaluates model data using North American Regional Reanalysis, and the Global Forecast System model through Integrated Data Viewer. Radar imagery was retrieved from the National Climatic Database Center. This case study investigates the mesoscale ingredients that caused severe weather to exceed preliminary expectations. Future research may be used to study how other anomalous EF-5 tornadoes occurred across the Plains.

Donepudi, Harinivesh "An Apache Hadoop Framework For Large-scale Peptide Identification"

(Dr.Zhonghang Xia)

This work describes the implementation of Apache Hadoop framework for large-scale peptide identification. The Apache Hadoop data processing software is immersed in a complex environment composed of huge machine clusters, large data sets, and several processing jobs. The framework uses Apache HDFS and Apache Mapreduce to store and process the peptide data respectively. The proposed framework uses peptide processing algorithm named CRANKER which indeed takes peptide data as an input and matches the peptide data. The proposed framework has two steps, Step 1: Execute the CRANKER algorithm on multiple hadoop nodes. Step 2: Create an algorithm to compare the peptide data and output the matched peptides, percentage matched. The goal of this framework is to process the large peptide datasets and execute the peptide processing algorithm using the hadoop distributed approach.

Dong, Qian; Brenneman, Breanna; Fields, Christopher; Srivastava, Ajay; "Involvement Of A Protease In The Development Of Dorsal Air Sac Primordium (asp) Of Drosophila Melanogaster" (Ajay Srivastava)

The Drosophila dorsal Air Sac Primordium (ASP) is a tracheal tube that invasively grows toward and into the wing imaginal disc. We reasoned that for the invasion of ASP into the wing imaginal disc, protease functions might be needed. In this study we look at the role of a protease in ASP development. We find that both the knockdown and overexpression of the protease in ASP results in perturbed growth and migration of ASPs. This is evident by the diversity of ASP shapes that we observed and the number of ASP filopodia that are present. We further explored if the protease is capable of degrading collagen IV, a component of ECM and find that indeed the protease is sufficient to degrade the ECM. These findings demonstrate that the protease facilitates the normal development of ASPs by degrading ECM.

Knowledge gained from this study has the potential to help us better understand the invasion of tumor

cells through the extracellular matrix.

Dong, Samuel "Exploring Effects Of Various Data Preprocessing Methods On The Classification Of DNA Microarray Data" (Huanjing Wang)

Recently, computers are being used to predict certain kinds of cancer from a patient's DNA. Certain forms of cancer can be predicted with excellent accuracy while others are still uncertain. The main issue with using DNA to predict cancer is the overabundance of genes and the lack of enough patient data. We are researching various combination of operations on the data and its effect on the accuracy. In order to do this, we take the data and perform every combination of three different stages: sampling, feature selection, and classification. Sampling is used to help rebalance the data set by either removing from the majority class or adding to the minority class, and feature selection is used to reduce the dimensionality of the data set by trying to find the best subset of attributes to keep. The classification also undergoes a process known as cross validation. In cross validation, the classifier is applied to one set of data, where the majority of the data is used for training and the remainder is used for testing. This is done multiple times by changing the training and testing portions. The output is then saved as spreadsheets that are to be read into MATLAB for statistical analysis. Through analysis of various metrics, the effectiveness of specific sampling, feature selection, and classification methods can be gauged. We plan to perform various case studies on microarray data sets and determine the effectiveness of our methods by comparing them to classification with the original data set.

Dowty, Ian "The Assignment: Adapting The Storyteller's Approach" (Victoria LaPoe)

I am a videographer. Yes, my degree will qualify me as a reporter, someone familiar with the inner workings of a news station. However, I posit that the School of Journalism and Broadcasting does not give you just a career, but rather a skillset that prepares you for a range of jobs. My discipline taught me how to articulate my thoughts in a clear, concise manner, which translates well to script or track writing. In addition, I have technical abilities that enable me to handle video and audio equipment in a proficient way. Combining these capabilities with soft skills I honed over the past few years on the Forensics team, I am what the industry would call a one-man-band. As such, I can implement each strength in the best way I see fit. The variable that most often alters how I manage my attributes on an individual production is the job assignment. Even though I may use the same equipment, the job assignment changes the storytelling process. My thesis project further delves into this idea by drawing on personal examples, as well as, times in the media where someone crossed the precarious line between agenda driven production and news media.

Du, Qinchuan; Kakavand, Pegah; Jahan, Muhammad; "Biomedical Applications Of Ti-6Al-4V "A Review" (Muhammad Jahan)

In recent years, Ti-6Al-4V (titanium alloy grade 5) has been found to be an excellent candidate for using as biomedical implants. The reasons for its increasing demands in biomedical industry are its high specific strength (strength-to-weight ratio), excellent mechanical and thermal properties, and outstanding corrosion resistance. This study will conduct a literature review on various applications of Ti-6Al-4V in biomedical industries. This research will investigate the benefits and challenges of using Ti-6Al-4V in biomedical applications based on the research conducted by various researchers and industries. This study will also try to identify the manufacturing processes and post-processes used for making biomedical implants. The review will be categorized based on the applications and including

manufacturing processes used for that particular application. Some of the common examples of biomedical applications of Ti-6Al-4V are spinal vertebral spacer, spinal rod, knee implant accessories, medical staples, plates for fractured bone, nail for marrow cavity and vascular stent.

Duff, Morgan "A Study Of Chemistry: For Wind Ensemble" (Michael Kallstrom)

Most musicians have a limited understanding of intricate areas of chemistry, while most chemists aren't familiar with details of music theory or composition. In this four part musical composition based on several broad areas of chemistry, certain relationships between music and chemistry can be shown. Because of the overlap between certain scientific concepts and many aspects of music theory, it is possible for members of both fields to use what they already know in order to get a deeper understanding of the other, very different, subject. This presentation will focus on two of the four sections of the composition--the section based on organic chemistry and the section based on nonreactive elements and reactions--and describe how the music is used to give an aural representation of the scientific concepts.

Duke, Brooke; Williams, Kevin; "The Effects Of Leaving Ligands On Potential Anticancer Drugs" (Blairanne Williams)

Currently there are three platinum containing anticancer drugs on the market: cisplatin, oxaliplatin, and carboplatin. These compounds vary in their leaving ligands, which are the locations on the compounds that will be replaced by their biological targets (DNA and protein). Our research focuses on testing different platinum compounds that have a nonleaving ethylenediamine ligand, similar to the nonleaving ligands found in cisplatin, and variable leaving ligands. Testing the different compounds on cancer cell lines allows us to determine the effects the leaving ligands have on the ability of the platinum compounds to kill cancer cells. The experimental testing involves performing MTT assays on colorectal cancer, testicular cancer, and non-cancer control cell lines that have been treated with the different platinum compounds. In MTT assays, the living cells can reduce a dye to a purple color that can be quantified to determine cell survival, which is useful in determining the dose-dependent toxicity of the compounds on each cell line. The testicular and colorectal cancer cell lines were chosen because of the success of cisplatin and oxaliplatin in killing those specific cancer cells. The main purpose of this research is to observe how the different leaving ligands affect cellular uptake, cell line specificity, and cancer cell death. The MTT assays on the HT-29 colorectal cancer cell line have suggested that the leaving ligand has a significant influence on the toxicity in these lines. Research into leaving ligands is very valuable since it could lead to more efficient anticancer drugs.

Dumaine, Jennifer "Acute Sleep Fragmentation Induces Tissue-specific Changes In Cytokine Gene Expression And Increases Serum Corticosterone In A Murine Model" (Noah Ashley)

Sleep deprivation induces inflammation and increased glucocorticosteroids in vertebrates, but effects of fragmented sleep are poorly understood. Considering the latter is more representative of sleep apnea in humans, we investigated changes in serum corticosterone, pro-inflammatory (IL-1 β , TNF- α), and anti-inflammatory (TGF- β 1) cytokine gene expression in the periphery (liver, spleen, fat, and heart) and brain (hypothalamus, prefrontal cortex, and hippocampus) of mice exposed to varying intensities of sleep fragmentation. Male C57BL/6J mice were exposed to bar sweeps every 20 sec (high sleep fragmentation; HSF), 120 sec (low sleep fragmentation; LSF), or the bar remained stationary (control). Blood and tissue samples were collected after 24h. We predicted HSF mice would exhibit increased pro-

inflammatory expression, decreased anti-inflammatory expression, and elevated stress hormones in relation to other groups. SF significantly elevated IL-1 β gene expression in adipose tissue, heart (HSF only), and hypothalamus (LSF only) relative to controls. SF did not increase TNF- α expression in any of the tissues measured. HSF increased TGF- β 1 expression in the hypothalamus and hippocampus relative to other groups. Serum corticosterone concentration increased with the intensity of SF. Consequently, SF is a potent inducer of inflammation and stress hormones in the periphery, but leads to upregulation of anti-inflammatory cytokines in the brain.

Duncan, Laura; Lickenbrock, Diane; "Determining Associations Between Paternal Involvement And Infant Temperament On Paternal Sensitivity" (Diane Lickenbrock)

Fathers who are involved with their infants at a higher quantity are found to be more sensitive to their infants (Feldman, 2000). The current study seeks to determine how the amount and type of involvement and infant temperament influence paternal sensitivity in either a distressing or a non-distressing task with their 6-month old infants (n= 28 dyads). Fathers completed questionnaires in order to determine: 1) the amount and type of paternal involvement (Child Care Activities Scale; What I Did With My Baby Today Checklist; Cronenwett et al., 1988; Planalp et al., 2013) and 2) infant temperament (Infant Behavior Questionnaire-Revised, Garstein & Rothbart, 2002). Fathers also participated in a distressing task (Still-Face Paradigm; Tronick et al., 1978) and a non-distressing task (free play) in the laboratory with their infants, which were videotaped and scored for paternal sensitivity.

Duncum, Cody "Foxcatcher, The American Dream: An Analysis Of Bennett Miller's Critique On Modern America." (Jerod Hollyfield)

Bennett Miller's 2014 film, Foxcatcher, has been revered and panned by both audiences and critics alike. It's bare narrative and steady pace have been polarizing as well as its dark subversive content and characterization. Foxcatcher is loosely based on the true and devastating story of two brothers and their interactions with a schizophrenic millionaire who works with them while they strive for glory in numerous Olympic wrestling events. I argue that Bennett Miller's Foxcatcher is a critique on modern America that we live in today. From the mise-en-scene to the narrative and the interaction/relationships between characters we begin to see certain ideas and themes being presented such as patriotism, greed and delusion. These themes are very present in modern American lifestyle, existing on many different levels of "The American Dream". These ideas are very subtle in each frame of Foxcatcher, telling a much deeper story than just surface level.

Dunnaway, Andrea "Building A Culture Of Sustainability" (Shahnaz Aly)

A Faculty-Undergraduate Student Engagement Grant allowed research to be conducted about architecture's role in spurring growth of sustainable behavior and awareness in American culture. Research indicated four aspects of sustainability must remain in balance to create a truly sustainable facility: environmental, social, economic, and cultural sustainability. Most importantly, cultural sustainability must be present to motivate and educate users to daily incorporate sustainable choices into their lives and build a culture of sustainability. The project's objective was to apply the four aspects of sustainability to create an architectural master plan and schematic designs for a field station which included the following: an environmental learning center, dormitory, and research laboratory at Western Kentucky University's (WKU) Green River Preserve (GRP). The mission of GRP is, to foster knowledge and protection of this highly diverse region and our natural heritage through research,

education, and conservation. GRP serves university researchers, students, and visitors and Hart County, KY's community by providing educational opportunities, economic stimulus, and civic engagement. WKU administrators hope the preserve will grow to host retreats and conferences. Considering the variety of users and the preserve's mission, WKU's GRP became the ideal home for a facility that would showcase sustainability through its campus design.

Durbin, Charleston; Coots, Zachary; Okita, Kento; "CNC Router Design" (Joel Lenoir)

The research project conducted by Zachary Coots, Charleston Durbin, and Kento Okita (with Professor Joel Lenoir as an advisor) focuses on designing and building a CNC router. Currently the Mechanical Engineering program is in great need of a CNC router which will be used for future design projects, and while a good router can be purchased for around \$8000, our team is designing and building a router to either the same standards or better for half the price. The team is focusing on cost effective ways of designing a router that meets the design specifications: router with a 4 foot by 4 foot surface area, milling in a full two dimensional plane, and software that will remain effective for many years in the future. With a \$4000 budget the team will design and build the router in its entirety. The project will be completed by May of 2015. The poster will illustrate the design and the constraints of the problem, and will give a real time update of the work in progress.

Dye, Josh; Wilson, Stacy; Hudson, Paul; "Real-time Clothes Mass and Moisture Estimation in Residential Clothes Dryer "Virtual Approach to a Real System" (Farhad Ashrafzadeh)

In the world we live in today, energy consumption is becoming an ever-growing concern. By developing smarter products, we can begin to slow down the amount of energy each household consumes and help reduce the wasting of this precious commodity. Among appliances, electric clothes dryers are the second largest energy consuming products at home in United States. These products originally were not designed for energy efficiency in mind. They just heat up the incoming air with a 5.4 KW electric heater located inside and then discard the heated air as well as moisture into environment. The energy efficiency of clothes dryer is non-linear and it is a function of clothes load size. For small loads, this efficiency can be as low as 25%. Due to the scale of appliances in American households and their high rate of utilization, just few percent improvements on dryer's energy consumption can lead to substantial energy saving at the national level. In this project, we intend to estimate the

Ebrahimi, Kianoosh; North, Leslie; Yan, Jun; "Gis Applications In Developing Zero-waste Strategies At Universities - A Case Study Of Western Kentucky University" (Leslie North)

Over the past two decades, the number of universities that pursue zero-waste strategies and schemes has steadily increased. GIS, as an integrating tool and spatial support system, can serve environmental planners at universities to provide a more efficient roadmap towards a zero-waste structure. As a case study, GIS was applied to visualize, and assess waste generation streams and resource allocation solutions spatially at WKU. Weight of accumulated solid waste in each dumpster, which is exclusively assigned to each building on the campus, were stored, visualized, and spatially analyzed in GIS with the Kernel Density Estimation. The produced maps represented the intensity of waste generation per areal unit over varying periods of time. At WKU, MMTH, food courts, and DSU have generated more wastes, suggesting close review of policies related to food practices is essential for increasing efficiency in waste management schemes. In this study, the number of current outdoor bins was investigated by the application of location-allocation and service area network analysis, and adding more bins was

recommended based on collected data. Overall, by utilization of GIS applications, zero-waste planners can realize how campus waste stream trends change over a specific time recommend how the rate of recycling can be raised.

Ejike, Chika "Influence Of Culture On The Utilization Of Healthcare Services By Refugees In Bowling Green, Kentucky" (Randy Capps)

The world as a global village has become a ubiquitous trope in the popular discourse, and Bowling Green, Kentucky, with its substantial immigrant population, may be said to be an exemplar of this idealized community. Bowling Green, has become a nearly ideal place for research regarding the challenges faced by immigrants. Due to the diverse cultural identities of the refugee/immigrant population here, it is particularly well-suited to research into complex culturally dependent healthcare utilization patterns. The central research question for the study undertaken by this author was as follows: What are the healthcare-seeking behavioral patterns (as influenced by culture) among refugees at their nearest healthcare facilities? This was addressed by way of several sub-questions. RQ1â€”To what extent does a relationship exist between immigrant and refugee cultural characteristics/perceptions and the manner in which said people utilize healthcare services? RQ2â€”What is the relationship between utilization of healthcare services by a given refugee/immigrant population and the barriers endemic to that population's community? RQ3â€”What is the relationship between a refugee's (or immigrant's) perceived level of health (i.e. physical and psychological wellbeing) and use of healthcare services? While the research is ongoing, the author anticipates that the results of this study will contribute to the discourses that surround immigrant/refugee communities and their wellbeing.

Elmi, Donald "'What's This': Tim Burton And Gothic Comedies" (Christina Noel)

In my paper, my objective is to look into director Tim Burton's style of making movies that consist of a gothic comedy theme. Is he really using this style in an appropriate manner? Throughout his career, Tim Burton's dark, artistic style has been praised for films such as his original work, Edward Scissorhands, and his version of Sleepy Hollow, which is a take on the classic Washington Irving story of Ichabod Crane and the Headless Horseman. However, there has been controversy about how he used this approach when he made adaptations and remakes of material which had been intended for all audiences. Such as his depiction of the Batman universe, which parental organizations considered to be inappropriate for children since Batman originates from family oriented material. These issues include the villain designs being much more gruesome, such as Penguin's deformed appearance in Batman Returns, and Joker's permanent grin that resulted in a botched plastic surgery meant to treat the wounds made from a backfired gunshot that pierced through his cheeks. In recent years, two of his adaptations such as Charlie and the Chocolate Factory (2005) and Alice in Wonderland (2010) have had mixed criticism over how he again took films that were originally cheerful and family friendly and gave it a darker tone. Despite these controversies, is Tim Burton an example of a filmmaker who has a unique way to produce films and entertain audiences, or does he go too far with his dark envisioning?

England, Johnny; Vo, Hieu; Ashley, Noah; "Sleep deprivation increases the sensitivity of the hypothalamic-pituitary-adrenal axis to dexamethasone treatment In C57bl/6j mice" (Noah Ashley)
Sleep deprivation (SD) increases the activation of the hypothalamic-pituitary-adrenal (HPA) axis, resulting in a release of corticosterone (stress hormone) into the blood. To evaluate the sensitivity of the

HPA axis, many studies utilize the dexamethasone (DEX) suppression test. Therefore, we hypothesized that SD mice will exhibit decreased sensitivity to negative feedback from DEX. To test this hypothesis, we injected C57BL/6j mice with dexamethasone (50ug/kg) or saline that were sleep deprived (SD) for 24 hours. Mice that have not been SD were controls. Four groups were created: (1) SD mice with DEX, (2) SD mice with saline injection, (3) non-SD mice with DEX, and (4) non-SD mice with saline. SD occurred using a sleep deprivation machine that involved use of a sweeping bar that moves every 30 sec. DEX or saline was injected 4 hours before the end of SD. Blood samples were collected for measurement of plasma corticosterone levels using Enzyme-Linked Immunosorbent Assay (ELISA). In contrary to our hypothesis, mice that were exposed to SD and injected with DEX exhibited significantly lower plasma corticosterone than those SD mice that received vehicle. These data suggest sleep loss increases the sensitivity of the negative feedback towards the HPA axis.

Ernst, Caleb "The Creatures And The Critics: Edgar Allan Poe's Menagerie Of The Grotesque" (Sandra Hughes)

Current critical analyses addressing the function of animals in Edgar Allan Poe's works are essentially flawed because they interpret Poe's use of animals as a primarily symbolic endeavor without considering the possibility that in Poe's works, animals function not only as symbols of human psychology or culture, but also as indicators of the shadowy nature of the division between man and beast and of the possibility of animal-kind assailing humanity's position of intellectual superiority. By calling the relationship between man and animal into question, Poe destabilizes the reader's existing anthropocentric ideology and upends traditional perspectives on mankind's monopoly of reason, leading to a distinctly unsettling effect closely tied to the concept of the grotesque. This essay discusses how Poe uses animals to create a grotesque effect in several of his tales and stories and engages with examples of traditional critical interpretations in order to demonstrate where those readings fall short in their analysis of Poe's animals.

Evans, Carolyn "Condemning The Cultural Defense As A Form Of Violence Against Women" (Jessica Furgerson)

The last 30 years have seen the rise of cultural defenses, or legal defenses that use a defendant's cultural background to argue for a mitigated sentence. While the cultural defense attempts to ensure that non-western immigrants are treated fairly under traditional western legal standards, it also reveals problematic trends in our justice system. Immigrant men who commit violence against women may invoke the cultural defense to receive reduced sentences. This paper examines courtroom testimony, judge decisions, and case record, to explore the historical roots of the cultural defense, its reoccurring themes, and the contrast between male and female defendants who utilize the defense. Additionally, this paper articulates the negative social implications for women who choose to use this defense. Finally, the paper concludes that the cultural defense has had a significant impact on women's legal rights in America, ultimately arguing that cultural defenses have the ability to justify violence against women.

Fan, Joy; Wayne, Jeremiah; King, Rodney; Rinehart, Claire; "Exploring Biodiversity Through Isolation and Characterization of Bacteriophages Bilbo and Fanfare" (Rodney King)

Bacteriophages are ubiquitous viruses that infect and replicate within bacterial hosts. Our objective in this project was to develop a more comprehensive understanding of the diversity of the bacteriophage

population by isolating and characterizing novel bacteriophage from two separate environmental water samples, using *Mycobacterium smegmatis* as the host. We analyzed the morphology of our phages, named Bilbo and Fanfare, using a Transmission Electron Microscope, and measured the tail and capsid dimensions. The genomic DNA from each phage was purified and evaluated by restriction analysis and gel electrophoresis. From these results, we conclude that Bilbo most likely belongs to the K3 subcluster of mycobacteriophages and Fanfare most likely belongs to A2, but this will require confirmation by DNA sequence analysis. Although both Bilbo and Fanfare were isolated from stagnant water samples using the same bacterial host and they share similar morphologies, the restriction analysis shows that they are not identical. The K cluster of mycobacteriophages are unique in that they are able to infect both *M. smegmatis* and the deadly human pathogen, *M. tuberculosis*. These phages could potentially be used to treat tuberculosis via phage therapy. Our results suggest that mycobacteriophages that infect *M. smegmatis* are morphologically similar and that the diversity of the phage population can only be revealed by the analysis of the phage genomes.

Farmer, Brandon "Endothelin-1 Promotes Bovine Corneal Endothelial Cell Proliferation Via A Mapk Pathway: Implications For Global Keratopathy" (Ken Crawford)

The corneal endothelium is necessary in maintaining the vital functions of the cornea, namely hydration, thickness, and transparency. Diseases that impair the corneal endothelium are currently remedied solely via surgical correction. These solutions present obstacles to patients of underserved areas due to cost ineffectiveness and lack of access. Trachoma, a disease which causes corneal cloudiness, is the leading cause of infectious blindness in the world. In order to eradicate Trachoma worldwide, epidemiological data is needed to aid in directing efforts from the World Health Organization. 3 villages in Kasigau, Kenya were studied to quantify the occurrence of Trachoma in the region. The 3 villages were found to have adequate access to antibiotic therapy and an unremarkable incidence of Trachoma symptoms. An alternative therapy for corneal endothelial disease is also needed. Endothelin-1 (ET-1), a known mitogen, induces wound healing through cell proliferation in bovine corneal endot

Fehrenbach, Amy; King, Steven E; Johnson, Jarrett; "Hearing And Effects Of Sound Exposure On The Axolotl (*ambystoma Mexicanum*)" (Michael Smith)

The axolotl (*Ambystoma mexicanum*) has been used as a model organism for studying development, genetics, and regeneration. Although the sensory hair cells of the lateral line have been shown to be able to regenerate, it is not known whether this also occurs in the inner ear. In fact, little is known about the hearing capabilities of the axolotl or other salamander species. We recorded auditory evoked potentials (AEPs) of six axolotls in order to produce baseline pressure sensitivity audiograms. Individuals were then subjected to a 48-hour 150 Hz sound exposure at approximately 170 dB (re 1 μ Pa). AEPs were then performed to measure hearing thresholds immediately after sound exposure and at 2, 4, and 8 days post-sound exposure (dpse). In the baseline audiogram, axolotls were most sensitive at 600 Hz, with an additional peak of sensitivity at 3 kHz. Following sound exposure, axolotls experienced a 6 to 12 dB temporary threshold shift (TTS) after sound exposure, with TTS being greatest at low frequencies near the 150 Hz stimulus frequency (i.e., 100 and 250 Hz). Hearing sensitivity returned to control levels within 8 dpse. This indicates that axolotls do possess the ability to recover hearing sensitivity after damage following acoustical trauma. This study is the first to document hearing and hearing loss in the axolotl. Future studies are needed to correlate this hearing loss and recovery to sensory hair cell loss and regeneration in the axolotl inner ear.

Fields, Christopher; Dong, Qian; Oates, Elizabeth; Srivastava, Ajay; "Genetic Characterization Of A Basement Membrane Degradar In Drosophila Melanogaster" (Ajay Srivastava)

We have identified a basement membrane (BM) degrader in the fruit fly, *Drosophila melanogaster*. Our study shows this gene up-regulates the c-Jun N-terminal kinase pathway (JNK), a key signaling mechanism necessary for proper development in *Drosophila*. Additionally, we have demonstrated that up-regulation of the BM degrader induces apoptosis when over-expressed in the eye, suggesting a mechanism by which this gene operates. Further evidence demonstrates its role by inducing basement membrane degradation during tissue development, and could have similar impacts during tumor metastasis. Currently we are working to understand this gene's role in the JNK pathway and performing a structure function analysis. Data from these experiments will be presented.

Fleming, Emma; Adams, Sarah; Pedersen, Kristen; Schroeder, Amber; "Increased Motivation through Categorization of Rewards for a Meaningful Task" (Amber Schroeder)

Research has shown that categorizing rewards can increase motivation, even when those categories are meaningless. Furthermore, research has shown that this phenomenon occurs even when participants are aware that the categories of rewards are arbitrary and the possible rewards included in each category are essentially the same. However, previous research has only tested these relationships with meaningless tasks. The current study will test whether or not these same relationships exist when participants consider tasks meaningful. This study will be conducted with a college student sample from Western Kentucky University. Participants will participate in a rÃ©sumÃ© workshop. Participants will then be asked to correct two rÃ©sumÃ©s based on the material presented during the workshop. Participants will be placed into one of two conditions, either being offered rewards from two separate categories or uncategorized rewards. Participants' performance and time spent on rÃ©sumÃ© correction tasks will determine the number of rewards they are able to choose. If the same relationships are found, this could have implications for many aspects of the workplace as well as other areas of life in which motivation could be increased through categorization of rewards.

Flynn, Abby; Carlin, Taylor; Peter, Thomas; Clarkson, Leiff; "Dominant Vs Non-dominant Trunk And Shoulder Flexibility In Collegiate Baseball Pitchers" (Jason Crandall)

Shoulder injuries may be prominent in baseball pitchers due to inflexibility of the shoulder joint and all muscles involved in pitching. The purpose of this study was to examine flexibility in pitchers' dominant and non-dominant arms to help prevention and rehabilitation of shoulder injuries. Fifteen (18-23 years) collegiate pitchers' shoulder flexion, extension, abduction, adduction, internal and external rotation, and horizontal abduction and adduction were measured using a standard goniometer. Trunk flexibility was measured using the Y-Balance Test. Paired sample t-tests were used to determine statistical significance ($p < .05$). Shoulder extension ($t(14) = -3.02$, $p = .009$), internal rotation ($t(14) = -2.8$, $p = .013$), horizontal abduction ($t(14) = -2.17$, $p = .047$), and Y-Balance Test ($t(14) = -2.2$, $p = .044$) were significantly greater in the non-dominant arm. Our results suggest a pitcher's strength and flexibility program should include flexibility training to possibly reduce injuries.

Flynn, Frederick "Kramer Vs. Kramer: Hollywood Confronts A Shift In American Cultural Attitudes" (Beth Plummer)

In this project the idea is to report on a particularly important American film, the reaction to the film

from a panorama of viewpoints, and perhaps most importantly, how the film portrays American cultural attitudes at the time it was made. In this case, because the movie *Kramer vs. Kramer* was released in 1979, a date that corresponds with the end of the decade that brought "Women's Rights" issues to the forefront of American consciousness, and in fact deals with the highly controversial issue of divorce, which, at the end of the period 1960-80, had experienced nearly a two hundred and fifty percent increase, there were bound to be strong reactions to the messages *Kramer vs. Kramer* seemed to send. The research for this project is shaped so that the original sources are the reviewers of the film. In the 1970s, a time of tumultuous changes in the make-up of what had been "the traditional American family," there were bound to be widely divergent views in how the film was received.

Ford, Leslie "Socioeconomic Factors And Their Impact On Maternal And Child Healthcare In The Aarohi Project Villages Of Rural Kumaon." (William Mkanta)

Socioeconomic factors are often linked with poor health outcomes. This is especially true in developing countries such as India. The purpose of this study was to investigate which socioeconomic factors affect access to maternal and child healthcare in the Aarohi project villages of rural Uttarakhand, India. Data for this study was collected by administering a questionnaire to villagers in the Kumaoni Foothills of the Himalayas. The survey consisted of 45 questions which covered topics such as general demographic information, education, economics, medical history, as well as, maternal and child health. In addition to the questionnaire supporting information was collected using data from the World Health Organization, The World Bank, and the Indian National Family Health Survey 3. There were a total of 36 respondents representing 34 households from seven villages. Four of these villages were part of a project which taught basic health to villagers. The other three villages were

Fortney, Casey "Self-explanation And Practice Retrieval: A Comparison Of Study Methods" (Jenni Redifer)

Retrieval practice results in superior test performance compared to rereading to-be-studied materials (Roediger & Karpicke, 2006). Less is known about the effectiveness of self-explanation, in which students explain to themselves the concepts contained in the materials that they read (Dunlosky et al., 2013). Because of the complex cognitive processes involved in self-explanation, we expected students who self-explained to perform better on recall tests than students who reread. Ninety-one undergraduates participated. Twelve participants were removed due to language difficulties or outlier analysis. Participants were randomly assigned to one of three study method conditions. Analyzed data contained 24 participants in the rereading condition, 28 in the retrieval practice condition, and 27 in the self-explanation condition. Participants read a science passage. Participants in the self-explanation condition learned to self-explain during a short training session. Three guiding questions

Fuller, Megan; Rigney Wright, Emily; Sims, Shannon; Neelly, Kurt; "Reliability And Validity Of A Smartphone Application To Measure Hip Rom" (Beth Norris)

Objective: To determine the reliability and validity of a smartphone application for the measurement of hip range of motion (ROM). Background: The instruments most commonly utilized in the clinic to measure hip ROM are the goniometer and the inclinometer. Reliability and handling issues with the goniometer and the inability to use the inclinometer for hip measurements in the supine position, create limitations with both instruments. Recent research has found use of Smartphone applications to measure joint ROM at the shoulder, ankle, cervical spine and lumbar spine to be valid and reliable. No

research exist to date, however, regarding the use of Smartphone app for measurement of hip ROM. Methods: The sample consisted of 30 healthy participants. Two examiners measured hip ROM of each participant 3 times for each motion using both the Smartphone and goniometer. Six hip motions were assessed: flexion, extension, abduction, adduction, internal rotation, external rotation. Int

Fussman, Kelly "Spanish Phonetics & Dialects Compared To American English Phonetics" (Mary Lloyd Moore)

This paper looked at the fundamentals of Spanish and English phonetics and dialects. My research drew from linguistics textbooks and scholarly articles in both English and Spanish. The goal of the project was to note the similarities and differences of the acoustic and orthographic representations of sounds in both Spanish and English. Furthermore, how and where sounds are produced in the oral and nasal cavities were studied in each language. Variations in the Spanish language were also examined in relation to dialects spoken around the world. Knowing more about the way speech sounds are produced allows communication disorders professionals to devise better ways of teaching and learning the oral aspects of foreign languages.

Fusting, Stephanie; Lickenbrock, Diane; "Rating Reactivity: Correlations Between Parent And Experimenter Reports Of Infant Temperament" (Diane Lickenbrock)

Individual differences in temperament early in life are crucial in the social and emotional development of children (Stifter, 2002). Anger and fear, specific components of negative temperamental reactivity, are predictors of future inhibitory problems in children (He et al., 2010). Joy, a component of positive reactivity, has been shown to be related to more positive parent-child social interactions (Aksan & Kochanska, 2004). Stifter, Willoughby and Towe-Goodman (2008) found that the mother-report and experimenter-report moderately correlate when used to assess positive reactivity in infants, but not negative reactivity. Previous studies, however, have failed to assess correlations between father-report and experimenter-report. Thus, the goal of the current study is to examine associations between father, mother, and experimenter-reports on negative and positive temperamental reactivity. The present study is part of a larger, ongoing longitudinal study. Participants included 28 families (mothers, fathers, & 6-month old infants). Negative and positive infant reactivity was reported by the parents at home using the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003). Experimenter-report of negative and positive reactivity was completed using an adapted Infant Behavior Record (IBR; Bayley, 1969; Stifter & Corey, 2001) by two experimenters at the end of a laboratory visit. Each visit included tasks that measured infant fear, anger, and joy, as well as two parent-infant play tasks. Preliminary results will be reported using the current portion of the sample that has been collected.

Gaiko, Jennifer "The Foundry: A Broadway United Methodist Church Community Center" (Shahnaz Aly)

The Foundry is located in Bowling Green's west end in the old Boys and Girls Club Facility and seeks to develop leaders among the young children in the neighborhood. The project design is a completely new structure on the current site of the Foundry to meet the needs of the client and create a safe and sustainable structure. The goal of the facility is to provide resources, identify potential, and develop strong relationships within the young community. Specific areas of focus include education, physical fitness, community gardens, health-based initiatives, and enrichment of life and community. Finally, this is a faith-based initiative of Broadway United Methodist Church here in Bowling Green, KY. The concept of my design includes the considerations of the verticality of the heavens, in reference to faith-based

priorities of the facility, as well as the horizontal juxtaposition of the earth, in conjunction with a sustainable focus. The building encourages exploration, learning and flow as well as utilizes recycled materials and focuses on incorporation of light. Research investigated the issues of the project proposition, Architectural code requirements, the sustainable challenge, technology and material considerations, unique construction techniques, as well as thorough case study investigations for inspiration and innovation.

Gaiko, Jennifer "Architectural Bridge Consequence" (Shahnaz Aly)

The architectural significance of bridges is indisputable. Often bridges are accredited to engineers for their transportation and functional needs; however, bridges are so much more than fundamental. The purpose of this work was to shift the perspective and purpose of the architecture of bridges as mere transportation systems to a meaningful architectural and cultural symbol. This CE/T outlines the cultural significance and identity of bridges, iconic historic perspectives, influences of composition and function, and the style and architectural relevance. All of these elements begin to shift the perspective and purpose of architectural bridges to that of a meaning architectural symbol. The overall approach was to take historical research of bridge architecture throughout the world to determine the thematic purposes and ideals associated with these famous bridges; then, apply these principals to my own architectural design of an iconic bridge. Finally, I investigated the meaning of bridges through the eyes of architectural professionals, engineering professionals, and average WKU students and so forth to compare the results of research, personal application and community reaction. Results shift the way we view communities and countries, the way we see function and perspective and the way architects themselves view the design and importance of bridges.

Garcia de Carvalho, Gabriel; Pereira da Silva, Anderhogene; "Evaluation Of Mechanical Instrumentation Of Root Canals In Inducing Dentinal Microcracks During Endodontic Treatment: Review Of Literature." (Lynn Austin)

The biomechanical preparation of the root canal system shows to be very important to the success of endodontic treatment. This stage includes cleaning, the maximum conservation of the original root canal curvature, reduction and/or removal of bacterial debris, and modeling of the root canal to receive the filling material. However-some researchers have suggested the possibility of appearance of root cracks as a result of mechanical preparation with rotary systems and reciprocating motion. This study aimed to verify, through literature review, the influence of mechanical instrumentation systems to cause the emergence and/or propagation of dentinal microcrack during endodontic treatment. The kinematic characteristics of some instrumentation systems, as well as structural, such as cross-sectional shape, angle of inclination, and depth of penetration, in contact with the root canal walls, creates dentin stress, which may result in tooth cracks and/or fractures. In the Niti rotary instrumentation, cutting action and sequential use of different tapered instruments can contribute to the microcracks generation factor, and it is suggested that more stress is provided when only one reciprocating instrument is used in the root canal preparation, showing that it can actually be a positive relationship between the use of these instruments and the appearance of dentin defects. The use of different methods to evaluate this relationship, contribute to the lack of standardization of results between authors, making difficult to evaluate the relation of different types of mechanical systems used and induction of dentinal

microcracks in endodontic therapy, which lead to a need for more studies.

Garrison, Haley "A Critical Analysis Of Volunteer Tourism And The Implications For Developing Communities" (Donielle Lovell)

The practice of volunteer tourism has recently experienced a rise in both popularity and participation, along with research into the effectiveness of the approaches to service taken in foreign countries. This type of tourism is commonly described as an eco-friendly and economically sustainable alternative to traditional methods of international travel. Participants typically express altruistic motivations behind their desire to travel, as conventional touristic activities are paired with various forms of volunteer work. Though this paper describes significant benefits associated with this growing industry, many critiques have also explored the limitations of voluntourism's approach to community development. In contrast to beliefs that volunteer tourism is mutually beneficial to all those involved, recent studies have suggested that it also exhibits trends of egocentrism, ineffectiveness, and damaging behavior to host communities. My research provides a critical analysis of voluntourism through an extensive literature review, personal interviews with past participants of such programs, and an evaluation of organizations offering international volunteer opportunities. Through this research, I have established the argument that instead of approaching international community development from a touristic and paternalistic standpoint, reflecting tones of neocolonialism, this sector must begin to shift focus from customer satisfaction toward education and the creation of sustainable solutions. Therefore, I propose more effective methods of engaging youth in community development and international education, through processes such as transformative learning that provide equitable and socially responsible experiences.

Garrison, Rebecca; Daday, Jerry; "The Effects Of New Materials And Teaching Methodologies In General Biology Courses" (Kerrie McDaniel)

A new generation has entered higher education that learns contrarily to generations before. To meet the changing needs of this generation Western Kentucky University's Biology Department introduced a new e-textbook and e-materials from McGraw Hill publishing in the fall of 2013 to all lower level classes. This study is to assess the changes in pedagogical techniques among professors of 100 and 200 level science classes due to the new e-text and e-materials. To do so, syllabi were collected from these classes both prior and post implementation and common characteristics were coded for and statistically analyzed to identify changes in pedagogy. It was found that many biology professors were, on average, increasing their number of homework assignments by 23% after the implementation. This work is to help increase the understanding of how higher education is adapting to address the learning needs of the students.

Gelderman, Alexander "Timeless Strategies For Better Sound: The Study Of Reverberation In Architecture Architecture" (Neal Downing)

We show examples of well-designed concert halls, pointing out the common features attributed to their excellent sound quality. Venues renowned for their acoustics share similar design elements resulting in a richer and more sustained sound that creates the musical atmosphere these halls are known for. Examples of architectural features that amplify sound quality include sound traps and hollow chambers. Each of the halls we discuss has prominent sound traps although they work by different techniques. One impressive use of a hollow chamber turned the floor of the orchestra pit into a resonating amplifier, while others may use decorative pieces to create hollow chambers. The audience tends to be the largest

source of sound absorption in a concert hall, with the walls, floors and ceilings absorbing very little of the sonic energy. Cutting edge technology and mathematical analysis are being used to design new concert halls, but ironically the same design in the modern halls can be found in stone amphitheaters fifteen hundred years ago.

Gensheimer, Julia "Unusual Reactivity Of A Platinum(ii) Triamine Complex" (Kevin Williams)

Platinum anticancer drugs traditionally have two nitrogen-coordinating ligands (or one ligand coordinating through two different nitrogen atoms) and two leaving ligands' that are displaced by biological targets. More recently, complexes with three nitrogen ligands have shown significant toxicity in cancer cell lines. We have therefore prepared a complex with a ligand (N,N-diethyldiethylenetriamine, or Et₂dien) that coordinates through three nitrogen atoms (a tridentate ligand). Such tridentate complexes are usually very stable to substitution; however, when the Pt(Et₂dien)Cl complex is reacted with methionine, we observed multiple products by NMR spectroscopy. At low pH, the methionine coordinates through the sulfur atom, whereas at moderate pH values the methionine appears to coordinate through both the sulfur and nitrogen atoms, partially displacing the Et₂dien ligand. Also, when guanosine 5'-monophosphate (5'-GMP) is added at the same time as methionine, the methionine can react first and then 5'-GMP can partially displace the Et₂dien ligand. Such unusual reactivity has not been previously observed for similar complexes.

Goble, Brant; Zhang, Jie; Elliott, Candace; Suzuki, Komako; Houchens, Gary; Norman, Tony; Redifer, Jenni; "Impact Of The Leader In Me On Student Engagement And Socio- Emotional Skills" (Jie Zhang)

This study examined 1) whether the implementation of the Leader in Me (TLIM) positively impacted student school engagement and socio-emotional skills in 112 US schools participating in a Federal Race to the Top District (RTT-D) grant entitled kid friendly (kids Focused, Responsible, Imaginative, Engaged, and Determined to Learn), and 2) how varying levels of TLIM implementation fidelity affected student non-academic outcomes. In academic year 2013-14, the 112 schools were divided into two cohorts: Cohort 1 schools implemented TLIM and Cohort 2 schools served as wait-list controls. Student Engagement and Performance (STEP) survey instrument was developed and administered to all students after 10-month of implementing TLIM. A four-criterion measure was used by TLIM coaches to determine the fidelity level (high, medium, low) of the TLIM program implementation in each Cohort 1 school. Results showed that students in the TLIM (Cohort 1) schools had greater school engagement and social emotional skills than students in the Non-TLIM (Cohort 2) schools after controlling for school demographics. Students in the higher fidelity TLIM schools had stronger school engagement, responsibility and self-control/self-management skills, emotional/physical wellbeing and fewer dropout indicators than students in the lower fidelity TLIM schools.

Goodwin, Courtney "Are Those Diamonds In My White Wine?" (Edward Kintzel)

White wine is composed of a number of different compounds including tartaric acid, which is primarily found in grapes. Tartaric acid does also take the form of potassium tartrate (K₂C₄H₄O₆). Since this acid is only partially soluble, it does not necessarily completely dissolve in wine even though visual inspection shows no indication of their presence. Over time, and in particular at low temperatures, the acid crystallizes over time and ends up deposited on the bottom of the bottle. Wine diamonds themselves are natural and harmless. Using the Large Chamber Scanning Electron Microscope at the WKU Nondestructive Analysis Center, the surface morphology of "diamonds" that were harvested from the

bottom a white wine bottle was carried out. Results will show the formation of pyramidal crystal structures of potassium tartrate. To complement this real-space imaging, a single crystal of potassium tartrate was studied using XRD. The sample was maintained at 298K during measurement, and the results indicate this is an orthorhombic crystal system for a rhombic-bipyramidal class with $a = 7.6 \text{ \AA}$..., $b = 7.8 \text{ \AA}$..., $c = 10.6 \text{ \AA}$

Goodyear, Sarah "Habituation To Auditory Stimuli By Captive African Elephants (*Loxodonta africana*)" (Bruce Schulte)

Elephants are cognitive species that exhibit many types of learning. Associative, social, and insight learning have been investigated with elephants, but one of the simplest forms, habituation, has not. Habituation can have implications for elephant enrichment *ex situ* and for the management of elephants *in situ*. Elephants possess a well-developed sensory system and may habituate to stimuli used for enrichment and/or management. The aim of this study was to examine the habituation process in response to repeated presentations of two auditory stimuli "buzzing by a disturbed beehive and the sound of banging of pots and pans, as such sounds are often used in wild elephant management schemes. We hypothesized that elephants would initially exhibit strong reactions to both sounds, but these responses would diminish over repeated trials. This study was conducted with four female African elephants (*Loxodonta africana*) at the Nashville Zoo. Elephants received each stimulus for a 10-day period. We found that elephants reacted to the sounds on the first day, such as by becoming alert and moving away from the area. However, over the ensuing days, the elephants stopped responding to the stimuli. Overall, habituation is an important aspect to consider when developing enrichment or management plans.

Graham, Jared "Geothermometry Of Metamorphic Lithologies From Chunky Gal, N.C." (Andrew Wulff)

The focus of this research project includes: identifying and characterizing mineral assemblages and determining peak (maximum) pressure and temperature conditions (geothermobarometry) of metamorphism for rock lithologies found within the Chunky Gal rock outcrop located on U.S. Hwy 64 in North Carolina. These outcrops can be found within the central Blue Ridge region approximately 25 km SE of the Hayesville thrust fault, which trends NE, separating the eastern and western Blue Ridge. Similar elements may substitute into similar crystallographic sites as a function of temperature and pressure conditions during metamorphism. The distribution of certain elements (e.g. Mg, Fe, Ca) between coexisting mineral phases (e.g. biotite, garnet, feldspar) in an assemblage is dictated by, and therefore reveals, pressure and temperature conditions of crystallization during metamorphism. The distribution of one elemental ratio (Mg:Fe) between garnet and biotite was analyzed in detail. Samples were analyzed using powder X-Ray Diffraction (XRD), Raman Microscopy (RMS), and Scanning Electron Microscopy (SEM). Data from all analytical techniques were compared to determine how detection limits, accuracy, and precision of each technique contributed to the P-T estimates. Minerals identified and described within the two major lithologies include alkali-rich clinoamphiboles, plagioclase, epidote, and secondary calcite veins in the amphibole-plagioclase gneiss, and almandine and Fe-pyrope, Fe-phlogopite, and quartz in a garnet biotite schist. These data suggest metamorphism to upper amphibolite-grade, with better constrained temperatures obtained from the completed geothermometry models. Foliations in these rocks suggest formation during progressively metamorphosed clastic sediments.

Graves, Laketta "Finding Home" (Shahnaz Aly)

Finding Home It is estimated there are between 143 million and 210 million orphans worldwide. Through extensive research on what it means to be orphaned and the psychological effects of becoming an orphan, it is evident orphan children all come from different regions, backgrounds, religious affiliations, etc. We are a product of our family environment. Past experiences dictate our self-worth or purpose. Many abandoned children have no direction or confidence. Research reveals the effects of abandonment, betrayal, disappointment, shame, pity, abuse, neglect, etc., are almost always evident. Children benefit from a stable environment and sense of belonging. They need to be nurtured and counseled. Many develop control or anger issues, feel the need for isolation, or attention, or struggle with expression. Vast research has also been done on regulations governed by the state. Orphans must be grouped according to age and sex. Appropriate residential space must be allotted for

Grebe, Jonathon "Corvette Race Trace Hotel" (Shahnaz Aly)

The research I did in preparation of designing the corvette race track hotel was mainly case studies of other buildings and looking at all the different ways sustainability can be used and incorporated in my building. The buildings I researched were the hotel at the Virginia international speed way because it has almost the same function my hotel would have, The Speedway Club at the Texas motor speedway because of the building's shape, and the corvette museum because it's the style that would be carried through. Some of the green research I did includes things like triple pane glass to help maintain rooms temperatures no matter how hot or cold it is outside, a film you can put over glass that always heat in during the winter but keeps it out during the summer, and cork flooring that is not only beautiful but a sustainable product. I feel as though all the research I've done has had a huge impact on my building and has truly made this hotel what it is.

Gregory, Arden "A case study analysis of the 19-20 March 1996 heavy snow event across southern Indiana and west-central Kentucky" (Joshua Durkee)

During 19-20 March 1996, a mid-latitude cyclone located over the Appalachian Region of Eastern Kentucky and West Virginia caused heavy wraparound snowfall over Southern Indiana and West-Central Kentucky resulting in 37,000 people without power, impassable roadways, and a state of emergency declared for 22 Kentucky counties. This study is both a mesoscale and synoptic-scale forecast analysis case study of this event. North American Regional Reanalysis and Climate Forecast System Reanalysis data were analyzed using the Integrated Data Viewer by Unidata in order to determine the mesoscale and synoptic-scale features that influenced the development of this system. It was found that there were many contributions to this system. However, at the mesoscale level, the most important factor was heavy snow banding. At the synoptic-scale, the most important contributions were a deep center of low pressure combined with moisture from both the Gulf of Mexico and the Atlantic Ocean and the circulation of the system that wrapped the warm, moist air up and over the below freezing temperatures in Southern Indiana and West-Central Kentucky, which resulted in this very impactful wraparound snow event.

Gregory, Charles "Restriction Enzyme Identify" (Claire Rinehart)

Over 5800 Mycobacteriophages have been isolated and purified. Over 800 of these have had their genomes sequenced and they have been grouped into clusters based on a 50% or greater nucleotide identity. In order to select phages with the greatest possible diversity, we need a rapid way to sort

phages into cluster or singleton categories. This will allow us to select a more diverse cross-section of phages for genome sequencing. Restriction enzyme digests and fragment separation by gel electrophoresis is a rapid tool that can be used to identify a mycobacteriophage's cluster membership or a singleton status. In order to identify a set of restriction enzymes that would produce a unique set of restriction digest fragment patterns for each known cluster, we decided to create a python program that could simulate a restriction digest and allow us to screen combinations of restriction enzymes that would produce unique cluster patterns. We will screen with all of the commercially available restriction enzymes to identify the minimal enzymes required to identify a unique fingerprint for each cluster and subcluster. Our results so far have allowed us to simulate virtual digests and we are seeing initial similarities in digests within the same cluster type. Our work will enhance the selection of diverse mycobacteriophages for genome sequencing.

Groh, Brittany "Impact Of Working Alliance On Clinical Outcomes In Veterans Enrolled In Suicide-specific Group Therapy" (Stephen O'Connor)

Previous research indicates that solid therapeutic alliances between patient and therapist enhance treatment outcomes in both individual and group psychotherapy. The proposed study examines individuals enrolled in a group therapy for suicidal Veterans at the Robley Rex Veterans Affairs Medical Center. Aims: 1) Determine how certain mental health concerns, such as posttraumatic stress, alcohol, and substance use, impact development of working alliance, and 2) Examine the interaction between working alliance and time so that greater working alliance scores indicate more rapid changes in clinical outcomes. Using existing data, 134 participants were included in the study and interviewed at baseline, 1-, and 3-month time points. A series of mixed model regression analyses is used to test our hypotheses that clinical dysfunction will negatively impact therapeutic alliance at 1- and 3-month time points. Preliminary results using baseline and 1-month data indicate that higher working alliance scores were significantly associated with more rapid reductions in suicidal ideation and more rapid improvements overall. Interestingly, a separate analysis indicated a significantly slower reduction in suicidal ideation for individuals reporting greater working alliance. Working alliance appears to play a role in determining rates of clinical improvement, yet the current findings are mixed regarding suicidal ideation.

Guthrie, Benjamin; Andrew, Keith; "Monte Carlo Simulation Of A Micro-nuclear Battery" (Phillip Womble)

Betavoltaics are beta decay-powered batteries that could potentially last for decades, but direct radiation damages the semiconductors of a battery long before its potential lifetime is over. Photon Assisted Radioisotopic Energy Source (PARES) batteries use a phosphorescent scintillator to convert radiation to photons which then impinge on a photovoltaic, which, in essence, shields the photovoltaic from the ionizing radiation. As part of an on-going research project, we are performing a survey of optimal fuel/scintillator/photovoltaic combinations. A Monte Carlo simulation code was developed to simulate the radioactive decay of the fuel, its subsequent interaction with the scintillator, the emission and absorption of photons from scintillation and the resulting potential differences in the photovoltaic. Two radioisotopes, Ni-63 and Sm-151, were selected as potential fuels and subsequently modeled. The calculations indicated that Ni-63 would deposit 1.23 ± 0.2 times as much energy in

Guthrie, Christina "The Correlation Of Childhood Obesity And Dental Caries In South Central Kentucky" (Joseph Evans)

Introduction: Previous research has presented information stating a high prevalence of tooth decay found within the state of Kentucky. In addition, studies have indicated an elevated rate of childhood obesity found within the region. As a future dental hygienist in Kentucky, it is important to understand if a correlation exists between tooth decay and childhood obesity to better educate both patients and caregivers. CE/T Statement: There is a possible correlation between tooth decay and childhood obesity in South Central Kentucky. Methodology: The investigation will utilize a sample of patient records through a retroactive collection process. Records will be reviewed and data collected within the pediatric dental office of Dr. Mandy Ashley. The collection of data for each patient will be obtained from the medical/dental history of each patient record and will include the following: age, weight, height, present systemic disease, sex, zip code, teeth with decay, teeth without decay, missing teeth, and oral hygiene classification based upon plaque levels. All identifying factors of each patient will be protected by assigning random numbers that are specific only for this study. SPSS software will be used to interpret data collected. Descriptive statistics will then be used to analyze the data. IRB approval through WKU was obtained January 2015.

Ha, Dat Thanh "Detection Of Bacterial DNA Sequences Utilizing Engineered Zinc Finger Proteins" (Moon-Soo Kim)

The visual detection of specific double-stranded DNA sequences possesses great potential for development of diagnostics. Zinc finger domains provide a powerful scaffold for creating custom DNA-binding proteins that recognize specific DNA sequences. We previously demonstrated sequence-enabled reassembly of TEM-1 beta-lactamase (SEER-LAC), a system consisting of two inactive fragments of beta-lactamase each linked to engineered ZFPs. Here the SEER-LAC system was applied to develop a ZFP array that can function as a simple and portable device to identify bacterial double-stranded DNA sequences. As an initial proof of concept, ZFPs were designed to detect a non-pathogenic strain of *E. coli*. Three pairs of ZFPs were engineered to detect 16S rDNA sequence (*rrsA*), which is only found in bacteria. After demonstrating our proof of concept, ZFPs were designed to recognize *stx2* gene coding for shiga toxic present in *E. coli* O157. A simple two-probe complementation assay was constructed to detect

Hacker, Charlotte "Examination Of Enrichment Using Space And Food For African Elephants (*Loxodonta africana*) At The San Diego Zoo Safari Park" (Bruce Schulte)

Zoological institutions are under increased scrutiny regarding the care and welfare of elephants. Enrichment can provide elephants with more space or strategic food type and placement to motivate movement and encourage species appropriate behavior. The goal of the present study was to determine the effects of exhibit space and food on the behavior and walking activity of thirteen African elephants at the San Diego Zoo Safari Park. This facility has two exhibits of approximately equal size. Three manipulations to assess the effects of food and space enrichment were deployed: (Half) access to half of the exhibit with food; (Both/Half) access to both yards with food in one half; (Both) access to both yards with food in both. To account for mirrored effects, the reverse for Half and Both/Half were also completed. Results suggests confounding effects Understanding the relationship between these factors will aid in the management of elephants at the SDZSP and could have applications for other facilities housing elephants.

Hamilton, Courtney; Baugh, Kimberly; "Contribution Of A Putative Up Element DNA Sequence To The Activity Of A Newly Identified Phage Promoter" (Rodney King)

Transcription is a universal step in gene expression in which information from a DNA sequence is copied

into RNA. In the case of messenger RNA (mRNA), this information is then translated into proteins that carry out the biochemical activities of the cell. A key component in gene expression is the promoter sequence, a region of DNA that initiates the transcription of downstream genes. Most bacterial promoters contain a -10 sequence element and a -35 sequence that are recognized by RNA polymerase. In addition, some promoters contain an Upstream Promoter (UP) element. UP elements are rich in A and T bases, and their sequences have been shown to boost promoter activity. We recently identified a new promoter in a mutant bacteriophage that grows on a restrictive bacterial host. Close inspection of the promoter sequence suggested that it had a putative UP DNA sequence element. The goal of this project was to determine if the UP element sequence contributes to promoter activity and, if so, to what degree. To test the effect of the putative UP element, reporter gene constructs were created in which the UP element was deleted. By observing the phenotype of the resulting bacterial colonies on indicator plates, we concluded that the promoter without the putative UP element sequence is still functional. Quantitative measurements of the reporter gene activity are currently in progress. This research has provided new details and enhanced our understanding of how the mutant bacteriophage is capable of growing on the restrictive bacterial host.

Hamilton, William; Modi, Tuls; Waghvani, Hitesh; "Designing A Unique Therapeutic Agent Involving Gold Nanoparticles Capped With Ceftazidime For Potent Antibacterial Applications" (Rajalingam Dakshinamurthy)

Resistance is a consequence of evolution. Antibiotic resistance, a global concern is now challenging the current antibiotic therapy to treat bacterial infections. Hence, there is a desperate need for making new antibiotics in response to the soaring increase in cases of multi-drug resistant (MDR) bacteria which are prevalently known as superbugs. In this research, we have tried to design an effective antibacterial agent involving gold nanoparticles (AuNPs) capped with an antibiotic (ceftazidime). By keeping twelve principles of "green chemistry" in mind, an unique, single step process, unlike conventional methods was fabricated for making AuNPs using the combine reducing and capping ability of ceftazidime to yield ceftazidime capped gold nanoparticles (C-AuNPs) which were then characterized using various analytical techniques such as transmission electron microscope (TEM), scanning electron microscope (SEM) and UV-Vis spectroscopy to determine its morphology. Efficiency of C-AuNPs was assessed using several antibacterial assays such as turbidimetry, spread plate method and XTT assay. A variety of bacterial strains involving both Gram-positive and Gram-negative were used for above assays. The minimum inhibition concentration (MIC) of C-AuNPs, obtained from the assays was compared with the MIC of ceftazidime pure drug in order to evaluate the superiority of C-AuNPs over ceftazidime pure drug.

Hampton, Tori; Goodrich, Gregory; "Aerosol Size Distribution Measurements During The 2014 Nasa Sarp Campaign In The Central Valley And Sierra Nevada Mountains In California" (Rezaul Mahmood)

Aerosols are directly and indirectly related to global climate by scattering radiation and also by seeding cloud formation. As a part of the 2014 NASA Student Airborne Research Program (SARP), research flights were conducted over the Central California region to better understand air quality in large urban California cities and also in the Central Valley. Using a Droplet Measurement Technologies Ultra High Sensitivity Aerosol Spectrometer (DMT-UHSAS), aerosol size distributions were measured across geographic regions of interest. Previous research has suggested that aerosols originating in the Central Valley may travel eastward to the Sierra Nevada and, once lifted orographically, could suppress precipitation in the clouds over the mountains. High concentrations of aerosols were found over the

Central Valley during the SARP campaign. Wind trajectories as well as meteorological variables were used to verify whether or not these aerosols travel to the mountains and affect cloud formation. Wind data confirms transport toward local mountain ranges and aerosol concentrations at the top and base of the mountains will be discussed.

Hancock, Stacy "A Photometric Study Of Two Variable Stars In The Constellation Draco" (Michael Carini)
A photometric study of two variable stars in the constellation Draco I present the result of a study of two variable stars in the constellation Draco: MM Draconis and an unnamed star of unknown variability type. Thirteen years of observations obtained with the three telescopes in WKU's Bell-Crimea-Kitt Peak (BCK) telescope network (the 1.3m Robotically Controlled Telescope , the 0.6m Bell Observatory and the 1.3m AZT 11 at the Crimean Astrophysical Observatory) are analyzed and presented. Light curves created via differential photometry and phase diagrams are presented and discussed. I hope to resolve a discrepancy in the reported period of MM Dra and confirm/classify the variable nature of star 3.

Hanna, Parker "They're Watching Us: Depictions Of Conspiracy Theorists In Popular Media" (Anthony Harkins)

The term “conspiracy theorist” is often used in discussions as a rhetorical device to discredit a speaker on the basis of their opinions. The effect this has is to turn attention away from the speaker’s stated opinions towards the speaker himself and his character as a “conspiracy theorist.” Used in this manner, the term functions as a sort of ad hominem response in certain contexts, because the term “conspiracy theorist” contains within it negative connotations. These negative connotations are recognized and understood by many, making the accusation an effective tool for muting the “conspiracy theorist’s” opinion in the mainstream public forum, whether that forum is the news, politics, or real life. Further, many negative connotations associated with the term can be found in popular media depictions of “conspiracy theorists” which allows instances of stereotyping to become apparent. This paper examines the relation between the term “conspiracy theorist” as a derogatory accusation about one’s character and the stereotypical depictions of “conspiracy theorist” in several forms of popular media, such as the movie Slacker (1992) and the X-Files television franchise (1993-2002). The term “conspiracy theorist” and the legitimacy of the connotations it is associated with will be treated with skepticism, and so it will be examined merely as a pejorative tool rather than as an accurate definition of a certain type of person. Through this research, it will be revealed how popular media depictions can inform our real life perceptions and opinions when confronted with a “conspiracy theorist.”

Happeney, Celeste "Supernatural Legends In Family Folklore" (Ann Ferrell)

All families have stories that are passed down from previous generations. I will examine supernatural narratives from my own family that include premonitions about death and discuss how these stories can evolve from memorates to a fully formed legend. These legends can serve functions similar to other narratives such as family misfortune or courtship stories. Family narratives are a good way for novices to not only explore folklore in general but contribute to collecting and preserving their own family’s memories and traditions.

Hardin, Ericka "Study Of A Contemporary Diet Of One Household In The Yucatan" (Karen Mason)

The history of the Yucatan has played a major role in the development of the food system of the area and the nutritional status of the population. Originating from an agricultural based diet, which forms the

foundation of the traditional Yucatan diet, there has been a recent shift away from whole and natural foods to a more processed and convenient food supply due to the influx of American products and culture. Coinciding with the influx of these unhealthy foods, there has also been a rise in the health problems of the Mexican population such as heart disease and diabetes, both of which are diseases related to nutrition. Through an evaluation of the history of the Yucatan, the traditional foods consumed in the Yucatan, the lifestyle and the health status of the Yucatan population, and through an analysis of a 3 day food diary from a contemporary Yucatan household, it is concluded that the traditional Yucatan diet provides all of the essential macronutrients in their recommended amounts. However, with a more detailed analysis, the Yucatan diet is also lacking or exceeding the Dietary Recommended Intake (DRI) of specific nutrients such as calcium, iron, fiber and sodium.

Harmon, Mitchell "The Homotopy Analysis Method And Technicolor Vector Potential Interactions For Quarks" (Keith Andrew)

We apply the Homotopy Analysis Method of solving differential equations to the problem of quark and subquark interactions inside elementary particles. The Technicolor equations of motion are an extension of the interacting color force dynamics between quarks to a substructure level of subquarks. The Technicolor interaction potentials carry matrix mixing terms that do not commute giving rise to the unique quantum nature of the interaction. The resulting fields are of two types; one that has a structure similar to standard electric fields and one that is similar to magnetic fields referred to as the Technicolor Electric and Technicolor Magnetic fields. These fields arise from scalar and vector potentials that obey the Technicolor field equations. Here we use the Homotopy Analysis Method to explore solutions to the Technicolor vector potential equations corresponding to bound state systems.

Harper, Laura "Nietzsche And The Self: Love And Overcoming" (Grace Hunt)

Nietzsche was a philosopher deeply concerned with style. He discusses styles of self-relation in *Twilight of the Idols*, deeming some stylizations of the self-unhealthy. The concepts of self-overcoming and intellectual conscience are employed to guide an individual to rule out unhealthy styles of self-relation. Yet, due to the intense self-reflective focus involved in Nietzsche's vision of health and his emphasis on self-love, a healthy self-relation appears similar to vanity. Vanity shares the characteristics of wholeheartedness and self-focus that produce a healthy self-relation in other circumstances. I will argue that because vanity isn't led by the intellectual consciousness and doesn't involve self-overcoming, it is an unhealthy relation. However, this does not rule out self-love. Self-love is a successful balance between wholeheartedness and letting go that is self-directed in a way that prevents it from being ruled out by the intellectual conscience. Because the intellectual conscience connects self-love and self-overcoming, self-love is a healthy relation that avoids slipping into vanity.

Harrison, Paige "Baby Names And Cultural Assimilation" (David Beckworth)

This particular project concentrates on baby names and their popularity throughout the United States, to see if there is a statistical difference between the acceptance of popular baby names in the continental United States and Alaska and Hawaii, the non-continental states. It would seem natural that since Alaska and Hawaii are both geographically removed from the United States that they would be less assimilated to US culture. It would also be natural to assume that since both of these states had their own indigenous cultures that their choice in naming babies would be different as well. I intend to compare statistical differences between the most popular baby names in these two states in comparison

to the rest of the United States, and if there is a statistical difference does that mean that Alaska and Hawaii have held on to their cultures and not fully assimilated to the culture of the United States. It may also be necessary to look at Puerto-Rico to see if there is a statistical difference in their acceptance of baby names considering they are a territory and not a non-continental state, to see if there is a difference. To study this question data will be gathered from the Social Security database, where there are records for the top five baby names in the United States, the top one hundred names for each state by year, and the growing popularity of names throughout history. These will all be important factors to consider when doing this project.

Harruff, Michael; Jahan, Muhammad; Arbuckle, Greg; "Micro-structuring In Copper, Brass And Aluminum Using Micro-milling Process" (Muhammad Jahan)

The demand for microstructures and components has increased significantly over the last decade due to the advancement of microelectronics, MEMS, sensors, automotive, medical industries. In order to meet the increasing demands from these industries micro-features are being produced using various mechanical and non-contact microfabrication processes. The present study focuses on machining of various microstructures in three widely used materials: copper, brass and aluminum with focus in applications in industries. The operating parameters for the micro-milling of three materials were optimized by trial-and-error basis based on the surface finish, cutting tool failure, and machining speed. The effectiveness of different coating materials on the micro-milling tool was investigated by comparing the machining performance during micro structuring in three materials. It was found that among the three materials brass has better capability of fabricating microstructures with better surface fin

Hart, Christopher "Petrophysical And Lithological Characterization Oolitic And Dolomitic Reservoirs In The Ste. Genevieve Limestone, South Central Kentucky" (Michael May)

The Illinois Basin has been a proven producer of petroleum, with the O'Hara and McCloskey units of the Mississippian Ste. Genevieve Limestone contributing approximately 18% or 743 million barrels, of its cumulative production as of 1993. Ooids and skeletal grains comprise the pay zones of these two units. Ooids are small spherical grains that characteristically form as a result of geochemical conditions in warm, shallow water shoals associated with carbon dioxide degassing. These ooids create ideal hydrocarbon reservoirs. The Ste. Genevieve also contains secondary dolomite, which contributes to enhanced porosity, therefore excellent petroleum reservoirs. Due to the properties of oolitic grainstones and dolomitic zones, extensive work has been conducted in Illinois, southwest Indiana and northwestern Kentucky to determine subsurface geometry and geographic distribution. There has been however, little study of the dolomite content or the distribution of oolitic units of the Ste. Genevieve at the edge of the basin in south-central Kentucky. This study integrates data derived from downhole geophysical logs, rock cuttings and outcrops in Logan, Muhlenberg, Butler, Edmonson and Warren counties. Utilizing these data permits identification of high porosity zones within the Ste. Genevieve and aides in the correlation of these reservoirs regionally. Field work conducted is revealing that dolomitic and oolitic zones are much more prevalent than has been documented for the Ste. Genevieve of south-central Kentucky. The oolitic zones, although varying in thickness, occur in geometries that follow linear trends that can easily be exploited by modern directional drilling and fracking technologies.

Hasken, Eleanor "Mothman: A History Of Fear In Rural West Virginia" (Ann Ferrell)

In 1966, residents of Point Pleasant, West Virginia, witnessed an unexplainable creature that continues

to influence the area. The huge, hulking creature, Mothman, immediately gained media attention resulting in the story being spread across the country. In the following thirteen months, over 200 more sightings were reported. The town began to attract visitors from all over hoping to see the Mothman. Soon after, an author, John Keel, wrote a New York Times bestselling semi-autobiographical novel about the sightings, *The Mothman Prophecies*, that was later turned into a feature length film. In retrospect, the Mothman sighting narratives demonstrate a gripping fear that was present in the community during the 60s. Drawing on local legends, first-hand accounts, and Keel's work, I will discuss the influence of the narratives on the Point Pleasant community at large. I will also examine the community's appropriation of the Mothman into a moneymaking endeavor.

Hayden, Madison "The Effect Of Cheese On The Ph Levels In The Oral Cavity" (Lynn Austin)

In Fall 2014, research was conducted with 20 participants on the campus of Western Kentucky University. Participants were given two ounces of Coca Cola® to drink and the pH was tested one minute later. After waiting a minute, the participants were given one-one ounce square of mild cheddar cheese to eat and pH was tested again one minute later. For further study, this project will be expanded to include more subjects as well as an increased exposure time to Coca Cola®. This research is conducted to help support that cheese can help increase the pH in the oral cavity by reducing bacteria which in long term could reduce decay. The cheese helps to provide a protective shield around the teeth that fights the release of acids. Cheese also increases the flow of saliva, which helps to keep the teeth cleansed, preventing bacteria from adhering to tooth surfaces. Also, the consumption of cheese also increases calcium and phosphorus levels, which helps reduce the acidity of dental biofilm.

Hayden, Natalie "Mythological Influences On Southern American Authors" (Walker Rutledge)

A major influence upon many parts of society is that of Greek and Roman mythology. While there are several interpretations of what myths are, for my purposes I will define them as stories from Greek or Roman origins that seek to explain some natural or social phenomena or to provide moral lessons. Myths were especially influential during the Southern Renaissance, a period of literary reinvention in America during the 1920s and 1930s. Authors used myths to give deeper meanings to their works as they struggled with issues of race, religion, and social changes. Myths appeared in plot lines, major symbols, and even the names of characters. This paper focuses upon mythological influences in short stories from Flannery O'Connor, Eudora Welty, and Caroline Gordon, as well as a play from Tennessee Williams. I will explore the specific influence each myth has on its work and the way in which each work is shaped by that influence.

Haynes / Avery, Adam / Ashley; Sharma, Rojita; Chang, Cheng-Yi; "Commercialization Of Pioneer Elite" (Bob Hatfield)

The Pioneer Elite is a remote controlled underwater submersible unit. Utilizing a mounted camera, the user is able to see under the water while simultaneously controlling the machine with the intuitive control system. Perfect for beginners, the submersible comes equipped with 100 feet of tether for easy retrieval, and a lithium battery standard in every unit for the longest battery life possible. Our team was tasked with developing a business plan for the Pioneer Elite brand. We created a video showcasing the submersible in action, as well as a brochure and poster. Our team needed to create marketing deliverables that would be useful in highlighting the features and benefits of the Pioneer Elite to help garner interest from potential clients. The goal is that these deliverables will assist the Pioneer Elite

brand in becoming successful and make its very first sale. Developed by the Western Kentucky University Engineering-Manufacturing-Commercialization Center the Pioneer Elite is the first in its class of affordable, remote controlled submersibles. It is perfect for beginner recreational use or professional industrial use. This all in one unit can fulfill any needs for an inexpensive price. The Pioneer Elite: Your Guide to a World Underneath.

Heine, Madison; Monroe, Jerry (David); Billings, Taylor; "Effects Of Cisplatin On Hearing And Inner Ear Hair Cells Of Zebrafish (*Danio rerio*)" (Michael Smith)

Cancer patients, who undergo chemotherapy treatments containing platinum compounds such as cisplatin, are at risk of hearing loss. This is due to the ototoxic effects of platinum compounds, leading to permanent loss of hair cells in the inner ear. The goal of our research study is to determine if there is auditory hair cell death in the zebrafish after being exposed to novel platinum (II) compounds, but first we must record the ototoxicity of cisplatin, as a positive control. 24 hours after microinjection of zebrafish with cisplatin, the fish will have their hearing tested via auditory evoked potential recording. Then the fish will be dissected under a microscope and the inner ears removed. Three end organs of the zebrafish ear, the saccule, lagena, and utricle, will be dissected from each ear. The tissue samples will be fluorescently stained with phalloidin and whole mounted on microscopic slides for analysis. Hair cell densities will then be quantified in each end organ to examine potential hair cell loss. This is the first step in using zebrafish as a model for examining ototoxicity of novel platinum(II) compounds that may be less ototoxic than platinum, paving a way for less harmful methods of cancer treatment in the future.

Heintzman, Eli "The Electro etching Process: Applications In Metal Forming" (Morteza Nurcheshmeh) Traditional methods of plastic strains measurement are time consuming and dependent on the operator's judgment in reading data which may impose errors on the obtained results. Given the increasing needs of the automotive industry in the design and testing of auto body parts it seems there is a need for accurate and quick measurement of strain in metals. The electro etching process can be used to create a circular or square shape pattern on the surface of sheet metal which can be used to track deformation of metal in the forming process. One has simply to measure the change in the pattern's shape to find the strain at a given location in different directions. In this research, different steel and aluminum samples are prepared based on the ASTM standard, electro etched and deformed permanently until the fracture occurred. Strain data is collected using a system has been developed by Forming Measurement Tools Innovations (FMTI) Systems Inc. The FMTI system consists of a handheld devi

Heintzman, Larkin; Pape, Richard; "IEEE Robot Control System" (Stacy Wilson)

Each year, IEEE Region 3 hosts a hardware competition. Student teams are tasked with the design and building of a robot which is can complete a series of tasks autonomously. A team of 7 electrical and mechanical students was formed to developed and build a robot that simulates playing games on a road trip. The games played are the following: a deck of cards, a pocket Simon-Says game, a travel Etch-a-Sketch game, and a Rubik's Cube. . In the competition the robot must be able to perform the tasks without external input. All of the tasks must be accomplished within 5 minutes. A sub team was created and tasked with developing the control system for the robot. In order to complete this goal, the team chose an Arduino Mega equipped with a custom made board that is designed to fit on top of the Mega and provide it with the necessary components to control all of the motors and read all of the sensors.

The control system consists of line following sensors, the drive motors, and the master program. This poster will present the various aspects of the robot control system.

Hickerson, Alexis "The Waterfront Goes Greener" (Shahnaz Aly)

With the new additions and enhancements of Louisville's Waterfront Park, the demand for residential buildings nearby are at an all-time high. The Champion's Loft Apartments would not only stand out in the area, but it will also contribute to the waterfront's concept of "where city meets nature" by its aesthetics, sustainable features, and park-like environmental design. Each of the units are designed with high ceilings and open floor plans for natural daylighting to be accessed in all major rooms. A stucco-clad rain screen system for the exterior is made of recycled construction waste; this provides aesthetic features and thermal comfort to the units. Glulam beams are included in the project because it's a renewable resource that uses less energy unlike steel and it lowers CO2 emissions. The design of the roof will capture rainwater, send it through the building for grey water use, and then down into the ground into a treatment tank that will disburse the water to be used for site irrigation. Overall, the site will look like an extension of the waterfront park with walking trails, lots of open space, park amenities, and solar panel light posts to provide energy for the site.

Hickey, Hayden; Barnes, Lorena; Lile, Cameron; Schroeder, Amber; "Inequity and Social Media in Hiring" (Amber Schroeder)

This study combines aspects of social media's role in employee selection and how it relates to potential employee attitudes toward a company. By measuring participants' attitudes when told that their Facebook profiles will be taken into great consideration in determining their job ability, their feelings of inequity were assessed. To measure the justice component, participants were divided into two conditions: condition A (i.e., the high justice condition) clearly explained the rationale behind using social media as an evaluation tool and showed empathy, and condition B (i.e., the low justice condition) provided no information and showed no empathy. Our objectives included determining participant attitudes toward a company that uses social networking sites in hiring, measuring feelings of workplace injustice when going through this type of application process, and determining to what extent sensitivity and explanation can affect these feelings of inequity.

Hodzic, Denis "The Role Of Melanin In Auditory Function Of Zebrafish (Danio rerio)" (Michael Smith)

Melanin is the pigment responsible for the coloration of eyes, feathers, hair, and skin. It has been shown to serve a protective role in the iris, retina, and skin, as well as in heavy metal scavenging, antioxidant activity, and calcium regulation. Zebrafish mutants such as nacre, which lack melanophores that produce and contain melanin, have been developed recently and are good models for examining the role of melanin on a variety of physiological processes. The purpose of our research is to examine whether melanin plays a protective role in the auditory system of zebrafish. Hearing tests will be performed via auditory evoked potential recordings in both wild type and nacre zebrafish to examine potential differences in their baseline hearing sensitivities. Additional hearing tests will be performed following exposure to either an acoustic stimulus or cisplatin (an ototoxic anticancer drug), which have induced zebrafish hearing loss in previous studies. If melanin plays a protective role in the zebrafish inner ear, we would predict that nacre mutants would exhibit greater hearing loss than wild type controls. Understanding the protective role of melanin in the zebrafish inner ear could help us discover means of preventing hearing loss in humans.

Hogue, Julio "Natural Training Grounds" (Shahnaz Aly)

In today's society health is one of the biggest concerns. People have realized this problem and are now attempting to make healthy lifestyle changes. In order to accomplish this people need a place in which they can take their decisions on health one step further. Research was done in order to create an environment that allows people to improve upon their health, confidence and every aspect of their lives. It has been noted that many people are uncomfortable with going to a gym. To combat this many spaces were created to allow for small groups to associate with one another. Research has also shown that many people enjoy working out outdoors. To recreate this type of environment plant life has been introduced inside which can help purify the air, large open rooms to allow better natural ventilation and natural daylighting. Several other sustainable features were also included such as the use of grey water, geothermal heating and cooling, rainwater harvesting and permeable paving. Gre

Holland, Joshua "Multimedia Reporting: Creating Unique Content That Spans Multiple Platforms" (Brad Pfranger)

With the continued ease of access to the internet, it has become a vital medium to distribute news and sports information. This study documents the process of starting from a relatively absent online product to developing daily web content. Trial and error of different original content ideas for online as well as experiments with translating broadcast content into a web product are coupled with interviews from professionals to create a framework of how to go about establishing an internet presence in an age of instant news. The case is generally focused on sports media due to the nature of my most covered content but the findings can and should be applied to news as well.

Holler, Jess "Bringing The New Deal Back Home (to Itself)?: Scattered Archives, Changing Sites, And The Case Of Western Kentucky's Christian-trigg Farms Project" (Michael Ann Williams)

This paper takes up the challenge of interpreting the social history of the New Deal through the lens of one of the era's most ambitious programs: the Resettlement Administration. In the shadow of the ecological devastation of the Dust Bowl, the Resettlement Administration was charged with remedying a national soil crisis by sequestering sub-marginal lands for conservation or recreation use. In turn, the individuals removed from those lands -- often struggling farmers -- were literally resettled onto Resettlement Administration-designed communities, often built with a cooperative agriculture model in mind. Analyzing methods from both community-based fieldwork and historic preservation, this paper will explore the challenges and opportunities of working to preserve and interpret these Resettlement Administration communities through the lens of one single site: the Christian-Trigg Farms project in Christian County, Kentucky. With regionally scattered New Deal archives, changes on the land, and the aging of the original resettlement farmer population, doing site-specific local history on the influence of the Resettlement Administration poses particular quandaries for researchers. This paper will interrogate my own methodological journey thus far, and will look to community based fieldwork methods as an anecdote to some of the silences of the archive.

Houchin, Lindsey ""Tell-tale Teeth: Psychosymbolism in Poe's 'Berenice'" " (Sandy Hughes)

Edgar Allan Poe's hallmark "unity of effect" drove the lasting impression of fear elicited by his horror stories, which feature eerie images. While the symbolism of the old man's veiled eye in "The Tell-Tale Heart" and the brilliant black eyes of the narrator's lost lover in "Ligeia" have long been studied, Poe's

similar use of tooth imagery is often merely acknowledged for its bizarre qualities without thorough consideration of the image's psychosymbolism within the stories. Present in tales as varied as "A Descent into the Maelstrom" and "Hop-Frog," Poe's tooth symbolism reaches its peak in "Berenice," a story in which the main character, Egaeus, fixates on his beloved Berenice's ultra-white teeth and, ultimately, extracts them from her mouth after her apparent death. Through a psychoanalytic lens, the dentata images in "Berenice" and beyond become symbols of anxiety in the face of a deep and dichotomous desire for and fear of intimacy is illuminated by Berenice's teeth, which threaten Egaeus. Poe's tell-tale teeth in "Berenice" showcase the deeper meaning of the story Poe has written; Egaeus tries to contain the teeth, which are symbolic of both the consuming quality of her sexuality and the undying, ever-lasting part of her body, but he fails. His attempt, reminiscent of Poe's relentless attempts to secure motherly succor that outlasts death, simply multiplies its force, leaving "thirty-two small, white and ivory-looking substances" scattered upon the floor—and throughout Poe's life.

Howell, Chelsea "Sub gingival Air Polishing In Dentistry" (Wendi Hulsey)

This paper presents a recent advancement in the field of dental technology. According to previously published literature, the effectiveness of the sub gingival air polisher has been measured. The results of these studies show there is a reduction in the amount of calculus and plaque formation beneath the gingival margin in patients with periodontitis. The work presented in this study will have insightful suggestions for future studies of sub gingival air polishing and may assist in ending the disease of periodontitis. In addition to reviewing published literature, a survey will be conducted involving local periodontists to determine if they are currently using the device. If periodontists are using the sub gingival air polisher, they will be asked six questions regarding the benefits and how patients responded to the therapy. The results of the study should comply with the results of the formerly published literature.

Hubbuck, Emily; Allen, Whitney; Ford, April; "The Relationship Between Ankle Dorsiflexion Measures And Functional Performance" (Beth Norris)

Objective: The purpose of this study is to investigate the relationship of ankle DF, measured in weight-bearing and non-weight bearing positions, to balance and gait performance. **Background:** Methods to assess ankle DF include a non-weight bearing position and the weight-bearing lunge test (WBLT). **Limitations** in ankle DF may be associated with balance dysfunction and the development of altered gait patterns, however research regarding this relationship has yielded differing findings depending upon the method utilized for the measurement of ankle DF. To date, no research has examined whether both gait parameters and balance ability are correlated with the method to measure ankle DF (non-weight bearing active ankle DF (NWBADF), non-weight bearing passive ankle DF (NWBPDP) and WBLT). **Methods:** The sample consisted of 22 healthy participants. Each participant underwent 3 methods to measure ankle DF, completed a 10 meter walk test, and a limits of stability balance assessment. **Results:** There was a significant difference between all measures of ankle DF. The correlation between measures of ankle DF and balance performance was significant only for NWBADF and end point excursion in the right forward direction. The correlation of ankle DF measures to spatial gait parameters were non-significant. The correlation of NWBADF and NWBPDP to temporal gait parameters were significant for cadence, stance time right, single support time left and single support time right. **Conclusion:** Non-weight bearing measures of ankle DF were found to correlate with temporal parameters of gait. There was no relationship between the WBLT and balance and gait performance.

Hudson, Kyndall "Bone Stimulation Implemented Using The Leukocyte Platelet Rich Fibrin Technique Within The Clinical Settings Of Kentucky And Tennessee" (Joseph W. Evans)

Leukocyte Platelet Rich Fibrin (L-PRF) is an autologous graft that is obtained from the patient's own blood. This provides a condensed network of fibrin that is saturated with cytokines, growth factors, and platelets. L-PRF speeds up the healing process and also reduces the need for bone grafts. Dental treatment options are expanding and new techniques within the office setting are constantly being developed. Present treatment modalities can assist with the stimulation of tissue formation after dental surgical procedures leading to various results. The placement of L-PRF provides enhanced healing following specific dental procedures using the patient's donor tissue and therefore reduces the opportunity for infection and optimizes the final outcome. A survey was conducted among dentists throughout the states of Kentucky and Tennessee to determine the level of awareness and use of L-PRF within the office setting. As a dental hygienist, it is important to understand current available dental techniques to inform patients of viable treatment alternatives and to educate fellow dental professionals regarding this approach.

Hughes, Jacob; Wulff, Andrew; "Geothermobarometry Of Metamorphosed Banded Iron Formation From The Ruby Range, Montana" (Andrew Wulff)

Samples of metamorphosed banded iron formation were collected from the Ruby Range in southwestern Montana to characterize mineral assemblages, compositions, and pressure and temperature conditions of metamorphism. The metamorphosed banded iron formations of the Ruby Range are found in a group of metasedimentary rocks including amphibolites, metapelites, and marbles which form the Christensen Ranch Suite. Sample collection occurred during the summer of 2014 as part of a Keck Geology Consortium REU project. The principal goal of the project was to evaluate the metamorphic history of the Ruby Range which was uplifted during the Big Sky orogeny (1.78 ± 1.72 Ga). Polished thin sections were created for petrographic inspection utilizing Polarized Light Microscopy to identify mineral assemblages and characterize their interrelationships. Textural variations include highly folded, two-centimeter width monomineralic bands, sub-centimeter scale, planar bedding, and exsolution features in iron

Hughes, Tiffany "Out Of The Mouths Of Babes: A Short Story Collection" (David Bell)

The literary genres of fantasy and science fiction are possibly the most popular in casual reading and the most underrated in academic settings. These genres, despite many academically fulfilling novels such as Fahrenheit 451 or Cloud Atlas, continue to be criticized for their whimsical details, mythical characters, and adventurous plot lines. However, fantasy literature can show a strong presence, connecting to complex human nature, worldly flaws, and critical social enigmas. While dismissing fantasy, many academics study these same issues in other literary works, suggesting that some genres are viewed above others based on bias. Therefore, I am in the process of writing six fantasy short stories that portray characters and themes with equal complexity and value to that of other academic literature. The resulting collection, while it cannot be likened to literary classics, provides the same elements that other scholars praise within modern works of different genres, thus making fantasy a relevant study. I will present a portion of my stories to show the audience that fantasy can be applicable to modern scholarly education.

Humphrey, James "Research And Design Of A Sustainable Art Gallery And Artist Residency" (Shahnaz

Aly)

One of the most highly debated topics in the architectural field is the incorporation of sustainability into buildings and structures. Throughout the planning phase of my art gallery and residency project, sustainability and green building were two key concepts that were taken into account when making major design decisions. The roofing includes a green roof to conserve energy used within the structure as well as improve the thermal performance and reduce the urban heat island effect. The exterior of the building promotes the entrance of natural daylighting into the building without sending direct beams into the art galleries. This way, no matter what time of day, natural sunlight will illuminate the interiors of the structure without destroying precious artwork or irritating guests at the gallery. The framing of the exterior walls will be sustainable steel with both steel and concrete exterior finish panels. In order to create a program for the gallery and residency, many other gallery structures were researched to document the required spaces as well as the desired spaces for such a structure. In the end this research resulted in the design of a sustainable new attraction for the Bowling Green area.

Hunter, Alexandra "Variance Of Estrogenic Compounds In Waste Water Treatment" (Ritchie Taylor)

The increased use of pharmaceuticals containing estrogenic compounds has led to the detection of these contaminants in surface waters. Estrogenic compounds have been shown to enter aquatic environments downstream from wastewater treatment plant (WWTP) effluent discharges. Currently, there are no water quality criteria for safe or acceptable levels of estrogens in surface waters. Since WWTPs have the ability to treat many contaminants, chemicals and particulates, it is possible that a reduction in estrogen concentrations may occur in WWTPs. This study was an evaluation of the occurrence of estrogenic compounds in WWTP influent and effluent, and a comparison of these levels. Samples of wastewater were collected before and after treatment from the WWTP in Franklin, Kentucky. Estrogenic compounds were measured via modification of EPA's Method 539. A method for detection of hormones in drinking water by solid phase extraction and LC-ESI-MS/MS.

Hurd, Sean; Hopkins, Jacob; Cox, Del; White, Ethan; Wurth, John P; "Basic Motion Emulator (esterline-korry Project)" (Stacy Wilson)

Esterline-Korry specializes in control solutions for operator interfaces in industries demanding high reliability in challenging environments such as: aerospace, defense, and others. One of the most recent concepts Korry is researching is the possibility of using touch screen displays in different types of vehicles ranging from the cockpit of a commercial aircraft, such as a Boeing 747, or the bridge of a cruise liner. The purpose of this project is to design a motion emulator for researching the dynamic response of a human interacting with a touchscreen display during simulated environmental conditions, such as a boat on choppy water, a vehicle driving off road, and a plane flying through turbulence. The motion emulator should simulate the effects that a pilot of a large commercial aircraft would feel during light to moderate turbulence. One of the main challenges the design team is facing is how accurate a user will be able to interact with the touchscreen as the vehicle experiences turbulence. To help with the testing of this possible issue, Esterline-Korry has asked our engineering team to create a basic motion emulator (BME) to help test a user's effectiveness with touchscreen displays under the effect of light to moderate turbulence.

Hutchinson, Gary "Confirmation Of Physician's Diagnosis Based On Patient's Emr" (Gaungming Xing)

In today's busy society, details are frequently overlooked which gives way to mistakes that can

potentially cause severe harm in cases of patients taking the wrong medication. This study is an attempt to add confirmation that a patient's prescription matches the symptoms detailed in his/her electronic medical record (EMR). To confirm a physician's diagnosis, knowledge trees must be built and maintained. The first level of knowledge comes from an indexed database consisting of all medical information provided by the National Library of Medicine. This data is what we will compare against to determine if a prescribed drug is being used for the correct purposes. The second level of information comes from supporting diagnoses by adding details associated with said diagnosis from Snomed CT. Lastly, the similarity between the patient's EMR along with the inserted details against our database of medical knowledge is calculated using the built-in features of Solr. After running similarity, the top 5 suggested drugs are returned. The goal is to have the prescribed medication be at the top of the list if it is indeed a correct prescription. Conversely, the drug should not be listed if it does not treat the patient's symptoms. This confirmation of a physician's diagnosis can help solidify a correct diagnosis and prescription alleviating mistakes due to a fat finger or a wrong translation. If the wrong prescription is entered into the system, the doctor can be flagged to review his selection which could potentially save lives.

Inabnitt, Courtney; Duffin, Lisa; Day, Martha; Keith, Hannah; "Testing The Effects Of Professional Development On Pre-service Teacher's Beliefs About Inquiry Instruction In Mathematics" (Lisa Duffin) For this project, we created a professional development (PD) seminar for elementary education pre-service teachers (n=40) at another university. The topic of the PD was bringing inquiry (5E) into mathematics instruction at the elementary level. The study utilizes a pre-post-test design and measures participants' knowledge and beliefs about using inquiry in mathematics instruction. At the time of the conference, data collection will have yet to be completed. This presentation will focus on the study to date.

Jackson, Hope "The Changing Face Of Marriage" (Bryan Carson)

This presentation will discuss changes in the role of women in marriage through time. Marrying for love is a recent phenomenon, entering the picture in the 19th century. It was originally a business proposition. From the Biblical story of Jacob through recent times, women were either bought for a bride-price or given with a dowry. Women were chattel and HAD to marry when, where, and whom they were told. A widow was often not allowed to keep her husband's property. If she remarried, property went to the new husband. Until the 1970s, wives' credit wasn't separate from their husbands. Marital rape wasn't illegal in all 50 states until 1993. In some cultures, groom can return "unacceptable" brides for reasons varying from appearance to "disobedience." In some countries, men still kill their "unacceptable" bride and keep the dowry. While security is important, love is the overriding factor in marriage today. Reasons for marriage and the role of the woman have changed together.

Jameson, Sarah "Blind man's Bluff: American Soldiers and Artillery during World War I" (Beth Plummer) American soldiers were introduced to a wide range of new weaponry in World War I, but none left as big of an impact as the improved artillery pieces with their greater range and destructive power. This paper examines the soldiers' reactions to advanced artillery in 1917 and 1918. The paper also explores the changes in artillery and how its use changed from the Napoleonic practices which had prevailed in the years leading up to the First World War.

Jeddi, Haleh; Kwong, Ka Wai; "Biomimetic Studies Of Cytochrome P450 Enzymes: Synthesis Of Porphyrin Ligands And Their Metal Complexes" (Rui Zhang)

Cytochrome P450 enzymes (P450s) belong to a class of enzymes with a heme active site. P450s perform oxygenation reactions, most notably in the human body, such as the metabolism of drugs and the biosynthesis of steroids. These enzymes perform approximately 70% of the body's drug metabolism. Oxygenation with P450s involves inserting an oxygen atom into the substrate from molecular oxygen and reducing the other oxygen to water. These enzymes can also catalyze oxidative DNA cleavage, especially in cancer cells. The active site of P450s consists of a macrocyclic ligand (protoporphyrin IX) with an iron heme core. This poster outlines the synthesis of a biomimetic porphyrin ligand, 5,10,15,20-tetramesitylporphyrin (H₂TMP), and the insertion of iron or manganese into its core. These metalloporphyrin catalysts mimic the structure of the P450 active site with the purpose of understanding the mechanism of P450s' catalytic cycle and maximizing their catalytic capabilities for further research.

Johnson, Cyrus "The Trends Towards Imitation To New Neorealism In Hollywood" (Bradley Pfranger)

The trends towards Imitation to New Neorealism in Hollywood The connection from one image to the other is how filmmaking began, no? Creating a frame to build a story so people can analyze what's going on in the picture. Neorealism, the practice of an authenticity natural view, shooting on location and the practice of an urgent response to the political turmoil and desperate economic conditions afflicting the country, connects images to create a language so the society know what's going on. Hollywood and its imitation of history explores on a language that reaches its audience in the same way. Though, Hollywood exaggerates and put perspective in various ways. I argue the belief that the neorealism films has the same language as Hollywood films do to the lack of work that the neorealist directors. They are the same. Hollywood is slightly different by way of special effects. Both neorealism and Hollywood films manipulate the frame only to show what is necessary. Kelly Payton a Hollywood critic said, "What's a great creative movie without special effects." If you notice, back in the 1900s filmmaker did what they had to do to engrave their point across, using what they know to promote their film, but film came a long way.

Jonchhe, Palpasha "Mph Student Exit Survey Results: Ffall 2010 To Fall 2013" (Darlene Shearer)

MPH Student Exit Survey Results: Fall 2010 to Fall 2013 Student exit surveys are often conducted among graduating college students to learn about their academic experiences. This study examines responses of graduating students in the Master of Public Health Program at Western Kentucky University (WKU). The main purpose of the survey is to use student feedback to improve the quality of the MPH program. This presentation is focused on comparing the experiences of the domestic and international students. Forty seven students (23 domestic and 24 international) participated in the survey from Fall 2010 through Fall 2013. Responses included student's proficiency level for core and cross cutting competencies. Likert scale of 1 to 5 was used to measure student's proficiency level responses. Descriptive analyses identified mean scores of these competencies. T-test compared the responses by gender, enrollment status (domestic and international), concentration areas (health education and environmental health) and the semester of enrollment. International and domestic students reported similar opinions about academic experiences however academic and career counseling satisfaction among international students was higher than in the domestic students ($p < 0.05$). Similarly, the mean score for satisfaction of students with the opportunities to participate in research and service projects

outside the classes was higher among domestic students though the differences was not statistically significant.

Jones, Dylan "What Is On The Menu: Food Identity In Cinema" (Jerod Hollyfield)

Food is vital. Sustenance throughout all of culture remains a key component to identity of not only societies but also individuals, and as such holds a very important place in the narratives that culture and media choose to put forth. Food, or the omission there of, in narrative structure is worthy of deconstruction and analysis in part due to its shaping of story when featured prominently, but also due to its often direct connection to the societal structure, priorities, or underlying motivations to the narrative an audience is presented. Survival is a key driving factor in any human beings existence and condition, and the inclusion of food in narrative as a key component not only for survival, but in all aspects of what that story means to an audience. Film, being an inherently visual medium, uses nearly all kinds of visual cues to try and quickly and effectively establish facets of story or character, not the least of which being the foods individuals eat. From decadent cuisine to junk food to consistent repetition of specific cultural foods to the preparation of food, all aspects of foods presence in existing works of narrative in film shape viewer perception in ways seldom explored by traditional cinematic scholars.

Jones, Konnor; Nee, Matthew; "Temperature And Electric Field Dependency Of Asymmetric Stretching Of Nitrate Ion" (Matthew Nee)

The decomposition of nitrate ion by exposure to sunlight (photolysis) produces nitrogen monoxide, nitrogen dioxide, and ozone, releasing these toxic gases into the atmosphere. In order to model the production of these gases, the process of bond-breaking in nitrate ion must be better understood. Different nitrate shapes in solution may have varying amounts of products form during photolysis. To better understand the steps of nitrate photolysis, a better comprehension of nitrate shape distortion is needed. Measurements of different molecular motions of nitrate ions were obtained at a series of specified constant temperatures with different amounts of electric charges in solution. The different electric charges (arising from water molecules and from other ions in solution) in a solution of nitrate distort the shape of the nitrate ion, which may favor a specific initial chemical path (such as more ozone, or more nitrogen monoxide) when exposed to light. Different distortions of molecular motions are observable in the graph of the energies of different motions of nitrate ions dissolved in water. These energies are used to estimate the relative amounts of nitrate associated with a molecular shape. This aids in our understanding the effect that naturally occurring salts have on the decomposition of nitrate ion in the environment by understanding the changes that solution composition has on the molecular shape.

Jones II, Leland "Growing Awareness" (Shahnaz Aly)

Our environment provides us with an endless amount of energy in many different forms. To truly coexist with our environment it is our duty to find efficient ways to extract energy that nature has always provided for us. The sun, rain and wind have been used for centuries as means of energy, and with today's technological advances we have the opportunity to harness this natural given energy and apply it to our modern world. We are aware that a change must occur with how we obtain energy due to global warming. The methods that have been in place for the past hundred years have been dominated by the burning of fossil fuel. Educated society has accepted that this method will lead us nowhere and it

is up to this generation to find new and innovative ways to use nature's energy in a way that doesn't in turn hurt the environment. Using natural phenomena such as the sun, rain and wind are the key to obtaining energy while still protecting what we cannot replace, our planet. Through this design project I researched and explored various aspects of capturing and harnessing this energy.

Kaiser, Douglas "Urban Barge Agriculture" (John All)

Urban Barge Agriculture is a different way to look at urban agriculture along water ways. The goal of this research topic is to determine if small agricultural methods such as hugels, raised beds, and hydroponics are useable for water filtration. Using these methods we are trying to determine if running river water through these agricultural methods will be a viable filtration system and community garden.

Kakavand, Pegah; Jahan, Muhammad; "An Experimental Investigation Into The Micro-electro-discharge Machining Of Niti Shape Memory Alloy" (Muhammad Jahan)

Shape Memory Alloys (SMAs) are generally known as difficult-to-cut materials for their unique properties such as super-elasticity, shape recovery capability, stress hysteresis, and magnetic resonance imaging (MRI) compatibility. Electrical Discharge Machining (EDM) is one of the non-traditional technologies that are used for machining difficult-to-cut materials, if the materials are electrically conductive. The purpose of this research is to investigate the surface modifications that take place during the machining of NiTi SMA with micro-EDM. This was done by creating an array of blind holes and micro-patterns on the SMA surface, and analyzing with scanning electron microscope (SEM), energy dispersive X-ray spectroscopy (EDS) and X-ray diffraction (XRD) techniques. The experimental results show that there was some amount of re-casting and formation of re-solidification of debris on the SMA surface after machining. Although, significant tool wear rate were observed during the process, SMA could be machined successfully using the micro-EDM process.

Keeton, Tyler "Lurking In The Shadows: The Return To Substance In Horror Cinema" (Jerod Hollyfield)

Horror films are undeniably a staple of the American (and arguably universal) cinematic identity. Not only do they provide entertainment and exciting thrills, but they also draw in a massive amount of annual revenue at the box office. The biggest drawback from film critics when approaching these genre films is a simple argument: horror films lack substance and tasteful credibility. 2014 was a wildly successful year for horror cinema, conversely, as it showcased the release of director Jennifer Kent's independent nightmare, *The Babadook*. Kent's film brought attention to a return to the classic era of horror-centered Hollywood, as it contains a deeper commentary on the family structure and maternal identity. In short, the film was not simply made for profit or cheap jump-scares. Jennifer Kent's name has been spreading like wildfire since the initial release of *The Babadook*, and she has called attention to the forgotten merit of horror filmmakers in relation to cinematic-societal

Keith, Hannah; Duffin, Lisa; Rudloff, Melissa; Inabnitt, Courtney; "Pedagogy And Teacher Rapport: Impacts On Undergraduate Mathematics" (Lisa Duffin)

In this study, we used a quasi-experimental research design to examine the effects of two commonly used teaching methods in mathematics instruction (i.e., direct instruction and the 5E model of inquiry) and teacher rapport on the achievement, engagement, and motivation of students ($n = 120$) in undergraduate mathematics. Two mathematics lessons which differed in style (5E vs. direct instruction) but delivered the same content were created for this study. These lessons were then implemented in

four different Math 116 classrooms at Western Kentucky University. Students in each of the four MATH 116 sections experienced content delivery in one of four ways: 1) direct instruction, 2) 5E, 3) direct instruction plus intentional rapport-building, and 4) 5E plus intentional rapport-building. Student achievement, engagement, perceived autonomy-support, and competence were measured using a post test. This presentation will focus on the data collected, the positive and negative impacts of both methods of instruction revealed by these data, and the relative importance of the teacher-student relationship as revealed in results.

King, Allyson; Waghwan, Hitesh; Payne, Jason; "Phloridzin Gold Nanoparticles “ An Attempt To Regain Its Lost Charm" (Rajalingam Dakshinamurthy)

Phloridzin, a natural constituent obtained from green apples is an antidiabetic agent. Phloridzin had to take an exit from the pharmaceutical market due to its side effects and poor bioavailability when compared to other antidiabetic drug competitors. Apart from its antidiabetic action, phloridzin is also reported to have anticancer activity, the mechanism of which is still under debate. Nanoparticles, especially gold nanoparticles (GNPs) have been studied for drug delivery applications for poorly bioavailable drugs. Hence, in order to tackle the side effects of phloridzin and study the unknown anticancer mechanism, we synthesized phloridzin capped gold nanoparticle (Phl-GNPs) in a single step, rapid, and bio friendly process. The synthesized Phl-GNPs were characterized for size and shape using transmission electron microscopy and UV-Vis spectroscopy. The presence of phloridzin was confirmed using SEM-EDS. The percentage of organic component (phloridzin) onto GNPs surface was characterized using thermogravimetric analysis. The pH stability of Phl-GNPs was studied using UV-Vis spectroscopy. The further prospect of this research is to study the antidiabetic and anticancer activity of Phl-GNPs and compare it with that of pure phloridzin. We hypothesize that functionalization of phloridzin onto gold nanoparticle surface may improve the pharmacokinetic profile of phloridzin, thereby help in regaining its lost charm.

King, Steven; Fehrenbach, Amy; Johnson, Jarrett; "Functional Recovery Of Axolotl (*Ambystoma mexicanum*) Hearing Following Sound Exposure" (Michael Smith)

The axolotl (*Ambystoma mexicanum*) has been used as a model organism for studying development, genetics, and regeneration. Although the sensory hair cells of the lateral line have been shown to be able to regenerate, it is not known whether this also occurs in the inner ear. In fact, little is known about the hearing capabilities of the axolotl or other salamander species. We recorded auditory evoked potentials (AEPs) of six axolotls in order to produce baseline pressure sensitivity audiograms. Individuals were then subjected to a 48-hour 150 Hz sound exposure at approximately 170 dB (re 1 μ Pa). AEPs were then performed to measure hearing thresholds immediately after sound exposure and at 2, 4, and 8 days post-sound exposure (dpse). In the baseline audiogram, axolotls were most sensitive at 600 Hz, with an additional peak of sensitivity at 3 kHz. Following sound exposure, axolotls experienced a 6 to 12 dB temporary threshold shift (TTS) after sound exposure, with TTS being greatest at low frequencies near the 150 Hz stimulus frequency (i.e., 100 and 250 Hz). Hearing sensitivity returned to control levels within 8 dpse. This indicates that axolotls do possess the ability to recover hearing sensitivity after damage following acoustical trauma. This study is the first to document hearing and hearing loss in the axolotl. Future studies are needed to correlate this hearing loss and recovery to sensory hair cell loss and regeneration in the axolotl inner ear.

Kirk, Cody; Nushart, Jordan; "Who Wants My Product? Affinity-based Marketing" (Leyla Zhuhadar)

The main objective of this project is to develop an intelligent banking application using Data Mining algorithms. Our approach consists of two methods of data collection: i) a simulated banking data; and ii) a focus group data collected from interviewing staff at Bowling Green US Bank. In this project we developed an intelligent marketing application. This application applied Data Mining algorithms on simulated banking data. For instance, if a bank decided to introduce a new financial product "a new type of current (checking) account" the marketing team would like not to waste efforts on customers who are unlikely to buy, the bank would like to address only those customers with the highest affinity for the new product. Accordingly, the bank's marketing department would push sales of the new account by sending direct mail to these specific customers. We used binary classification to predict for each customer, whether they will buy the product, along with a confidence value indicating how likely each of them is to buy the new product. Customers were then ranked by this confidence value and the 20% with the highest expected probability to buy the product are chosen for the mailing campaign. In addition we evaluated the predictive accuracy of the model and visualized the performance of the model using Lift charts and ROC charts, and finally customers were ranked by the predicted confidence for a purchase to select the best candidates for the campaign.

Knight, Katherine "The Debussy Problem: Debussy The Impressionist, The Neo-impressionist, The Symbolist" (Ingrid Cartwright)

Since the 19th century, many critics and scholars, both of music and the visual arts, have debated about the place of Claude Debussy's oeuvre in relation to the visual arts movements that developed during his career. Attempts have been made in the literature to label Debussy as Impressionist, as Neo-Impressionist, or as Symbolist, each given exclusive ownership of his music by the author, leading one to ask: Why have scholars and critics been so adamant about defining Debussy and his work, especially along the lines of these visual movements? The purpose of this research is to examine Debussy's relationships to these movements and to identify ways in which the ideals and the people of these movements may have influenced his music. Through a visual analysis of specific works by Claude Monet, Georges Seurat, and Odilon Redon and a musical analysis of selected art songs across Debussy's oeuvre, one sees that these attempts by scholars and critics to label Debussy and his works fall short of fully characterizing him as an artist. Rather, Debussy is better viewed as an artist who resisted such labels and blurred the boundaries between art and music.

Knowles, Bryan "How Hard Is Getting Around WKU's Broken Sidewalks?" (Mustafa Atici)

The "pathfinding" problem is one that is well-researched in Computer Science. We consider a case of this problem where the network (e.g., sidewalks) exhibits uncertainty (e.g., sidewalks being broken due to construction) and forward information (e.g., vision of sidewalks ahead). We show cases where, according to the nature of the forward information, the problem is or is not reducible to: minimizing entropy; Markovian processes; and non-Markovian processes. Although we are simply asking, "how should one navigate campus to best anticipate a sidewalk being broken," the applications of this problem extend into computer networking, message passing, roadways, and so on.

Kwong, Kawai; Chen, Tse-Hong; Luo, Weilong; "Synthetic And Mechanistic Studies Of Catalytic Oxidation By Manganeses(iii) Porphyrins With Iodobenzene Diacetate" (Rui Zhang)

Catalytic oxidation is one of the most important processes in organic chemistry, and fundamental

transformations in nature as well. This study is inspired by one of the heme-containing enzymes, namely cytochrome P450s (P450s) which can catalyze a wide variety of oxidation reactions with exceptionally high reactivity and selectivity. In this work, a series of metal porphyrin complexes are synthesized and characterized. The study focuses on the synthetic and mechanistic studies of catalytic epoxidation and hydroxylation by metalloporphyrin complexes in the presence of iodobenzene diacetate as mild oxygen source. It is shown that the manganese (III) porphyrin complex associated with iodobenzene diacetate (PhI(OAc)₂) is an potent catalytic system for the oxidation of alkenes and activated hydrocarbons in the presence of a small amount of water at 50°C. Under optimal condition, quantitative conversions, rapid turnovers (TOFs) and high selectivities were achieved in the epoxidation of most alkenes. A manganese (IV)-oxo porphyrin was detected in the reaction of the manganese(III) porphyrin and PhI(OAc)₂. However, our catalytic competition and Hammett correlation studies have suggested that the high-valent manganese(V)-oxo intermediate was favored as the premier active oxidant, even it is too short-lived and do not accumulate to detectable concentrations.

Lambert, Hayley "Identifying Happiness In The Periphery Is Less Cognitively Demanding Than Anger" (Andrew Mienaltowski)

It becomes more difficult to detect details of faces as those faces move farther into our peripheral vision. However, research has shown it is easier to detect emotions of faces than determine a face's gender even as the face is presented farther into the periphery. This study used images of faces to test whether participants would be better at detecting negative emotional faces than positive emotional faces. Faces were presented at different locations on a computer screen while participants were asked to focus on the center of the screen. Participants indicated whether the face was male or female or whether the face had an emotional (angry or happy) or neutral expression. They also responded to a central task designed to keep their attention and their eyes focused in the center of the display. Results showed that participants were more accurate in both emotion detection tasks than the gender discrimination task and more accurate at detecting happy expressions than angry. There was a differential decline in emotion accuracy as faces became more peripheral. Further research is needed to determine why there is a difference in our ability to detect happy and angry expressions presented in the periphery of our vision.

Lancaster, Zachary; Johnson, William; Reesor, Jesse; Hollen, Clayton; "Making Quad rotor Research Affordable" (Joel Lenoir)

Despite a growing interest in the field of UAS (unmanned aerial systems), there is a limited selection of aircraft available for purchase “off the shelf” or as DIY kits. The goal of my research is to design an affordable quad-rotor “remote controlled helicopter” platform that can be easily adapted and utilized in future research. To accomplish this, I have utilized engineering materials including carbon fiber and 3D printed materials to design an affordable and easily repairable platform. We have also designed a quick-release system to allow the rapid exchange of payloads (sensors, cameras, etc.) on the quad rotor. This is a follow-up on the poster I presented last year.

Langston, Amber "Lars Von Trier: Sexist Or Female Liberator" (Jerod Hollyfield)

With mixed critical success of Lars von Trier's “depression trilogy”, the Danish director reflects on his own personal battle with depression and anxiety. The films *Antichrist* (2009), *Melancholia* (2011), and *Nymphomaniac Volumes 1 & 2* (2013) span only four years of von Trier's impressive four decade career.

However, these films, as their moniker alludes, all deal with strong themes of depression, anger, anxiety, and self-hatred. They star women in leading roles who must express these themes in the upmost of high stakes and intensity. Several actresses who have worked with von Trier, including Bjork and Nicole Kidman, have expressed that his techniques are “sexist” and his views are “old-fashioned” in depicting and representing females. Conversely, others praise him for providing complex, unbridled, and non-apologetic women in Hollywood. I will explore a variety of von Trier’s films and interviews, while concentrating particularly on his “depression trilogy” in order to shed more light and possibly conclude whether or not his bleak depiction of feminine humanity is strictly a coincidence or if he truly believes women are only capable of self-deprecation and a dismissal of positive human qualities.

Leasor, Zachary "The potential influence of cyclogenesis on precipitation banding in winter storms: A local-scale analysis of a heavy snow event across the Ohio Valley during 22-23 December 2004" (Joshua Durkee)

On 22-23 December 2004, a historic winter storm produced heavy snow along and north of the Ohio River in southern Indiana and Kentucky. A mix of precipitation fell across Kentucky while isolated areas of southern Indiana that saw all snow received upwards of 20" of snowfall. Previous research shows that the atmospheric processes resulting in a tight gradient of snowfall totals have been analyzed at the synoptic scale, but not on a smaller scale. The purpose of this research is to examine an interest area running from Evansville to Cincinnati and determine the mesoscale processes that resulted in heavy snow. This research uses archived model data plotted in Integrated Data Viewer to quantify specific parameters related to the winter storm over a 48 hour time period. The rapid intensification of a surface low produced the necessary mesoscale forcing to produce precipitation banding and thundersnow across a very small area. By determining what role mesoscale forcing played in the storm’s impacts, these findings can be used when forecasting future winter storms in the Ohio Valley.

Lee, Ben "Flaher For Wind Ensemble" (Michael Kallstrom)

Music compositions are vehicles of communication. Organized music ensembles in schools allow for students to share in the process of music-making and extra musical expression within the curriculum. As of late, school districts have made a push in mental health awareness and suicide prevention within professional development seminars. This project views the music classroom as an important, open environment for such pressing social subjects. In such, my composition “Flaher for wind ensemble” pays homage to a friend, Anthony Flaherty, who committed suicide (keeping his namesake in the work’s title). “Flaher” will be an accessible piece for high school or college band that directors can use to discuss pressing challenges in students’ lives. The work explores melodies derived from a chord of solace discovered in the coping process after hearing of the suicide. These melodies are presented in the alto flute, representing the initials “A.F.” of my friend. This theme is then juxtaposed in woodwind and brass choirs, respectively. The theme undergoes formal contrapuntal techniques to create a bright landscape in melancholy remembrance. My presentation focuses on how these themes develop, how different timbres are used to develop this theme, and how this work’s emotional progression can be an allegory to talk about life with high school or college students. Insight into my compositional approach will be provided, as well as a presentation of other pieces with inherent social backgrounds. “Flaher” is being premiered by the WKU Wind Ensemble at their April concert, with hopes of being published soon thereafter.

Li, Jinglin; Vannoy, Trinity; "Just-in-time Management In Healthcare Operations" (Ismail Civelek)

Reducing costs and improving quality are two of the most important goals in managing healthcare operations. In this study, we explore how to improve healthcare operations by integrating Just-in-Time (JIT) management system. We first introduce the JIT management system, and then discuss how it can generate benefits in healthcare operations. We investigate implications for healthcare practice, which include how JIT techniques can be applied to healthcare operations, how hospitals and general practices can use JIT techniques, how JIT can help the patient throughput rate, and how technological advances can speed up healthcare processes. Implications for management and directions for future research are discussed.

Linder, William "Burning Resources: Traditional Fuel Use On The Mongolian Steppe" (Jean-Luc Houle)

Fuel and the selection of it, has always been an integral part in the lifeway's of nomadic pastoralists. Certainly, the gathering of fuel, the storage of it, and its eventual use represents a large part of daily culture. Yet, it remains an understudied aspect of ancient household economies. This is unfortunate since understanding fuel selection and use can also serve to evaluate specific cultural practices and human-environment relationships since there is often a close link between specific types of available fuel and local environmental conditions. Through informal ethnographic interviews with current residents in the Altai region of western Mongolia, information about their use of fuel in a domestic setting was gained with the intent to help archaeologists reconstruct past lifeway's by creating analogies between the use of fuel by people of the Altai region today and the archaeological signatures left by their prehistoric counterparts. Based on current archaeological research it is believed that present-day inhabitants in the Altai region share a similar nomadic pastoralist mode of subsistence with the people living in this same region during the Late Bronze/Early Iron Age (mid-Second to mid-First millennia BC). Local lake core data also suggests that the Bronze and Early Iron Age environmental landscape in this region was fairly similar to that of today. These similarities allow us to infer that Bronze and Iron Age societies possibly had an overall domestic economy similar to the modern people of this region. The data collected also serves to evaluate past human-environment relationships.

Lindsey, Colton "Influences of low-level atmospheric kinematics, thermodynamics, and circulation discontinuities on a particularly large, long-lived tornado near Bennington, KS on 28 May 2013" (Josh Durkee)

On 28 May 2013 a nearly mile-wide tornado developed over open farm land less than two miles west of Bennington, KS and remained quasi-stationary for nearly one hour. While no fatalities or injuries were reported, over 100 head of cattle perished as winds estimated at 247mph were observed by a nearby mobile radar instrument. On this day, the forecast for such violent weather outcomes was not anticipated, particularly across the central Kansas I-70 corridor. Given the failed prognostic determination of this event, the purpose of this study was to determine the lower atmospheric dynamic and thermodynamic contributions to this particularly unusual and unanticipated tornado event. North American Regional Reanalysis, satellite, and radar data, as well as in-situ observations collected in real time by the Western Kentucky University Field Methods in Weather Forecasting course were used to analyze this event. Initial findings suggest that the orientation and collocation of a stationary near

Littlefield, Paulina "Hydrogeology Of Cold River Cave, Warren County, Kentucky" (Christopher Groves)
Hydrogeology of Cold River Cave, Warren County, Kentucky The Lost River Groundwater Basin is a karst

drainage system that covers much of southern Warren County south of Bowling Green. Rainwater sinking into numerous sinkholes enters the groundwater flow system and flows northwards as underground rivers towards the Lost River Rise, the ultimate outlet for the waters. Along the way the underground river can be seen at several "blue holes" or springs, where the river is exposed as it flows across the bottom of a large sinkhole at the Lost River Cave Valley. At one of these blue holes, Cold River Cave has been explored and mapped for 50 meters before the cave becomes submerged and cannot be followed without cave diving gear. The goal of this project is to better understand the relationship between the flow of water in the cave, to the hydrology of the Cave Valley and broader, the Lost River Groundwater Basin.

Liu, Xin; Valentine, Haley; Yan, Bangbo; "Synthesis, Structure And Characteristic Description Of Three New Metal Organic Framework Materials" (Bangbo Yan)

Three new metal-organic frameworks (MOFs): [Cu(Br2BDC)2](HTEA)2

(1) $[Co_2(Br_2BDC)(HCOO)_2(DMF)_2]$ (2) and $Zn_2(Br_2BDC)(Trz)_2 \cdot 3H_2O$ (3) (Br2BDC = 2,5-dibromoterephthalate, DMF = dimethylformamide, TEA = trimethylamine, Trz = 1,2,4-triazole), were synthesized in our lab. Compounds 1 and 2 have two-dimensional (2D) structures, while compound 3 is a three-dimensional network (3D). Single-crystal X-ray diffraction revealed compound 1 consists of anionic layered networks balanced with cationic HTEA⁺ ions located in between the layers. The layered network of 1 is a uninodal 4-connected net in which copper ions act as the uninodals and the Br2BDC ligand as the linkers. Compound 2 is a neutral 2D coordination network containing hexagonal rings of clusters formed by six CoO₆ octahedra. The topology of the 2D network in 2 is a uninodal 6-connected net when the clusters are viewed as the nodals. In both compounds, the stacking of the layers forms one-dimensional channels. In compound 3, zinc ions are connected by 1, 2, 4-triazole to form layers. Adjacent layers are connected by 2, 5-dibromoterephthalic acid resulted in a 3D structure with one dimension channels. Detailed structural analysis with full characterization including infrared spectra, thermogravimetric analyses, and elemental analyses are reported.

Logsdon, Bradley; Kakavand, Pegah; Jahan, Muhammad; "Biocompatibility Of Titanium Alloys Machined By Electrical Discharge Machining "A Review" (Muhammad Jahan)

Titanium alloys are found to be excellent candidates for biomedical applications due to their exceptional mechanical properties besides outstanding corrosion resistance. Ti-6Al-4V (grade 5 titanium alloy) and NiTi (shape memory alloy) are two widely used titanium alloys for biomedical implants ranging from orthopedic to orthodontic applications. The purpose of this research is to conduct a literature survey on the biocompatibility of the titanium alloys after they are machined using the electrical discharge machining process (EDM). The review includes the current and past research on the EDM of various titanium alloys (mainly Ti-6Al-4V and NiTi alloys) and their applicability in the biomedical applications. The review will focus on how the surface characteristics of the titanium alloy were investigated in different studies. The review will investigate the relationship between the characteristics of the EDMed surface and biocompatibility. The review will also investigate how the biocompatibility of EDMed surface was evaluated in the literature.

Luna, Brian "Improving Writing Instruction With Peer Review In Physics Labs" (Scott Bonham)

Our research goal was to answer the question "Do students submit higher quality lab reports after they've critiqued one another's reports?" In this approach, each student submitted a report to be

evaluated by three of the author's peers. The students revised their reports based on the feedback and submitted the revised version to the professor of the lab. The experimental group, consisting of two lab sections, followed these procedures approximately every three week while the control group, the other two sections, submitted a report every week. We collected all submitted reports and evaluated the quality of the reports in multiple categories using a previously established coding scheme. We looked for accuracy in writing of the abstract, quality of the experimental description and data analysis sections, correct use of units and uncertainties, and comparison in the conclusion. The data was then compared between the four sections. It was found that the final reports submitted by the experimental sections were, in most categories, comparable in quality to the control sections and noticeably better in a few. We can conclude from this that using a peer review system in conducting physics labs has potential to maintain quality in student reports while reducing workload.

Luo, Weilong; Zhang, Rui; "Selective Sulfoxidation Catalyzed By Manganese(III) Porphyrin Complexes With Different Axial Ligands" (Rui Zhang)

Selective oxidation of sulfides to sulfoxides by metal catalysts is of great importance in organic synthesis and industry. Organic sulfoxides are valuable synthetic intermediates for the production of a variety of chemically and biologically active molecules. Many transition metal catalysts including metalloporphyrins have been synthesized to mimic the predominant oxidation of catalysts in Nature, specifically the cytochrome P450 enzymes. In this study, a set of manganese tetra (pentafluorophenyl) porphyrin with different axial ligands have been synthesized and characterized. With iodobenzenz diacetate [$\text{PhI}(\text{OAc})_2$] as an efficient oxygen source, manganese (III) porphyrins catalyze the selective oxidations of sulfides to sulfoxides. A significant axial ligand effect on selectivity and reactivity of the catalytic sulfoxidations were observed.

Luttrell, Meagan; Arnold, Jessica; Lowry, Danielle; "Effects Of Reward Motivation On Young And Older Adults' Single Target And Dual Target Recognition" (Sharon Mutter)

We presented high or low value reward cues prior to study list word pairs and examined how this affected associative and pair recognition (Exp. 1) or item recognition for words presented with the same (intact pairs) or a different (rearranged pairs) context cue (Exp. 2). Age differences were greater in associative than pair recognition and high reward cues improved both young and older adults' performance on these tests. Preserved context produced better item recognition for young, but not older adults. Reward value had no effect on older adults' item recognition, however, young adults' performance was worse for words associated with high reward cues. High rewards may have motivated participants, and especially young adults, to form higher order associative units, which improved associative and pair recognition. These unitized associative representations did not aid and may have even impaired young adults' cued item recognition.

Macke, Cristina; Smith, Laura; Wilson, Kimberley; "Comparison Of The Duration Of Different Stretching Techniques On Hamstring Flexibility" (Harvey Wallmann)

Purpose: The purpose of this study was to compare the effects of static, dynamic, and PNF-HR stretching techniques regarding differences in the duration of hamstring flexibility. Method: Sixty subjects ($N=60$) volunteered for this study. All subjects were randomly divided into 4 stretching groups: static ($n=15$), dynamic ($n=16$), PNF-HR ($n=14$), and Control ($n=15$). Each subject walked on a treadmill for 5 minutes at a self-selected pace and was then positioned on a mat in a 90° knee flexion- 90° hip flexion position

and measured for hamstring flexibility. Each subject then performed the assigned stretching protocol for 30 seconds and returned to the table in the 90°-90° position for re-measurement. Hamstring flexibility was measured every two minutes until the subject had two consecutive measurement declines. Results: Statistics reveal no significant differences between groups for duration of stretch. Conclusion: Since there were no significant differences between static, dynamic, and PNF-HR stretching groups as it relates to increasing duration of hamstring flexibility, any of the stretches used in the study will most likely result in the same duration of hamstring tissue extensibility.

Mahoney, Ryan "Application Of Equations To Explain Heat Transfer In Bimetallic Materials" (Lester Pesterfield)

Some of the most challenging questions that an individual can ever ask may result from asking the simplest questions. The rate at which heat passes through a specific single substance of specific volumes has been studied in detail. The current expands those investigations to examine the rate at which heat moves through bimetallic material. Placing one bimetallic substance on top of another, the rate at which heat, at a fixed temperature, passes through the two metals comes into question. Originally, this study was observed through experimental lenses. This was done by warming a heat source (in this case, a hot plate) up to a specified set temperature, then placing a combination pair of 1 inch metallic blocks stacked on top of one on the center of hot plate. An infrared thermometer was then utilized to track the progression of the rising temperature of the metals over a period of 20 minutes. Currently, this same study has taken a turn toward the theoretical perspective. By applying equations used in the study of heat flux between certain metals, this research is now explores the idea that there may be equations that describe the rate at which specified heat passes through two metallic materials. Using such equations and rules of heat transfer between objects, this investigation examines inquiry question in a mathematical sense.

Manakee, Wes "Whiplash: The Current Beat Of American Youth" (Jerod Hollyfield)

The 2014 Sundance Grand Jury Winner, Whiplash by writer/ director Damien Chazelle, is a story both onscreen and off-screen about following your passions and ambitions to achieve your dreams and goals. As exemplified in the film, the road to achieving any artistic greatness requires determination, ambition, tons of practice, and a goal to overcome adversity all for the love of a passion. This story of the relationship between mentor and student has become the talk of film critics and movie-goers. In my critical analysis of the film, I argue that Whiplash is a contemporary commentary of youth and the challenges that they face in today's ever shrinking job market, as well as the social repercussions that come from these challenges. Although it is highly praised as an entertaining story, analysis is needed to determine if it is an accurate portrayal of today's students. The editing, lighting, and the cinematic techniques used in this film metaphorically shape the perception of dr

Mann, Kyle "Glutathione's Interaction With Platinum, And The Role Of Ph In Altering Ligand Formation Between N-acetylcysteine And Platinum" (Kevin Williams)

Cisplatin is an important anti-cancer drug. Structurally, cisplatin is a coordination complex, which means that it has a central metallic atom; platinum. Side interactions prevent cisplatin from effectively treating cancerous cells by reaction with DNA. Cisplatin has a high rate of forming protein adducts, primarily with sulfur containing amino acids. To better understand how cisplatin interacts with sulfur containing amino acids in the body, a platinum compound with an ethylenediamine ligand attached was reacted with N-

acetylcysteine and glutathione. The reactions of cysteine with platinum were performed at three pH values: 7.0, 8.5, and 10. NMR spectroscopy was used to examine these reaction over time. A COSY and HMQC spectrum of glutathione's reaction with platinum were collected to better identify the reaction products. All ¹H NMR spectra were taken on a JOEL Eclipse 500 MHz NMR instrument. The appearance of a free ethylenediamine ligand signal, in many cases, suggests that the amino acids react to form products in which the ethylenediamine ligand is displaced as the amino acids react via both sulfur and nitrogen atoms.

Manning, Cole "A Master Community" (Shahnaz Aly)

The purpose of this research is to discover how to successfully master-plan a small yachting community for Walker's Marina. Through the success from the previous five marinas and the recent demand for waterfront housing in South Florida, the Walker's Marina brand is expanding into a Yacht Club and community. The goal is to provide a master-plan that demonstrates circulation of the property and executes all desired structures. This has been done by examining other yachting communities such as Hawks Cay in the Florida Keys and Marina Del Ray in Southern California. To create a master-plan that works in harmony I broke the site into three sections, using the club house as a central point and the community and marina as the two wings. A tremendous amount of research went into accommodating for extreme weather South Florida can face. This include working with different building materials to provide the strength as well as the aesthetics. Solar paths were taking into consideration to al

Martins, Sarah; Leitão, Tarcísio; Neves, Pierre; "Breastfeeding And Dental Plaque Acidogenicity"

(Becky Tabor)

Introduction: Night breastfeeding and free demand of sucrose has been associated as a risk factor for the development of cavities. However, this association is not consistent in the literature. It has been suggested that mixing the nourishment of children with breast milk and sucrose can ecologically modify the dental plaque, making it more cariogenic. Objective: To evaluate the acidogenic potential of breast milk and sucrose in dental plaques of children with dental cavities. Methodology: dental plaques of seven children of 2-3 years were collected in microfuge tubes, resuspended in 0.9% NaCl and subjected to the following treatments: sucrose solution 10%, 7% lactose solution, human milk and saline. Results: the lowest pH values observed were for exposure to sucrose group (4.12 ± 0.28) followed by lactose (4.45 ± 0.34), and both were below the critical point to dissolve the enamel (5,5) during the first 5min and 15min, respectively. For human milk the achieved values were 5.04 ± 0.23 , and only after 60 min human milk was considered critical for enamel dissolution. Conclusion: Sucrose is the carbohydrate that induces higher pH drop in plaque of children with cavities. Under the conditions of the absence of salivary flow experiment, the critical pH for dissolution of enamel in exposed biofilm to human milk was reached only after 60 minutes, which denotes a low cariogenic potential.

McCutchen, Allison; Hulsey, Wendi; "Barriers To Care And Buyer Behavior In Relation To Oral Hygiene"

(Lynn Austin)

How much of an impact do advertising, brand loyalty, and socioeconomic status have on the overall oral-health knowledge and dental care product purchases of consumers? A survey was distributed to collect data on consumers' background, oral hygiene purchasing habits, and decision making rationales. It is assumed that those with minimal access to care and minimal oral-health knowledge would be purchasing products based on sale prices, or the promise of improved esthetics, whereas consumers

with increased access to care are likely making their purchasing decisions based on the recommendations of a dental professional and are potentially more interested in trying new and innovative products, regardless of price.

McDonald, Benjamin; Price, Carson; Botero, S.; "Investigating Structural And Physical Properties Of Graphene-conducting Polymer Functional Hybrids For Aerospace Applications" (Sanju Gupta)

Hybrid nanomaterials are an interesting class of materials that can find applications in diverse fields owing to their multifunctionality tailored at the interface of the constituents. Graphene is described as a one-atom thick layer of the layered mineral graphite and it has attracted a great deal of attention worldwide attributed to their extraordinary physical (electronic, mechanical, thermal, optical and electrochemical) properties useful for a gamut of technologies. Likewise, pi-conjugated or conducting polymers serve as playground for preparing not only supramolecular nanostructures but also hybrids and nanocomposites. This work is centered at design and development of “smart” hybrid nanocomposites from functional nan building blocks namely, graphene and its derivatives and electrochemically polymerized conducting polymers [namely, polypyrrole (PPy) and polyaniline (PANI)] using layer-by-layer approach. Here we investigate their structural and physical properties using a range of complementary analytical techniques including scanning and transmission electron microscopy, atomic force microscopy, room temperature electrical property and resonance Raman spectroscopy with mapping, that are employed to determine surface morphology and topography, surface roughness / uniformity / (in)homogeneity, nanoscale (amorphous versus semicrystalline) structure through diffraction, and elastic modulus to establish microscopic structure- processing-property correlations. The experimental findings elucidate the optimized properties of synthesized hybrids for aerospace and energy industries.

McGuirk, Meghan "From " (Patricia Minter)

From 1929 to 1974, the Eugenics Board of North Carolina sterilized over 7,600 men, women, and children. The North Carolina General Assembly enacted legislation that allowed for the forced sterilization of persons considered “feeble-minded” or a threat to the public good of society. Petitions for sterilization could be originated by family members of the patient, officers at mental institutions or prisons, or county welfare departments. By the end of the program in 1974, a majority of the sterilizations were conducted on low-income, African American women. The eugenicists targeted mental patients, low socio-economic citizens, and racial minorities with little criticism by the public. Research was conducted through an analysis of case law, legislative records, newspapers, and administrative reports from state agencies. Today, the North Carolina legislature is in the process of awarding reparations to surviving victims of forced sterilization.

Mckenna, Kelly; Ferguson, Jack; "Preparation Of Core-shell Nanoparticles Using A Hydrophilic-hydrophobic Approach" (Hemali Rathnayake)

Core-shell nanoparticles are of interest due to multiple applications to fields such as catalysts and biomedical applications. When core-shell nanoparticles are formed, a shell of a hydrophilic substance will form around a core of a hydrophobic substance. The core shells are formed by the hydrophobic hydrophilic interaction between the two substances. Core shells can were formed by having a hydrophobic and hydrophilic solution start in a solution where they are both soluble, and slowly introducing this solution to an aqueous solution. The hydrophilic solution formed a shell around the

hydrophobic core. Cross linking the solution allows for the products to remain intact even when drying.

McMullen, Ryne; Weatherholt, Wade; Inman, Chase; "Title: Vo2 Max And Time To Volitional Failure Improved Following Bike Ride Across The United States" (Don Hoover)

Purpose: This study assessed the changes in aerobic capacity and time to volitional failure during a graded cycling test conducted prior to and following a cross-country ride completed by novice cyclists. Methods: Five novice cyclists (21.0.2 \pm 0.71 year, 187.842 \pm 6.50 cm, 82.84 \pm 5.42 kg) completed laboratory testing prior to and after the cross-country ride. Participants visited the laboratory on two occasions, completing an incremental to maximal cycle test prior to embarking on a cross-country bicycle ride and upon completion. Testing occurred 60 days apart. Following a standardized warm up, subjects rode an electronically-braked cycle ergometer until volitional failure. Conditions were controlled and measured by computer, and inspired and expired gases were collected via open-spirometry. The following variables were assessed continuously (30s average) during each trial: VO₂, VCO₂, VE, METs, RER, VT, FEO₂, FECO₂, and HR. Paired t-tests were used for statistical analysis.

Medero, Krstina "Scardy Rats" (Benjamin Robin)

A study published in Nature on April 28th 2014 reports that mice and rats demonstrate extreme levels of stress in the presence of male researchers. Psychologist and author of the study Dr. Jeffery Mogil explains, the stress induced by smelling male pheromones was "massive", analogous with being "in a very small tube [unable to] move for 15 minutes." Paul Flecknell, a veterinary anesthesiologist tells Science Magazine on April 28th 2014, "Almost every animal behavior studied in the lab, from the effectiveness of experimental drugs to [cognitive abilities] is affected by stress." Considering that rats account for 95% of lab animals it is imperative that we, first, discuss the details of the study, next, its current impacts on research, before finally, recording future implications of a factor that may have impacted decades of behavioral, psychological, and biomedical research.

Meek, Katie "Gather Together" (Tim Broekema)

In a world where eating in your car has become normal, individual meals are a freezer staple and the rate of obesity is growing at a staggering rate; the food dilemma is real and affecting more Americans than ever before. Despite research detailing the benefits of sitting down at the table for a shared meal, many Americans consider this a luxury rather than a necessity. Regardless of our fast-paced society, people who still cling to the power of the table and choose pleasure over productivity are realizing the added effort pays off in conversation, time together, and healthier meals. "Gather Together" will profile people who value sharing their table "not just for a wedding or holiday extravaganza, but for a simple meal. With storytelling still photographs, long form written content accompanied by audio clips and informational graphics I will tell the story of people that hold to the table as an important place in their lives. "Gather Together" will feature 10-15 different types of people/groups representing an array of cultures and family sizes. The project content will be organized into sections based on cooking for "one", "two", "few" or "many".

Meservy, Cody; Gani, Nahid; "Investigation Of Apatite And Zircon Minerals For Thermochronologic Dating: A Case Study From The Siwalik Sandstones, Central Nepal, Himalaya" (Nahid Gani)

The Siwalik Group sandstones in Central Nepal provide an opportunity to understand the unroofing processes that shaped part of the Himalayan foreland basin in the Late Miocene. The analysis of detrital

sediment composition and thermochronological dating of the Siwalik sandstones provides information on provenance and exhumation. Sandstone samples collected from the Surai Khola River section of the foreland basin are used to determine when the thrust and fold belts of the foreland basin would have been unroofed by erosional processes. Sample section NEP-13-012 has relatively-high availability in apatite and zircon especially within the 125Åµm to 180Åµm fraction. Apatite and zircon crystals in this sample are subhedral to anhedral in shape with few visible crystalline faces. Most crystals are found as fragmented pieces, however elongate forms have also been collected. The maturity of the crystalline grains can signify the impact of many possible cycles of lithification of sandstone which they have undergone. Understanding the forces that helped shape the Siwalik sandstones and establishing a timeline for processes that contributed to the formation and unroofing of the Himalayan foreland basin will better explain the growth and change of the Himalayan mountain system.

Mitchell, Logan "An Analysis Of The Lost River Karst Aquifer's Hydrometeorological Response To Storm Events" (Jason Polk)

The purpose of this research was to examine storm event induced flooding and hydrometeorological responses in the Lost River Cave Aquifer System. In order to achieve this, precipitation totals from ASOS, COOP, GHCN, and KYMN weather stations within the same drainage basin were compared to discharge totals from Lost River Rise (LRR) and Blue Hole Four (BHF). Both daily and monthly resolutions were used so that individual storm events could be analyzed, while also focusing on comparison of the larger hydrometeorological responses by comparing those to the baseflow regime. Data were measured and collected for 20 continuous months, with evapotranspiration being accounted for at the monthly resolution. HOBOWare and EcoWatch software were used to measure and record data, while SigmaPlot was used for further statistical analysis of storm events to determine predictive flood modeling between the primary output (LRR) and the upstream conduit (BHF). A predictive storm model that helps explain the basin responses in the system to differing storm events was created. The results indicate there are critical thresholds at which the system responds to storm events and that seasonal influences are present. This research has broader impacts in providing an increased understanding of karst-related hydrometeorological interactions within the Lost River Cave Aquifer System, which pose the threat of flood risk, and possible application to better plan for development in the basin as well as others with similar characteristics.

Modi, Tuls; Filani, Oluwadamilola; Dakshinamurthy, Rajalingam; "Understanding The Molecular Level Interaction Of hFGF-1 With A Cancer Inhibitor Imatinib" (Rajalingam Dakshinamurthy)

Fibroblast growth factors-(FGFs) lack signal sequences, and are exported through endoplasmic reticulum (ER)-Golgi-independent non-classical routes. FGFs work as modulators of various cellular activities like mitosis, differentiation, survival etc. Among the FGF family, which comprises of 23 different heparin proteins, human FGF-1 (hFGF-1), a potent angiogenic factors are one of the targets in cancer inhibition, as they are involved in blood vessel formation in tissues. There has been intensive research directed at the development of drugs that could effectively inhibit angiogenesis. In this context, the purpose of this study is to fully understand the molecular principles essential to determine probability of inhibition of hFGF-1 signaling transduction by imatinib. Imatinib, a 2-phenyl amino pyrimidine derivative is a tyrosine kinase inhibitor with antineoplastic activity. Imatinib binds to the intracellular pocket located within tyrosine kinases and inhibit the downstream cell proliferation events, but the exact molecular mechanism is still elusive. In this study, expression of hFGF-1 in recombinant E.coli was carried out, and

the expressed protein was purified using heparin affinity column chromatography. The structural interactions governing imatinib-hFGF-1 interaction was studied by monitoring its stability, conformation and binding affinity by equilibrium unfolding using steady state fluorescence and proteolytic digestion assay. These data show that imatinib binds to hFGF-1 and enhances its thermal stability and solvent accessibility. In addition, Biacore analysis was carried out to determine the binding affinity of imatinib to hFGF-1. 1H-15N HSQC-NMR was also performed to determine exact binding sites and stoichiometry of binding between imatinib and hFGF-1.

Mokhtar, Mohd Nizam; Offutt, Tracy; Hooper, Charles; "Silence Effect: Teacher Nonverbal Immediacy, Motivation And Effective Learning Among College Students" (Larry Caillouet)

This quantitative study examined the relationships between professors' nonverbal immediacy behaviors with students' motivational and effective learning behavior. A sample of 261 students participated in this study and completed a paper-and-pencil questionnaire which was designed to measure the frequency of professor (of the class they attended prior to the one which the study was conducted) nonverbal immediacy behaviors and how it influenced students'™ motivation and learning behaviors. In addition to studying this relationship, this study also aimed to determine whether nonverbal immediacy is perceived differently according to the different combinations of students and teachers gender. Data of this study indicated that professors'™ nonverbal immediacy behaviors were correlated positively and significantly with students'™ effective learning and motivation. In addition, no gender difference was found between male and female professors and student perceptions of their nonverbal immediacy. However, there was a trend towards the male students-male professor gender combination as being more nonverbally immediate than other combinations. Findings of this study suggest that students'™ motivation and effective learning increase when the professors utilize various nonverbal immediate behaviors while teaching.

Moolani, Harsh; Waghwan, Hitesh Kumar; Modi, Tuls; "Single Step Synthesis Of Kanamycin Capped Gold Nanoparticles And Evaluation Of Its Antibacterial Activity" (Dr. Rajalingam Dakshinamurthy)

Antibiotic resistance is a global issue threatening the commercially available front line antibiotics. Need for novel, innovative strategies for developing antibiotics is becoming a necessity due to an increasing number of rapidly evolving multi drug resistant bacteria threats. Antibiotic encapsulated gold nanoparticles (GNPs) are one such strategy showing promise. Kanamycin is an aminoglycoside antibiotic with bactericidal activity that works through binding the 30S subunit of the bacterial ribosome, interrupting protein synthesis. In this study, we report a single step biofriendly method for synthesis of Kanamycin capped GNPs (Kan-GNPs) in an aqueous buffer. The Kan-GNPs were characterized using TEM, SEM-EDS, UV-Vis spectroscopy and DLS. The synthesized Kan-GNPs were tested for antibacterial activity against multiple Gram-positive (Staphylococcus epidermidis, Enterococcus durans, and Streptococcus bovis) and Gram-negative (Escherichia coli, Pseudomonas aeruginosa, and Enterobacter aerogenes) bacterial strains. This was done using in vitro antibacterial assays such as turbidimetry assay, spread plate assay, and other colorimetric methods such as XTT assay and fluorescence assay (live/dead cell viability assay). This nano-formulation was found to be multiple fold active against bacterial strains tested when compared to pure kanamycin. Currently, Kan-GNPs are tested against kanamycin resistant bacteria. Positive results from this study will lead to a successful platform for other commercial antibiotics to which bacteria have gained resistance.

Moore, Brittyny; Flynn, Deborah; Gani, Nahid; "Normal Faults On The Ethiopian Plateau: An Understanding Of The Geodynamics And Fault Zone Permeability" (Nahid Gani)

The tectonic evolution of normal faults on the Ethiopian Plateau is not well understood. The Ethiopian Plateau, situated on the flank of the active rift systems, the Main Ethiopian Rift and the Afar Depression, has dominated by numerous micro-to-macro-scale extensional structures such as normal faults. The purpose of this study is to examine the geometry, kinematics and dynamics of the normal faults to better understand the tectonic activity governing the evolution of these faults, and to decipher fault related permeability structures. We analyzed 28 normal faults that are collected from the Ethiopian Plateau, and generate stereoplots and DEM-based 3D models in MOVE software. Our preliminary results show the presence of mostly steeply dipping normal faults with listric to layer parallel nature at depth, and shear fractures. Fault zones ranges from 10cm to several meters and displacement ranges from 10cm to >50m. The dominant orientation of these faults is NE-SW to NW-SE directions

Muccigrosso, Mara "Teaching A Feminist Reading Of " (Rob Hale)

Throughout its entire history, literature has been used as a pedagogical tool to, as Brazier and Clark argue, "improve morality and instill ethical and cultural history...to produce good citizens; to foster personal growth; to offset inequity; and to encourage enjoyment and appreciation". Since its publication in the late nineteenth century, Charles Dickens' Great Expectations has been read and taught in Secondary English/Language Arts Classrooms because of the themes and social issues it addresses that are particularly applicable to high school students. One that is particularly significant is Dickens' exploration of women's role in society during the Victorian period through, which he explores through the characters of Mrs. Joe, Estella, Miss Havisham, and Biddy. According to May Granata in her essay "Pip's Great Expectations and Ours," the novel's "social and historical significance helps the student to see his place in time and in the world, to become aware of his own society and of a part of his heritage." Teaching a feminist reading of Great Expectations would make students aware of the gender roles and stereotypes that were prevalent during the Victorian period so they can compare them to those of today and thereby "see [their] place in time and in the world." In this work, a pedagogical lesson is outlined, teaching high school students to relate the social condition of women in the Victorian period with that of the modern day woman.

Nash, Kristin "Demographics and Health Status of Rural Kentucky Population Served By The Institute Of Rural Health From 2011-2013" (Jill Maples)

A variety of factors impact health status (e.g. family history, employment status, education, etc.) and one's perception of their overall health (i.e. self-reported health status). The purpose of this study is to examine demographic information and self-reported perceptions of overall health among the residents in rural areas of South-Central Kentucky, served by the WKU Institute of Rural Health (IRH). Demographic and health screening data collected by the IRH from 2011-2013 were analyzed to characterize individuals served by the IRH. The population consisted of 4,190 adults (73% female & 27% male) of primarily Caucasian adults (94% white, 5% African American, less than 2% Other). Participants also had differing educational backgrounds (17% less than 12yrs, 19% had a high school diploma/GED, & 63% had some college/graduated college. Participants were given a survey including varying aspects of health which ended with the question "how would you rate your physical health". Within the sample, 23% of people rated their health as "very good", 58% "good", 17% "fair" and 2% rated their health as "poor". Preliminary results indicate an interesting

association between levels of education attained and perceived (self-reported) health status. Surprisingly, there was an inverse relationship with education attained and perceptions of health status, where individuals with higher levels of education tended to rate their health status lower. Based on the results of our study, it would be beneficial for the IRH to invest in health education programs that promote a realistic view of health and how to achieve it.

Nasseh, Kianoosh; Ashrafzadeh, Sepideh; Ashrafzadeh, Sahar; "Qualitative Evaluation Of Challenges With Diabetes Self-management In Eastern Kentucky" (Gary English)

Kentucky has the fourth highest rate of diagnosed diabetes in the United States at 11.4%, compared to the national median of 8.3%. Eastern Kentucky has particularly high diabetes prevalence in the state, with some counties having up to 20% of their Medicaid population diagnosed with the disease. With diabetes-related healthcare services costing the state hundreds of millions of dollars annually, public health officials need to understand their target population to create relevant and effective diabetes management programs. Consequently, this study investigated the lifestyle challenges, beliefs, and diabetes self-management practices of people with type II diabetes in Eastern Kentucky. Study authors interviewed 20 residents in McCreary County who had type II diabetes. Inclusion criteria was being aged 35 or above and having lived in the county for at least five years. One-on-one, 30-60 minute interviews asked study participants questions about their disease knowledge, diabetes self-management practices, and challenges (related to work, time-limitations, finances, traditions, family/friends) for controlling their disease. When qualitative analysis of the interviews is complete, we will organize study results and list recurring challenges, practices, and knowledge limitations Eastern Kentucky residents had about the disease. We will also propose solutions for how to address some of the recurring challenges based on literature review. This study's results will contribute to better understanding of the diabetic population in Eastern Kentucky, hence enabling public health leaders to initiate and better tailor diabetes prevention and control initiatives in the region in upcoming years.

Neerudu Sreeramulu, Niharika "Synthesis Of Nanoparticle Colloids For Colloidal Self Assembly Under Microgravity" (Hemali Rathnayake)

Neutral microparticle colloids are able to segregate with the highly charged nanoparticles to form organized assemblies called "colloidal self-assemblies". These experiments are conducted under microgravity to remove the gravitational effects on the colloidal systems including the work described here. In a typical experiment performed under microgravity, it is expected that charged nanoparticles arrange around large particles, which is known as "haloing effect". Nanoparticle haloing is a new mechanism; the highly charged nanoparticles fuse with neutral microparticles (colloids) forming a hollow ring of charged particles. These hollow particles (colloidal nanoparticle) have a wide range of significance in designing stable fluids and gels and have a widespread application in drug delivery. During the formation of the colloidal self-assembly, the charged particles segregate to the regions of the neutral microparticles because of the columbic interactions. The other particles in the solution promote to deplete the inner region of the colloidal particles which form a gap and the region between are controlled with weak forces of attraction, usually van der Waals forces of attraction. These particles can also be treated with externally applied electric fields and are used in photonic crystals for energy harvesting and also have applications in thermal, chemical and optical fields.

Newberry, Jamaque "Dear School Daze: The Experience Of Black Life On Campus Through A Lens" (Jace

Lux)

Director, screenwriter, and producer Spike Lee has garnered negative and positive attention since his critical 1989 release of *Do the Right Thing*. Spike Lee speaks his mind and has an unrivaled thirst for the truth by any means necessary. Journalist Jason Bailey noted "Media's perception created an unfair image that persists today: that of a reckless provocateur." He continued to make his voice heard becoming one of the ground-breaking filmmakers of our generation touching on subjects ranging from police brutality to gentrification. His film *School Daze* provoked society as well by taking an internal view on the life of black college students dealing with racial issues as well as hazing within fraternities. This film laid down the foundation for novice director Justin Simien's *Dear White People* which its center focus is a college campus with racial tensions. My paper will explain how and if Lee's and Simien's films depict the life of black college students effectively and accurately. Both films carry a strong narrative with themes of morality but some believe that much of it is a bit exaggerated or propaganda for race wars. Both these men have established their feet in the industry but at what cost to their people or craft?

Nezirovic, Hana; Lyttle, Quintin; Lile, Cameron; Schroeder, Amber; "The Effects of Negative Salience on Employers' Ratings of Applicant Facebook Profiles" (Amber Schroeder)

Employers are increasingly using social media websites to evaluate potential job candidates. This study examines negative salience as a variable that may be affecting employer evaluations when using social media as a selection tool. The purpose of this study is to see if negative information impacts the decisions of hiring managers when reviewing a potential job candidate's Facebook profile and at what level this negative information begins to impact their opinions. Participants will be recruited from Western Kentucky University and will act as hiring managers for an entry level desk job. They will review a potential job candidate's Facebook profile and rate the profile on cognitive ability, potential job performance, personality, and counterproductive workplace behavior. The results of this study will better educate Facebook users and job applicants about what they should and should not post on Facebook.

Nguyen, Brandon "Justice Saves Contamination- Cultural Relevance In Cinema" (Jerod Hollyfield)

In a NY Times article titled *A Case for Contamination*, Kwame Anthony Appiah discusses a concept he calls "contamination" of different cultures. He argues "we should learn about people in other places, take an interest in their civilizations, their arguments, their errors, their achievements, not because it will bring us into agreement but because it will help us get used to one another" "something we have a powerful need to do in this globalized era." In this essay, I will discuss how learning about world cinemas (focusing on a handful of films) relate to Appiah's view on contamination, and how the cultural relevance of this contamination ties in with justice. On a very basic level, it would be easy to say most films are useful because they teach us about the cultures of each country represented. Furthermore, that these teachings familiarize audiences who would otherwise, potentially, never be exposed to it. This familiarization supports Appiah's contamination idea, as it helps us get used to other people's cultures, and as a result, the people "themselves. The varying justices within films act as a foundation of relevancy and verisimilitude of Appiah's claim."

Nonweiler, Dylan "Faith In Design" (Shahnaz Aly)

Our projects consisted of designing a commercial building. I was given the privilege of developing a new

church in the Bowling Green area. Research started with client meetings to understand the wants and needs of the facility. The goal was to design a non-traditional Baptist church that will attract new members of all ages. Research was also done on different churches to have reference buildings when designing, to find out how people interacted in different spaces, and to investigate the flow to each room. Research included touring a few church facilities in the area which put me on the right track. This research enabled an informed decisions about the overall layout and look of the church. Green sustainable features and materials will be offered throughout the structure. This will benefit the church and the environment. By incorporating natural daylighting and photovoltaic panels, the electric bill will stay low as well as the use of solar thermal panels for heating to name a few. Research conducted met the needs of the client and met sustainable design.

Norman, Anais "Babel" (Dale Rigby)

babel is a collection of nonfiction essays in which I explore a female twenty-something's crossdimensional dilemma of spirituality, racism, art, and love in the wake of Bible-belt hipsterdom. I board the train that is human pride, that great metal snake by which we essayists craft our lives, and measure out my stories by cities and coffeespoons—dotted with dark roast, preferably. The train of my thesis glides through the first —burg and its Godlike aspirations, Babel; travels a ways to Virginia, specifically Jerry Falwell's Lynchburg and Prince Edward County, which was the hotbed of the Civil Rights in Education Movement; and emerges a world away, in a mosaic of people on cow-peppered Indian streets. This master's thesis is as a tangible fixture of my own words in a realm where greater folks have preceded me and still fallen (far and hard as Icarus) is prideful, exploratory, and ultimately human. The titular pun may be taken more or less seriously.

Oldham, Alexandra; Ryle, Mary-Katherine; "Examination Of Attributions As Moderators Of The Impact Of Past Performance On Self-efficacy Estimates" (Steven Wininger)

Research has established self-efficacy (SE) as a major predictor of performance in athletic and academic contexts. Past performances are one of the most important factors influencing SE. Attributions are —œexplanations about why particular behaviors occurred,â€ and ways people explain their performances influence future expectations. Do attributions about past performances moderate the impact past performances have on SE? The main purpose of this study was to examine attributions as a potential moderator of the impact of past performances on individuals' SE. This study measured students' perceptions of their SE on academic and athletic tasks. Two of these tasks were familiar (math flash cards and basketball shooting) and two were novel (Equate, i.e., math Scrabble and a hand grip task). After an initial practice round, participants were asked to report their SE for successful task completion prior to each trial, and completed an attributional measure after. One hundred eighty

Oliver Butler, Kaitlin; Lancaster, Zach; "Ieee Robot: Layout Optimization" (Stacy Wilson)

The Institute of Electrical and Electronics Engineers (IEEE) hosts a student competition each spring; this year's competition awards points for an autonomous robot that can navigate a course and play four games associated with road trips. The maximum robot size is a one foot cube. The robot must play a Simon Carabineer for 15 seconds, draw —œIEEEâ€ on a Pocket Etch-A-Sketch, rotate one row of a Rubik's Cube 180 degrees, and pick up a playing card and carry it to the course finish. Five electrical and two mechanical engineers formed a team to design WKU's robot. A major engineering challenge presented by the robot lies in the complexity of tools needed to play the games within the size limits. To

optimize the layout, games were paired and tools were placed in various locations on the robot. The number of motors and tool motion were minimized to increase reliability. The final design approaches all games by the same face; some games are played from above using a platform to raise and lower the appropriate tool while others are played at the base. All tools are static until they are to be played, efficiently using the robot's limited energy and space.

Ottersbach, Jennifer "More Than Cookies: Falling Older Girl Retention Rates In Girl Scouting And How Gsusa Councils Are Combating The Situation" (Elizabeth Gish)

This study examine rates of 'older girl' (ages 15-17) retention in Girl Scouts of the USA. Enrollment numbers and troop activity/participation are examined from the Girl Scouts of Kentuckiana Council to assess the reflection of this regional council to the nationwide organization. Benefits such as character building, developing leadership skills, international and domestic travel opportunities, democratic opportunities, and public work or service projects for older girls are described. In comparison to the history of Girl Scouting nationwide, in the past few decades retention rates in Girl Scouts for older girls has significantly declined and various efforts have been made to keep girls interested and active in scouting through their secondary education and perhaps beyond. Professional staff of the organization explain why older girl retention is not only desired but necessary for the success of the organization. Promising practices and attempts to increase older girl retention across the nation are also described.

Owen, Jody; Huang, Xiaoxia "Silvie"; "How Can We Put The " (Jennifer Cribbs)

The purpose of our study was to examine what factors influence the use of technology in mathematics and science classrooms. With the rapid advancement of technology and its integration in every aspect of our culture, it is important that classrooms reflect this trend. We collected data through a survey of 39 middle and secondary mathematics and science teachers in the Midwest region of the United States. Results report basic descriptive data related to technology use in the classroom and a regression analysis looking at predictive factors influencing the use of technology in the classroom. Findings indicate that teachers reported that they used the Internet, calculators and the Active Boards more frequently than other types of technology. In addition, professional development was the only predictive factor for increasing the amount of time teachers use technology as part of their instruction. Implications for these findings indicate that if we want teachers to increase the amount tec

Owens, NaKeya; Doctrow, Jamie; "Effects Of Chronic Sleep Fragmentation On Corticosterone Levels In Mice" (Noah Ashley)

Hair cortisol levels are emerging as an important biomarker of stress in humans and other primates. Multiple studies have shown a significant trend of increased cortisol levels in samples taken from hair grown during a period of long term stress relative to the levels in hair grown during a less stressful period. However, less is known about similar effects in levels of corticosterone, an analogous hormone found in rodents. Chronic sleep fragmentation is a known stressor. This study considers the levels of corticosterone in hair samples from three groups of mice: those injected with corticosterone, those exposed to chronic sleep fragmentation, and those exposed to no external stressor. It is anticipated that the levels in the group subjected to sleep fragmentation will be similar to those of the group subjected to injections, but analysis is ongoing. These results will likely help us better understand the role that sleep fragmentation plays in stress.

Pace, Juliana; Waid, Amanda C.; Williams, DrPH, MPH, Christian L.; "Creating A Care Continuum: An Analysis Of The Kindred/gentiva Merger" (Gregory Ellis-Griffith, PhD, MPH)

Introduction: The Patient Protection and Affordable Care Act (PPACA) was signed in 2010 to reform the healthcare industry. To revise and add certain Medicare provisions, the Health Care and Education Reconciliation Act later amended PPACA. The Bundled Payment Initiative (BPI) of 2013 aimed to: reduce overall costs, encourage the cooperation of doctors, hospitals, and other health care professionals; and to improve care and health outcomes of Medicare beneficiaries. Under this model, providers will receive a bundled payment where reimbursement is based on a defined episode of care. As a result of policy changes, there has been a strategic, competitive response in multiple health care sectors. Acute care facilities have begun to merge with or acquire post-acute facilities, or vice versa, depending on the strength of the facility. One example is the Kindred/Gentiva merger, finalized in February 2015, in a deal valued at \$1.8 billion, resulting in the largest and most geographically diverse home health and hospice organization in the United States. Methods: An operating, strategic, and financial analysis will be performed on both companies, both individually and as the merged pro forma company. Results: Theoretical evidence shows that competitive response mergers would be successful. Success of the Kindred/Gentiva merger will be determined upon further analysis of financial data. Conclusion: The success rate of merging in response to BPI has yet to be determined. The purpose of this study is to use results from a multi-faceted analysis to determine if BPI reactive mergers will be a success or a failure.

Pait, Ryan; Hollyfield, Jerod; "A Miniseries Of Unfortunate Events: Realizing The Full Potential Of Lemony Snicket's Book Series Through Television Adaptation" (Ted Hovet)

Lemony Snicket's A Series of Unfortunate Events, a series of 13 children's books, seemed like it had the potential to become a massive franchise in a similar vein to the Harry Potter film series. Snicket's books feature three plucky protagonists, a sinister villain, and constantly-shifting settings—all elements that could make a successful film series. A film adaptation, titled Lemony Snicket's A Series of Unfortunate Events was made in 2004. It adapted the first three books in the series, and became a moderate financial and critical success. Despite the success, no further films were made. As a fan of Snicket's books, I was disappointed to see the film series end so abruptly. I thought that the episodic nature of Snicket's books would work well as a television miniseries, which became the basis for this project. My project includes two full scripts (adapting two books from Snicket's series) as well as an episode outline for the entire series, and a list of possible production schematics. Introduction and reflection sections will contextualize my project in terms of other book-to-television adaptations (such as "Game of Thrones" and "Sherlock") and allow for personal commentary on my adaptation process.

Patel, Vir "Examining Mycobacteriophage Evolution Through Secondary Structure" (Claire Rinehart)

Bacteriophage are remarkably abundant viruses characterized by replication in bacterial hosts. While these viruses vary widely in their respective bacterial targets, previous studies have found that clear relationships exist between the host specificity of a phage, particularly those classified in the mycobacteriophage group, and its unique evolutionary history. The mosaic nature typical of mycobacteriophage provides significant insight into the relationships between various families of these viruses defined by protein similarity. While the literature is abundant with studies inferring these evolutionary relationships through the primary structures of phage proteins, little is known about how these relationships may be refined and redefined at the secondary structure level, a phenomenon that

has been observed in both eukaryotic and prokaryotic genetic studies. To answer this question, we present PhageSage, a tool that reorganizes mycobacteriophage "families" based on comparisons of predicted secondary structures. By using a clustering method to provide a pairwise comparison of secondary features such as coils, helices, and loops, our easily extendable program presents a new map of mycobacteriophage families that agrees with previous studies while also providing several novel relationships. This information could serve as a powerful dataset in the quest of understanding the host ranges of mycobacteriophage and consequently, the potential therapeutic applications of these viruses.

Payne, Jason; Modi, Tulsi; Waghvani, Hitesh; "Green Synthesis And Evaluation Of Catalytic Activity Of Sugar Capped Gold Nanoparticles" (Rajalingam Dakshinamurthy)

Owing the importance of gold nanoparticles in catalysis, designing them has become a major focus of the researchers. Most of the current methods available for the synthesis of gold nanoparticles (GNPs) suffer from the challenges of polydispersity, stability and use of toxic and harmful chemicals. To overcome these limitations, we present a novel single step, biofriendly process for synthesis of fructose (monosaccharide), sucrose (disaccharide) and raffinose (trisaccharide) capped GNPs, wherein sugar is directly capped onto gold without the use of any secondary capping/stabilizing agent. Characterization of synthesized GNPs was done using various analytical techniques like transmission electron microscope (TEM), dynamic light scattering (DLS), SEM-EDS, and UV-Vis spectroscopy. The synthesized sugar GNPs (S-GNPs) were spherical in shape and in the size range of 10 ± 5 nm. p-Nitrophenol reduction assay was used to evaluate the catalytic reduction activity of various sugar capped GNPs. The effect of temperature and the size of ligand on catalytic activity were also evaluated at different temperature using UV-Vis spectrometer. Further, rate constant (k) was determined followed by its activation energy (E_a) and exponential (A) factor. Results of the study also helped to understand the relationship between sugar chain length (ligand) and catalytic activity. Given to the high activity and stability, S-GNPs might be useful as a catalyst for wide range of industrial and environmental applications. Results of these studies not only provide us a novel synthesis method but also yielded efficient catalytic agents.

Pennington, Hannah; Krishna, Nitin; Eisenberg, Marisa; "Applications Of Latin Hypercube Sampling Scheme And Partial Rank Correlation Coefficient Analysis To Mathematical Models In Wound Healing" (Richard Schugart)

Latin hypercube sampling scheme and Partial Rank Correlation Coefficient analysis (LHS/PRCC) can be used in combination to perform an analysis that assesses model sensitivity over a global parameter space. Through this analysis, the uncertainty of the input parameters and therefore the variability of the model output in response to this uncertainty can be observed. Latin hypercube sampling divides the parameter space into equiprobable regions without replacement, producing a global, unbiased selection of parameter values. For monotonic, non-linear relationships, the correlation between the outputs and parameters can be understood by performing a Partial Rank Correlation Coefficient analysis. This sensitivity analysis is applied to various models describing wound healing. The results of the LHS/PRCC sensitivity analysis are used to assess the biological significance of the parameters in relation to each compartment of the models to further understand their biological implications.

Perkins, Blake; Schafer, Mark; "Preparing A Student With Paraplegia For Health Fitness Specialism Certification: Functional Capacity Evaluation And Accommodation" (Don Hoover)
Section 504 of the Rehabilitation Act of 1973 states that students cannot be denied access to education

because of a disability at any entity that receives federal funding. This law offers fair educational opportunities to qualified students with disabilities. However, for prospective disabled students the physical demands of many professions are often innately limiting. The purpose of this case report is to chronicle areas of need and suggested accommodations for a 23 year old paraplegic student who sought to attain the Health Fitness SpecialistSM (HFS) certification offered by the American College of Sports Medicine (ACSM). A functional capacity evaluation (FCE) was administered on the student. His FCE performance measures were assessed in light of ACSM guidelines regarding essential job functions for working as a HFS. FCE results showed the student was capable of performing materials handling tasks at medium physical demands level, and that the student could perform all necessary non-materials handling tasks. The student needed modifications to perform some essential tasks, such as during execution of graded exercise testing. Interdisciplinary collaboration allowed for successful assessment of functional abilities and accommodation of psychomotor tasks necessary for working as a HFS, thus helping the student reach his educational goals.

Peyman, Caleb "Future Masterpiece: Ridley Scott's The Counselor" (Jerod Hollyfield)

In spite of boasting a cast of big-name talent—Brad Pitt, Michael Fassbender, Javier Bardem, Cameron Diaz, and Penélope Cruz—and having been helmed by Academy Award-nominated, and generally commercially successful, director Ridley Scott from a screenplay penned by Cormac McCarthy, the 2013 film *The Counselor* was a commercial failure upon its theatrical release and was generally panned by critics. My goal is to look at why *The Counselor* might have been so poorly received, but more importantly, to put forth reasons why I suspect that the film will be looked back on in several years and be viewed and appreciated for the intelligent, philosophical, well-crafted piece of cinema that it is. The film subverts expectations, defies the traditional/accepted teachings of good screenwriting and visual storytelling, and presents incisive observations regarding morality, violence, culture, gender, and humanity in an engaging, stylish, and, admittedly, bleak crime thriller. As Scott Foundas, film critic for *Variety*, points out, *The Counselor* “is bold and thrilling in ways that mainstream American movies rarely are, and its rejection suggests what little appetite there is for real daring at the multiplex nowadays.”

Phillips, Jennifer "Rosie The Riveter: The Journey Of An Icon From 1942 To 2014" (Anthony Harkins)

The image of Rosie the Riveter, created by J. Howard Miller in 1942, has become an iconic symbol of feminism for this generation. It portrays a strong, young woman flexing her muscle while looking at the world with a slightly provocative smile, hair pulled up in a feminine, yet no nonsense red polka-dot bandana, with the slogan “We Can Do It!” and it has been used recently by feminists, such as Beyoncé. Of late the image has gone viral on the internet as women from all over the world have posted pictures dressed as Rosie to show their support of equal rights and opportunities for women. Today it seems Rosie was created specifically to visually represent the ideal of equality for women.

My research reveals that the meaning of the image was very different when it was first created and it later evolved to become symbolic of the feminist movement. This essay demonstrates how the image began in a World War II era factory to encourage employees to work as a team. It was then used to encourage women to enter into areas of the wartime workforce formerly reserved for men. It is only in last two decades Rosie began to reemerge to take on the explicitly feminist meanings we now associate her with. My paper establishes how the use of an image can be altered by society’s use to change it drastically from its original meaning.

Piercy, Justin "Tarantino And Feminist Filmmaking" (Jerod Hollyfield)

Known for his recent films including the Kill Bill films and Inglourious Basterds, Quentin Tarantino is recognized the world over by his gritty, violent, satirical, pop culture referencing style. Critics and filmmakers alike, including Spike Lee, have openly criticized Tarantino on his work. In a world ruled by male directors and auteurs, the male gaze and profuse violence seem evident in an excess of films released each year. However controversial the director may seem, Tarantino actually works against the grain in this way. Quentin Tarantino breaks the mold as an exception to the filmmaker bringing power to the white male population. Throughout his career, Tarantino has displayed his belief in the power of strong minorities in film, particularly in regards to women. His display of tenacious, powerful female characters lend proof that Tarantino is, despite the initial first layer of violence and perceived misogyny, a feminist filmmaker. His characters, including Pam Grier as Jack

Potter, Emily Potter "Seeing The Sacred: Community Identity And Sacred Art" (Elizabeth Gish)

Seeing the Sacred: Community Identity and Sacred Art Author: Emily Potter Humanities

(Interdisciplinary) Equipment needed: computer with projector, sound capabilities. Humans across the world use visual means to express ideas that cannot always be expressed with words. Sacred art appeals to our senses and allows us to construct visual narratives of the things that make us human—our hopes and fears, our perceptions of ourselves, and our connections with each other and the world around us. My undergraduate research focuses on the three primary purposes of sacred art: 1) to express our view of the universe and our place within it, 2) to convey our identity as a member of a particular community, and 3) to connect with something greater than ourselves. The scope of my project includes research and image-gathering, the creation of my own paintings inspired by the themes I found in various examples of sacred art, and a community-based art project I directed with a group of middle-school students to teach them the concepts of community, collaboration, and transcendence through visual, hands-on learning. My presentation will consist of an analysis of my work illustrated by photos of my own paintings, the work of other artists that convey the themes of sacred art, and a series of pieces created by the students I have mentored.

Potts, Emily "The Paschal Controversy Revisited" (Beth Plummer)

Whether the Paschal controversy signaled the apparent defeat of early insular Christianity in the British Isles has been widely debated among medieval and Celtic Studies scholars. Kenneth Harrison and Dáibhí Cráin, among others, have argued that the controversy erupted largely due to different calendrical systems. Others, such as Gerald Bonner, have focused on the related issue of Pelagian heresy. For many scholars, however, discussion of the controversy ends with Bede's account of the Synod of Whitby in 664. Such approaches avoid any critical analysis of the post-Whitby cultural milieu that might offer valuable insight into the nature of the conflict. Through a combination of material culture and primary source analysis, this paper will examine a less studied cause of the Paschal Controversy signaled by post-Whitby events. In particular, the Irish sites of Tech Saxan and Mag na Sacsan illustrate cultural exchanges between British and Irish clergy which continued after the Synod of Whitby as the result of English clerical settlement. This paper will juxtapose analysis of these sites and wider insular material culture with a textual analysis of Bede's Ecclesiastical History of the English People to suggest an alternative approach to the Paschal Controversy of the seventh century.

Price, Carson; Heintzman, E.; "Hybrid™ Graphene / Conducting Polymer Multilayers as High-performance Supercapacitors: Layer-by-Layer Assembly via Electropolymerization and Property Characterization" (Sanju Gupta)

Conducting polymers are promising that serve as playground by themselves and as hybrids and nanocomposites with nanocarbons including graphene and carbon nanotubes. A hybrid electrode consisting of graphene nanosheets (supercapacitive) and pseudocapacitive conducting polymers [polypyrrole (PPy) and polyaniline (PANI)] processed electrochemically for intimate electronic contact and covalent interface exhibiting a synergistic effect with excellent electrochemical performance. These hybrid multilayered supercapacitors are constructed layer-by-layer (LbL) in-situ via electrochemical anodic polymerization of polymers followed by electrochemical reduction of graphene oxide (ErGO) namely, (ErGO/PPy) $_n$ and (ErGO/PANI) $_n$, where $n = 1-5$, as potential supercapacitor electrodes for effective energy storage application. These hybrid electrodes not only improved electronic conductivity through intimate contact with the ErGO, but also enhanced chemical stability during the charge-discharge process. We investigated the electrochemical performance with number of bilayers (n) and chemical treatments that may affect the degree of reduction of GO and conducting polymers. We found that they exhibited excellent cyclic voltammogram behavior with gravimetric capacitance of 175 F g⁻¹ peaking at $n = 1, 2$ and at a discharge current density of 0.15 A g⁻¹ that outperformed other hybrid supercapacitors based on conducting polymers and GO. The hybrid supercapacitors maintained their capacity up to 90% over 500 cycles at a current density of 1.5 A g⁻¹. An ac electrochemical impedance spectroscopy is used to determine interfacial capacitance at the hybrid bilayer/aqueous electrolyte interface besides Warburg impedance (ZW) and charge transfer resistance (R_{ct}). Scanning electrochemical microscopy (SECM) is also used to probe and image various surface and interfacial.

Price, Kathryn; Bunch, Justin; Kazaferovic, Sejla; "Isolation And Characterization Of Gansey, A New Member Of The Cluster K Mycobacteriophages" (Claire Rinehart)

Bacteriophages are viruses that infect bacteria and they can be found anywhere a suitable host exists. The purpose of this research was to gain insight into the diversity of the bacteriophage population by isolating and characterizing new bacteriophages from the environment. Mycobacteriophage Gansey was isolated from a soil sample collected from Hodgenville, Kentucky. Gansey's morphology was viewed by electron microscopy, and preliminary information about its DNA sequence was determined by restriction analysis and gel electrophoresis. Gansey phage particles have a 162.4 nm long, non-contractile tail and a icosahedral head with a diameter of 37.6 nm. DNA restriction analysis suggested that Gansey belongs to the K1 sub-cluster of mycobacteriophages and full genomic sequencing verified this. The DNA sequence is 59,708 bp long, and includes a 11 bp 3' overhang (CTCGTAGGCAT). Using DNA Master, GeneMark, Glimmer, BLAST, and HHPRED, Gansey's genome was predicted to have 95 genes and is most similar to other K1 mycobacteriophages JAWS, Adephagia, Angelica, CrimD, Anaya, and BarrelRoll.

Primicias, Jade "Eye Of The Beholder: Surveying The Perception Of Artistic Fusion Across Cultures" (Clifton Brown)

The amorphous genre of contemporary dance holds a newfound place in modern British society in a much different way than is seen in the United States. International artists have influenced dance companies throughout the USA and Britain with choreographic ideas, visions, and insight; companies have taken this inspiration and begun to create new works of art and consequently, new styles of

performance. Here in Kentucky, dancers and audiences alike are less likely to experience and, in return, experiment with the innovation taking place elsewhere, which should not be the case in this day and age. Much of this in-exposure is due to a common adherence to classic techniques and repertoire. Following examples from both British and American dance companies, the student crafted and produced concerts of structured dance improvisation and original poetry in both countries to discover how this artistic fusion was received while simultaneously exposing audiences to the style. Inspiration for the duet, *Beauty Lies* was drawn from the students experience at Harlaxton College, making the content relatable to multicultural audiences. The nature of this project allowed for hands-on research and performance, fostering a better understanding of contemporary dance in different cultures for audience members around the world.

Prince, Seth "The Krantz Crystal Collection In 3d" (Joel Lenoir)

Due to the diversity in learning techniques, educators are always looking to improve the learning process. One such example is the use of physical models of crystal structures to aid students and researchers who learn in a visual and tactile manner. Holding a physical model of the crystalline shape provides a non-ambiguous view into the angles and facets of the crystal. The Krantz Company of Bonn, Germany, generated a set of 956 wood models for crystal study. Various subsets of these models were sold, but research suggests only one complete set remains. Fortunately, the models are documented in text form in a crystal handbook. The goal of this project was to generate SolidWorks models of each of these crystals, then digital models in both STL format (for 3D printing) and 3D PDF (digital visualization) could be generated. The purpose is to broaden the availability of these models to the general educational community. The first step was to interpret the models in a reprint of the original Krantz crystal structure catalog. These were compared to a crystal handbook so that angles and facets could be calculated and then digitally generated in SolidWorks. The models were mathematically based on relational crystal dimensions, allowing for the structure to scale without distortion. Creating 3D models of these crystal structures will greatly improve the ability to understand the possible crystal structures. Although many models were created and confirmed, the process will need to be continued to fulfill the goal of completing the catalog.

Queen, Katherine "Ghanaian (akan) Widows Oral History: Identity Narratives" (Rose Korang-Okrah)

The world is aging at a rapid speed, a speed that many countries struggle to keep pace with. In many developing countries, such as Ghana, gender greatly interacts with the social, economic, and cultural issues to create very different outcomes for male and female's transition into older adulthood. This study explored the growing up stories of Ghanaian (Akan) older widows (50+ years). Four Akan widows were interviewed with the help of a translator. A semi-structured guide was used for the in-depth interviews which lasted between 60 to 90 minutes for each interview. The main purpose of the interview was to find out how each woman had evolved through her span of life and the different experiences they had brought to their current stage in life. The women constructed their narrative identities and evolving story of their life history. Findings from these interviews showed factors such as illiteracy, poverty, caring for multiple children/grandchildren and lack of support from the community.

Quinton, Haley "The Case Of The Disappearing Diamonds: A Sherlock Holmes Story In The Style Of Sir Arthur Conan Doyle" (Rob Hale)

Sir Arthur Conan Doyle's Sherlock Holmes has maintained popularity since his introduction in 1887. I

sought to better acquaint myself with Sherlock Holmes and with Arthur Conan Doyle by writing my own Sherlock Holmes short story. I researched Doyle's biography and writing style in order to emulate him as closely as possible. I did additional research on the Victorian Era, paying particular attention to the language so that this story sounded authentically Victorian. By comparing several of Doyle's own short stories, I was able to find the basic structure of the stories. I plotted my story using this structure as a guide. During this close reading of the original texts, I was able to emulate Watson's voice. My story has Holmes and Watson solving the case of diamonds that have gone missing within a locked safe. With this project, I was able to intimately learn about Doyle, his writing process and style, and examine what has made the character of Sherlock Holmes appealing to the public since his introduction.

Ramos, Colton "Crafting Tools For Video Game Development" (Jeffrey Galloway)

Graphics programming is not only an area of great commercial interest, but also an area of software development with a very high learning curve. This high learning curve acts as a barrier of entry to newcomers in computer science. To shed a more academic light on the code that makes video games and computer-generated imagery possible and lower the barrier of entry for graphics programming, I built a graphics engine based on the popular Simple Directmedia Layer (SDL) development library in C++. Using OpenGL and GL Extensions Wrangler (GLEW) for rendering, the engine currently supports mesh and texture rendering, Lambertian lighting, camera movement and time management systems. These features are highlighted through a demo scene compiled using the engine. Built for PCs, my code base would act as a framework for other 3D applications to be based upon. While building this framework, I also constructed documentation and a development blog to give insight to the techniques and algorithms I used. My source code, development blog, and documentation could give novice graphics programmers the tools they need to begin researching and building graphical applications of their own. In an undergraduate research group I lead at Western Kentucky University, the engine could potentially serve as a great example of how to set up a code base for developing graphical applications. The project source code and documentation are available online as an open-source project for others to use and improve upon via BitBucket.

Ray, Ashton "I Am Not My Hair, Or Am I?" (Ann Ferrell)

Dreads, Kinky Twists, Micros, Lace Fronts, Sew-Ins and more are just a few examples of what African-American women are very familiar with when talking about hair. Natural versus relaxed and good versus bad hair are also topics that can consume Black women and the society that we live in. What is in and what is not, continually a change with the days, seasons, and years. But one thing is for certain hair is very important among African-American women. In this paper I discuss the importance of hair to African-American women including examples of styles that begin in the roots of Africa. How we as black women express ourselves through hair and many times identify with the styles. Reading many articles and talking with friends and family I have gathered information on how they relate to their hair and how the image has affected them in positive and sometimes in a negative light, leading to judgment from others. I believe that it is important for others to understand where the importance began and why we are not our hair but still individuals who may choose our hairstyle as a form of expression.

Richmond, Valerie "A Method For Measuring Contact Pressure" (Chris Byrne)

Experimental measurement of the contact pressure between two solids has traditionally been done using pressure sensitive films. Evaluating the results of these films requires separating the solids. This

research has developed a new approach to directly measure contact pressure while the solids are still touching. The approach uses ultrasound to measure reflections at the two-body interface. Empirically derived relationships between these reflection coefficients and contact pressure are used to establish the pressure distribution across the zone of contact. We use a model system representing the Hertzian contact between a cylinder and a flat, which has elliptical pressure distribution. A particular aspect of this work is the refinement of spatial variation using transducer calibration data. We show how this adjustment can make the measured contact pressure match favorably with the results predicted by theory.

Riley, Benjamin; Lee, Ting-Hui; Stanghellini, Letizia; Shaw, Richard; "Chemical Abundances Of Planetary Nebulae From Optical Spectra" (Ting-Hui Lee)

We present preliminary results from an optical spectroscopic survey of compact planetary nebulae (PNe) in the Galactic disk. PNe are the envelopes ejected by Sun-like stars near the end of their lives. This is an ongoing optical+infrared spectral survey of 150 compact PNe to build a complete database of PN chemical abundances in the Galactic disk. We obtained optical spectra of 26 PNe with the Southern Astrophysical Research (SOAR) Telescope in September 2012 and February 2013. The flux intensities of the emission lines H-alpha, H-beta, [OIII], [NII], [SII], and [ArIV] are measured and reddening corrected, and used to calculate electron temperature and density for each PN. Using these diagnostics, the elemental abundances of He, N, O Ne, S and Ar, were derived. These abundances are vital to understanding the nature of the PNe, their progenitor stars, and the region of the Galaxy where they formed.

Roberts, Michael "Sustainability Incorporated Into Education" (Shahnaz Aly)

The goal of the project was to design a new and sustainable elementary school for the Wayne County Kentucky School System. Research included looking into other schools in the United States and Canada that incorporate sustainability in their schools, not just structural and building materials but ways for the students to learn and interact with sustainability as well. One objective of the project was to make the entire facility, or as much as possible, a place of learning and integration in the classroom and outside. Not only did codes from the IBC have to be followed but also the Kentucky Department of Education's codes for schools. Research was also done in to education of k-2nd grader which led to the integration of things that they are taught at those levels into the building. Meetings were held with two different groups in Kentucky that design schools and ideas were obtained from them. The end user was kept in mind when designing the various spaces in the structure to make for a

Roe, Clarissa; Broder, Brittany; Palmquist, Shane; Andrew, Keith; "Investigation Of Martian And Lunar Regolith Nanocomposites For Planetary Exploration" (Edward Kintzel Jr.)

In the current investigation, we have carried out initial tests on a variety of novel samples of Martian and Lunar Regolith simulants with carbon nanofibers (CNF). Studies into the development of materials for durable constructs fabricated at the Planetary Materials Lab within the WKU Nondestructive Analysis (NOVA) Center may be used as a baseline for future manned exploration of our solar system and beyond. Cementitious samples were prepared with graded carbon nanofiber materials mixed with water at 300K. Initial imaging using the Large Chamber Scanning Electron Microscope (LC-SEM) at the NOVA Center indicates the manner in which the CNF are dispersed with the cementitious matrix. The resulting strength of these nanocomposites based on the steric effect for a variety of CNF has been interrogated.

Comparison of these results with the LC-SEM imaging provides a more comprehensive picture into the development of materials that are strong and durable relative to the harsh environments that exist on other worlds. Future studies will include the use of small-angle neutron scattering to provide independent confirming measurement of the size and distribution of CNF within the cementitious matrices.

Rogers, Barrett "Hearing And A Potential Novel Peripheral Auditory Structure In *Semaprochilodus insignis*" (Michael Smith)

The Weberian apparatus is a distinctive anatomical structure comprised of a set of modified vertebrae found in all fishes within the Superorder Ostariophysi. The purpose of the apparatus is to connect the swim bladder to the rest of the auditory system in order to transmit sounds which are amplified by the swim bladder. The goal of this project is to describe the hearing and anatomy of the peripheral auditory structures of the ostariophysan *Semaprochilodus insignis*. Baseline hearing tests from 100 to 6,000 Hz were performed by auditory evoked potential recordings for *S. insignis* (n=6). Then the same individuals had the gas removed from their anterior swim bladders and hearing tests were repeated. Specimens of *S. insignis* were fixed in 4% paraformaldehyde and then dissected for examination of the swim bladder, inner ear, and potential connections between them. Weberian ossicles were examined more closely in specimens in which the bones had been cleaned. *S. insignis* exhibited a U-shaped audiogram, with sensitivity being greatest at 800 Hz. Following swim bladder puncture, hearing thresholds were significantly elevated, suggesting that the swim bladder plays an important role in sound detection. Dissections revealed a cord of connective tissue attaching the swim bladder to the otic capsule surrounding the ear. We hypothesize that this connective tissue helps transmit vibrations from the swim bladder to the inner and increases hearing sensitivity. This novel connective tissue has not been previously described in fishes.

Rogers, Barrett "The Unique Inner Ear Anatomy Of *Semaprochilodus insignis*" (Michael Smith)

The Weberian apparatus is a distinctive anatomical structure comprised of a set of modified vertebrae found in all fishes within the Superorder Ostariophysi. The purpose of the apparatus is to connect the swim bladder to the rest of the auditory system in order to transmit sounds which are amplified by the swim bladder. The goal of this project is to describe the hearing and anatomy of the peripheral auditory structures of the ostariophysan *Semaprochilodus insignis*. Baseline hearing tests from 100 to 6,000 Hz were performed by auditory evoked potential recordings for *S. insignis* (n=6). Then the same individuals had the gas removed from their anterior swim bladders and hearing tests were repeated. Specimens of *S. insignis* were fixed in 4% paraformaldehyde and then dissected for examination of the swim bladder, inner ear, and potential connections between them. Weberian ossicles were examined more closely in specimens in which the bones had been cleaned. *S. insignis* exhibited a U-shaped audiogram, with sensitivity being greatest at 800 Hz. Following swim bladder puncture, hearing thresholds were significantly elevated, suggesting that the swim bladder plays an important role in sound detection. Dissections revealed a cord of connective tissue attaching the swim bladder to the otic capsule surrounding the ear. We hypothesize that this connective tissue helps transmit vibrations from the swim bladder to the inner and increases hearing sensitivity. This novel connective tissue has not been previously described in fishes. Future experiments will directly test the effect of this tissue on hearing in prochilodids.

Romano, Nicole "Unknown Title" (Jerod Hollyfield)

In this paper I am going to examine the use of politics within the film industry, and how it can affect the way a film is received not only in the United States but as well as other countries. I am going to specifically focus my paper on the new film to cause an uproar of political controversy this year The Interview. While focusing on this movie specifically, I want to explore the political impact, sales and releases in other countries, as well as what exactly is this doing and saying for the film industry within the United States. Also exploring the impact the film has had on the main subject and ridicule within the movie North Korea. Including some older films that have angered enemies of the United States in the past years as well. Films such as: Hostel (2005), The Great Dictator (1940) and Borat (2006). In all these instances film makers made their way to the world of politics, provoking, informing and even poking fun at their enemies, to entertain their audiences. I want to explore the idea that cinema has the ability to shape a nation's identity.

Ronkainen, Millicent; Stryker, Stefan; "Exploring Bacteriophage Diversity By Comparison Of Novel Specimen" (Naomi Rowland)

Bacteriophage are among the most populous and diverse organisms on earth, but despite this, they are still widely unexplored. Our research was part of an effort to explore the diversity of these viruses as well as to explore potential applications such as phage therapy for the common respiratory disease tuberculosis by harnessing the properties inherent to their lifestyle. Two novel specimen were isolated from soil samples collected at different locations in Kentucky and enriched on the host Mycobacterium smegmatis. These new isolates were purified to homogeneity and analyzed by transmission electron microscopy and their genomes were analyzed by DNA restriction analysis and gel electrophoresis. Despite being isolated on the identical bacterial host species, the mycobacteriophages, Electra and Waker2, exhibited different characteristics such as plaque morphology, particle dimensions, and DNA sequences. This evidence suggests that Electra and Waker2 are distantly related yet both belong to clusters within the classification mycobacteriophage as they infect the same host cells but exhibit different characteristics. This evidence also suggests that the bacteriophage population is highly diverse.

Rosenthal, Samuel "Institutional Intersection: Capitalist Edifice And Masculine Construct" (Kristi Branham)

Creating, maintaining, and portraying a dominating disposition and a positive self-identity is, presumably, a priority men hold subject to their own standards, as well as society's standards. It has been imparted on men as early as when infants form their own self-conscience and grasp of reality that to achieve a positive masculine identity, strict and unwavering standards must be met. Methods and traditions associated with constructing and performing masculinity, like strength and libido, are often influenced by institutionalization and societal construct. Capitalism, having been what America needed to flourish in wealth and immerse in freedom, can now be critically studied and considered as another influence that has rooted itself deep into the collective construct of U.S. masculinity. For my research I am looking at the pressure enacted on men from the demands of capitalistic standards and patriarchal institutionalization, and the scrutiny men experience for failing, when in actuality opportunity for success is a scarce prospect. My presentation will consist of the general concept of capitalism, examining the influence capitalism imposes on U.S. masculinity, and argue that capitalism helps preserve negative aspects of U.S. masculinity.

Ruggles, Hannah "Evaluating The Effectiveness Of The "teach-back" Method In Achieving Geriatric

Patients' Understanding Of Their Discharge Instructions From An Acute Care Setting" (Dana Bradley)
A review of the literature suggests that communication between medical care providers and patients is crucial in creating positive outcomes for patients. Discharge staff is responsible for providing patients with information regarding continued care outside of the hospital setting. A discharge method that facilitates a positive transition out of acute care facilities could contribute to reduced readmission rates. The "Teach-Back" method has been found to be effective in providing guidance for patients leaving the hospital. The purpose of this study was to evaluate the effectiveness of the "Teach-Back" method on achieving geriatric patients' understanding of their discharge instructions from an acute care setting. A descriptive explanatory design was conducted with total of 14 patients being recruited by the discharge flow nurses on two units at Baptist Health Lexington. Participating patients were aged 65+, received discharge instructions, and were alert and oriented. An investigator-designed instrument to assess geriatric patients' knowledge of their discharge planning was administered. Items are rated on a 3-point Likert scale: 1 = Do Not Understand, 2 = Somewhat Understand, and 3 = Completely Understand. A dependent t-test was conducted to evaluate the impact of the "Teach-Back" method on geriatric patients' discharge planning knowledge scores.

Ryckele, Meghan "Evaluating The Social Behavior And Activity Patterns Of Clouded Leopards (*neofelis Nebulosa*) At The Nashville Zoo" (Bruce Schulte)

The behavior of the elusive clouded leopard (*Neofelis nebulosa*) of Southeast Asia is not well understood. In captivity, they are prone to exhibit stress-related behaviors and are often aggressive to conspecifics when paired. The present study built on past research by examining clouded leopards at the Nashville Zoo to determine their activity patterns through focal animal observations and their temperament using behavioral reaction tests. Stereotypic behaviors were also evaluated. Twelve leopards (7 F, 5 M) from 1-5 years old were exposed to familiar and unfamiliar objects and people, as well as their reflection in a mirror over nine trials. The males were often more reactive than the females, and the 5 year olds more reactive than their younger counterparts. No noticeable difference was evident between leopards that were or were not paired. The mirror image and unfamiliar object trials brought out the most aggressive and stereotypic behaviors, while the behaviors expressed in the familiar person and familiar object trials were normal and mild. The quality of care at the Nashville Zoo can be considered good because of the few stereotypic or aggressive behaviors exhibited by the leopards. These findings may be helpful for other facilities housing clouded leopards. Near the end of the study, four leopards were transferred to a facility in England; we would like to examine their behaviors at this new facility.

Ryumae, Rena; Oluwadomilola, Filani; Modi, Tulsi; Dakshinamurthy, Rajalingam; "Novel Experimental Procedure For Expression And Purification Of Human Fibroblast Growth Factor-1 And Its Receptor - Relevance In Cancer Research" (Rajalingam Dakshinamurthy)

Fibroblast growth factors (FGFs) comprises of 23 distinct proteins with high affinity towards a proteoglycan: heparin. Biological functions of FGFs are primarily mediated through their interactions with four different fibroblast growth factors receptors (FGFRs 1-4). Structurally, FGFR family consists of three extracellular immunoglobulin (Ig)-like domains (D1, D2 and D3), a transmembrane domain and an intracellular domain with tyrosine kinase activity. The major ligand (FGF) binding domain is the D2 domain. FGF/FGFR interactions trigger intracellular signaling activities that control a range of cellular activities like angiogenesis, cell proliferation, survival etc. Overexpression of FGF prototype human FGF-

1 (hFGF-1) and its receptors (FGFRs) have been associated with the promotion of several types of tumor cells. Hence, hFGF-1/FGFRs interactions can be considered an important target for tumor therapy by designing antagonists capable of modulating their interactions in cancer progression. Therefore we designed a hybrid peptide (GNPSLSWLK named WKU9). WKU9 is similar to the amino acid sequence of the 176-196 regions (D2 domain) of FGFRs 1-4. In order to elucidate the possible molecular inhibition of hFGF-1/FGFRs interactions by the peptide WKU9. Overexpression and purification of the proteins from bacterial hosts was carried out. The purity and native conformations of the proteins was confirmed by SDS-PAGE and fluorescence spectroscopy analysis respectively. Currently, we are in a process of performing various biophysical studies such as biacore, proteolytic digestion assay and protein-NMR spectroscopy to determine the binding affinity of WKU9 to hFGF-1, stability of hFGF-1 in the presence of WKU9 and exact binding sites of WKU9 on

Sadrinia, Cyrus "TiO₂ Nanoparticle-induced Toxicity In Mice" (Nilesh Sharma)

Consumer products containing significant amounts of Ti-nanoparticles include paints, toothpaste, colorants, cosmetics, sunscreens, medicine, and beverages. Ti is generally considered biologically inert, but Ti-nanoparticles were observed to cause significant toxicity in recent cell culture studies. In this study, lab mice were administered repeated intraperitoneal doses of TiO₂ rutile crystals (30-50 nm) at the rate of 333 mg/kg (low dose) and 1332 mg/kg (high dose) for short (5-d) and long (15-d) periods of time. After termination of the experiment, spleen extract and circulating blood were assayed for a range of cytokines using ELISA. A differential pattern of cytokine production was observed in short and long treatments. Significantly reduced levels ($p < 0.05$) of proinflammatory cytokines (TNF- α , IFN- γ , IL-1 α , IL-1 β and leptin) were found in the serum from exposed mice, compared to control, after 5-d exposure, but no changes were found in the spleen. In long

Sahare, Swapnil; Rathnayake, Hemali; "Cost Effective Carbon-based Solar Cells" (Hemali Rathnayake)

Solar cells produced based on organic semiconducting materials such as P3HT:PCBM are growing into a promising inexpensive alternative to silicon-based solar cells due to factors like ease of fabrication, processing, lightweight and compatibility with flexible substrates. So far the most efficient architecture for polymeric solar cells is the bulk heterojunction (BHJ). Here, the active layer is made by mixing an electron-donating and an electron accepting component. P-type polymers like the well known poly(3-hexylthiophene) (P3HT) are commonly used as the electron donor while n-type soluble fullerene derivatives have been shown to function as very efficient acceptor molecules. However, narrow light absorption range of wavelength limits the device efficiency. Our research work focuses on bulk heterojunction solar cell with tandem configuration. Tandem polymer solar cells can provide higher power conversion efficiencies (PCEs) than single junction cells because the range of absorption sp

Sarkar, Debadrita "Cloud Computing: Storage And Interface Design" (Michael Galloway)

Cloud computing is a technology which is gaining its popularity rapidly. In the current time most of the data transaction are moving to cloud, for example, Facebook, Netflix, Instagram and many more other renowned companies. The main advantages why cloud is being accepted throughout the world because of its location independent accessibility, cost efficiency, automatic software integration etc. More and more people starting to work in cloud, more the problems we are facing. Available limited amount of storage space is one of the biggest problems cloud providers have right now. The hardware called data centers stored data physically, and are located in different areas. No cloud platform offered via

providers or directly to customer can ignore the value of high performance, scalable and low cost data storage. Due to the limited hardware storage space of the data centers, it is not possible for the providers to offer a large amount of space in a very low cost. My research goal is regarding cloud storage and my aim is to develop a private cloud and learn its pros and cons, then I will try to find a way to virtualize a small storage space into a larger one. In the process I am hoping to find a way to make a low cost large storage space available to the user. And also I will research about the possible way to access a cloud account offline, which is not efficiently available right now.

Schaedig, Nicholas "Snow Walking In Silence: An Inquiry Into The Role Of Aesthetics And Identity, Shaping Snowshoe Use In The North Woods." (Michael Ann Williams)

In this paper, I use a pair of wooden snowshoes I received as an heirloom/coming of age gift to link the changes in how these snowshoes were used throughout their lifespan to the process members of the community have engaged in to author and re-author their own story. As the utilitarian function of these snowshoes has become more ambiguous, its users have re-negotiated its role in their lives. I rely on participant interviews, personal experience and critical reading to address several theoretical issues. The participants work to re-assign function and aesthetic value to a desired object and Katherine Young's work in Aesthetic Theory frames the questions I ask of this cultural process. A close reading of both Young's work and the snowshoes themselves reveals that not only do the snowshoes themselves have an aesthetic dimension, but "Snow Walking" as an activity also involves its own aesthetics, of which gear is a part, and that those choices reveal more about the extent to which this community is engaging in articulating a vision for Mary Hufford's Alternative Modernity's. This research adds to Folkloric dialogues regarding traditional roles in articulating these maternities, and the role of auto-ethnography in tourist landscapes.

Schnell, Mallory "A case study analysis of the 4-5 December 2002 severe ice storm across the southeastern United States" (Joshua Durkee)

On record, one of the most crippling ice storms to hit North Carolina took place 4-5 December 2002. Heavy snow and sleet accumulated across the mountains, while freezing rain and rain left behind considerable impacts across the Piedmont and Coastal Plain regions, respectively. The purpose of this study is to investigate the synoptic and mesoscale dynamics of low-level cold-air damming along the Appalachians that led to the outcomes of this event. After analyzing North American Region Reanalysis data via the Unidata Integrated Data Viewer, evidence of a low-level cold-air wedge and dual surface low pressure system combined to produce a wintry mix of precipitation that downed power lines and paralyzed cities for days after the storm. The dynamics of this particular cold-air damming event played an important role in producing up to an inch of freezing rain with additional snow and sleet accumulations across the North Carolina Piedmont. While cold air damming is not unusual in this part of the country, the 4-5 December 2002 Southeastern US ice storm was an anomalous event that the current study seeks to provide a better understanding of.

Schooler, Mitchell "The Effects Of Glyphosate-based Herbicides On Amphibian Morphology, Escape Speed, And Mortality" (Michael Collyer)

There has been much recent interest in the effect of herbicides on larval amphibian development. While the results from different studies are varied, there is a general consensus that herbicides affect the developmental process of larval amphibians, leading to increased mortality and malformations. It is

though that such outcomes can lead to population crashes, especially in environments where amphibians co-occur with predators. The mechanistic explanation is that altered morphologies can impinge swimming performance, making escape from predators less efficient. Furthermore, it is unknown if different brands of herbicides affect morphology and escape speed similarly. I analyzed morphological data obtained from larval salamanders reared in aquaria with different brands of herbicide added. I also analyzed swim speed data from the same salamanders. I found that head shape and tail shape were highly correlated, that the shapes were significantly different among treatments, but morphology and swim speed were not correlated and only one type of herbicide had a negative impact on swim speed. Thus, it appears that impartial selection of herbicides can have varied consequences in nature. The results are discussed in light of amphibian life history and conservation implications.

Scott, Derek "From Civil Rights To Economic Rights: Martin Luther King And The Poor People's Campaign" (Patricia Minter)

In the spring of 1968, Dr. Martin Luther King Jr. and the Southern Christian Leadership Conference planned to bring thousands of the nation's poor to live in a constructed shantytown on the National Mall in Washington D.C. They planned to demonstrate and use nonviolent civil disobedience to force the federal government to respond to the plight of the nation's poor. Despite many setbacks, hostile opposition, and the death of the plan's chief advocate, SCLC proceeded with the Poor People's Campaign in dedication of King's last dream: to "øgo for broke" in forcing America to come to terms with its internal contradictions of values and priorities. This paper examines the Poor People's Campaign and the problems that led to its ultimate failure, such as the strong anti-communist opposition in the mass media society, as well as the internal conflicts and adversity of the campaign's organization. Using both primary and secondary sources, this paper shows how ideas and attitudes changed after the minor successes of the Civil Rights Movement, which made it impossible to develop a successful coalition for economic justice in America.

Scott, Julie "Forensic Investigations Of Gunshot Residue On Bone Using The Large Chamber Scanning Electron Microscope (Ic-sem)" (Edward Kintzel)

Initial forensic investigations of gunshot residues on bone have been carried out using the Large Chamber Scanning Electron Microscope (LC-SEM) at the WKU NOVA Center. Analysis of residues is of foremost importance in forensics. Currently, there is limited research that has been performed on gunshot residues on bone after decomposition. To facilitate the present investigation, a combination of high resolution imaging using back-scattered electrons (BSE) and energy dispersive x-ray spectroscopy (EDS) in variable pressure mode using the LC-SEM was carried out. Gunshot residue from several different common caliber handguns (.22, .380, .44, .45 and .9mm) using full metal jacketed ammunition at distances from point blank range to six feet in increments of 1 foot were conducted. These studies illustrate the power of the LC-SEM as a tool for forensic investigations. Further, these initial studies can be used in the development of a forensic knowledgebase for law enforcement agencies.

seethi, venkata sravani "Changing Population Dynamics In The World From 1972 To 2012 And The Projections For 2030" (elmer gray)

World population is projected to increase for the foreseeable future. However, a few countries have a declining population growth rate, and a few have a sustained growth rate. The change in population

dynamics is a growing concern. Human population size is a function of birth rate and death rate, which are changing in most populations. The present study was conducted to compare the dynamics of populations that have a decreasing growth rate to those with a sustained increasing growth rate. Population profile data were taken from the World Factbook (Central Intelligence Agency), which included longitudinal information on population size, birth and rates, life expectancies, and annual population growth rates. The results show that there is a shift in the population from the younger to an older age group, reflecting a decreasing death rate and increasing life expectancy. The average annual population growth rate for 10 countries decreased from 1.555 in 1972 to 0.424 in 2012, whereas it sustained at rate of 1.452 for 10 countries. The average birth rates for both sets of countries showed a decrease from 1972 to 2012. The death rates showed a decrease in the sustained population growth set, whereas it remained at an average of 8.659 with a decreasing population growth rate. The average life expectancies showed an increase in both sets. These changes are critical and require adjustments in health care systems and general economic policies.

Sehgal, Ripa "Reactions Of Oxaliplatin Analogs With Dna Nucleotides" (Kevin Williams)

Oxaliplatin is one of three FDA-approved platinum anticancer drugs. Oxaliplatin has a 1,2-diaminocyclohexane "carrier" ligand that remains attached to the platinum throughout its biological reactivity and an oxalate "leaving" ligand that is replaced by protein or DNA targets. Reaction with DNA occurs primarily at guanine residues and secondarily at adenine residues. We have prepared oxaliplatin and a close analog containing two methyl groups to increase the size of the carrier ligand and have reacted each platinum compound with both guanine and adenine nucleotides. These reactions have been characterized by NMR spectroscopy over time to observe the formation of products. Guanosine 5'-monophosphate (5'-GMP) reacts with both compounds to form one dominant product; the product appears to have two 5'-GMP residues coordinated to the platinum, suggesting that reaction of the second 5'-GMP is faster than reaction of the first. When adenosine 5'-monophosphate (5'-AMP

Sewell, Kyle "The Future Of Film Advertising And Marketing: Adapting A Classical Approach Into A New Technological World" (Jerod Hollyfield)

Trying to catch up to an ever technologically changing world, the Film industry is forced to provide new and integrative ways of advertising films. A paper titled "Current Trends in the Marketing and Promotion of Movies Using Social Media" (2012) claims that moviegoers related more to the films website rather than social media. During the time of this research social media was still on the rise and can now greatly help the popularity of a film. The integration of social media advertisements will help the increase the popularity for future films. In this paper, I will discuss and compare traditional ways of advertisements verses newer and contemporary ways of catching a viewers attention. In order to do this I will use different films and their marketing strategy to provide examples of what seems to work and what does not. In doing so, I will use the marketing strategy of the new blockbuster film Jurassic World to show the future expectations of film advertisements. Furthermore, I will use the same franchise to show how a film can gain popularity over the years (I will also compare other franchises and how they have lost popularity).

Shah, Jimmy; Ellis Griffith, Gregory; Douglas, Breion; michimi, akihiro; carter, daniel; hunt, mathew;
"The Influence Of Education Level, Income And Provider Density Among Children Visiting A Mobile

Dental Unit In South Central Kentucky" (Gregory Ellis-Griffith)

Background: Dental caries is the single most common chronic childhood disease in Kentucky affecting 20% of preschoolers, 50% of second graders, and 75% of 15 year old. Dental caries, also known as tooth decay, occur when bacteria from salivary glands produce an acid to breakdown food, and if this acid is not cleaned off teeth it destroys the tooth enamel. Result Objective: To describe and assess the influence of sociodemographic factors on children (age 6-15) who received oral examinations provided by the Mobile Dental Unit (MDU) operated by the Institute for Rural Health (IRH) in South Central Kentucky between 2006 and 2011. Analysis: The study focused on the possible relationship of socioeconomic status (i.e. average income level in household income, average educational level) and access (number of dental providers in a service area) on the dental caries status of children. Study subjects were children (age 6-15) who received oral examinations provided by the Mobile Dental Unit (MDU) operated by the Institute for Rural Health (IRH). Principal Findings: With preliminary analysis, we found that provider density and education level may have an indirect relationship with the average number of caries per visit, while median income may have a complex relationship with the average number of caries seen. Conclusions: The availability and access to dental providersâ€™ maybe a key determinant in reducing the caries rate in children. Future work is needed to identify the possible relationship between provider density and educational level on dental caries in children.

Shannon, Michael "The Influence Of Business Over Art" (Jerod Hollyfield)

The Influence of Business Over Art by Michael Shannon The creation of Youtube in 2005 made film an easily accessible medium for filmmakers and viewers alike. Since then, it has only gotten easier for videos and information to be shared through the internet on an international level. However, in recent years, films like The Interview (Goldberg and Rogen, 2014) and Pyongyang (Verbinski), a North Korea based film, have been made into international acts or completely shut down, respectively. While this form of information and film sharing has proven to be largely positive in that it allows people around the world access to films and ideas they otherwise wouldnâ€™t have access to, the film world is being used as a means for terrorists to hinder creativity. It has not helped that the government has not supported the rights of artists. Safety is being used as the primary reason to stop these films. Threats and fear are turning the film world into a regulated industry and restricting creati

Sharma, Ananya; Srivastava, Ajay; "A Drosophila melanogaster Model To Study Silver Nanoparticle ToxicityA" (Ajay Srivastava)

Silver nanomaterials are being widely used in a variety of consumer products such as food, medicine, and cosmetics. Recent cell culture studies indicate that silver nanoparticles (AgNPs) can enter cells and interact with DNA or cellular proteins to produce harmful effects on human health. To better understand the effects of AgNP exposure on an intact organism, we utilized the genetic model Drosophila melanogaster. Experiments were designed to study the distribution patterns and effects of 60, 40, 20 nm size AgNPs on development and longevity of Drosophila melanogaster. This research suggests that adult flies exposed to 60 nm AgNPs experience a reduction in life span. ICP Mass Spectrometry analysis of larval tissues exposed to 60 nm AgNPs demonstrated a significant accumulation of nanoparticles. Studies of 40, 20 nm size AgNPs on fly life span, accumulation patterns in larvae, and hemocyte population are in progress.

Sheinidashtegol, Pezhman "Cloud Security" (Michael Galloway)

Cloud technologies have proved affordability, scalability, disaster recovery, and quality of service. Moreover, many organizations are migrating from traditional web servers, database servers, and network to cloud services in order to make use of its advantages. However, the concern of a data breach has been increasing. Criminal operators (hackers) are becoming more interested in being able to penetrate cloud services. When successful, varying amounts of private information can be accessed. Some cloud security issues are from the very nature of cloud technology, like multi-tenancy. This is resulted by nature of cloud customer's data coexisting on shared physical resources. Some other issues are not unique to cloud computing. These issues are mostly general Network security problems. The focus of this study is on the precise definition of cloud security issues and breaches. We first give an overview of all the security problems.

Shelton, Anna "Funding In The Film Industry" (Jerod Hollyfield)

Anna Shelton Funding in the Film Industry As a whole, the film industry is widely known for the "Hollywood Appeal" that relies heavily on its high-budget, glossy, and over-produced aesthetic production choices. To the non-movie enthusiast, films are created by large corporation studios backed by major investors with a return of millions at the box office. Other studios are smaller, and less well known than their largely well-funded counterparts. My argument states that smaller independent studios not tied to major investors are a more suitable choice to support than the large Hollywood machine-made movies that draw viewers with cheap gimmicks. Some of these studios have been operating under the radar for decades, but have their small following of fans that keeps them afloat. I hope to go in-depth and analyze just where the money is coming from and where it's going when people or other agencies decide to invest their dollars into a project. How much is usually budgeted f

Shepherd, Kalyn; Cash, Lindsey; Hancock, Shane; "An Examination of Pacing Training for a Two Mile Run in ROTC Cadets" (Steven Wininger)

The purpose of this study is to examine the efficacy of a training program designed to teach ROTC cadets to better regulate their pacing while completing the two mile run for the Basic Training Physical Fitness Test requirements. The training is based on research on attentional focus and running. Participants are being taught to utilize physical symptomology (e.g., breathing rates, muscle fatigue) to select optimal pacing. They are also being taught to use adaptive self-talk and attend to other task-relevant stimuli while running (e.g., goals, strategy, time splits). The end goal is an improvement in performance for the two mile run. Working memory will be examined as a potential moderator for training effectiveness. Participants consist of volunteers from Western Kentucky University's ROTC program. An initial testing will be conducted for all participants. Next, half will be assigned to treatment I and half to a wait list control group. Treatment I participants will attend three

Shircliff, Molly; Cox, Del; "Performance Prediction Of Drying Process In Clothes Dryers Using Multi-physics Simulation Environment" (Farhad Ashrafzadeh)

The clothes dryer is the second highest consumer of electricity among household appliances in the U.S. Few improvements have been made to the overall design of dryers since the 1970s. For this reason, there is a large region for energy efficiency research in domestic clothes dryers. In order to effectively and accurately test efficiency and design of new prototypes of the dryer, a mathematical model for the drying process as well as its numerical simulation are developed. This model captures the multi-physical nature of the drying process, specifically its heat and mass transfer behaviors. The model is then

validated experimentally in order to predict the dryer's performance under various conditions. This model provides a foundation for further research on energy efficient and eco-friendly clothes dryers (E2 Dryers). The multi-physics simulation software, called Dymola, will also be assessed as a simulation tool and as a potential addition to the curriculum as a source of an integrated research and education environment for STEM programs.

Siers, Megan "In Name And Deed: A Rider's Tale" (David Bell)

My goal in writing a book is to hone my skills as an author and to eventually seek publication. This love of writing has been something I've wanted to pursue for many years, and thanks to being allowed to use my book as my Honors thesis, I was finally able to complete my manuscript. Spanning over 500 pages, *In Name and Deed: A Rider's Tale*, follows the journey of one dragon and his rider as they attempt to protect their kingdom and those they love from a threat that wants to destroy everything they hold dear. I explore concepts such as the boundary between reality and possibility, the different bonds formed in a person's life, and what it truly means to be human. The resulting poster showcases some of my favorite scenes and a possible cover for my book. Along with the poster, I would have an excerpt to distribute and would be able to answer any questions regarding its or the book's contents.

Simpson, Brittani "An Exploration Of Beginning Pre-service Teachers' Concerns About Being An Educator In Today's Society" (Lisa Duffin)

In this mixed methods study, beginning pre-service teachers (PSTs; n = 77) were asked to describe in an open-ended statement, their biggest concern(s) about being an educator in today's society. Using qualitative and quantitative analyses, 18 different concerns were expressed by the sample with the highest proportion of concerns being: effective use of teaching methods (16.3%), motivating students (12.5%), and employment (10.6%). Different trends in the data emerged when quantity of quality field experiences (i.e. PST had designed and taught at least one lesson in the field during teacher preparation) were taken into consideration. PSTs with quality field experiences were more "self-focused" in their concerns (controllable); while PSTs with no quality field experiences were more "outwardly-focused" (non-controllable). Implications will be discussed.

sivek, nick "The Underlying Dynamics Of Student Engagement On Thesis Completion" (Betsy Shoenfelt)

Engagement is an increasingly important construct in organizational and educational settings. Research indicates that engagement is positively related to satisfaction, commitment, and performance in the workplace. This study investigates the underlying dynamics of individual motivational constructs that lead to engagement in the thesis project and, ultimately, to more effective completion of the thesis (e.g., timeliness and quality of the thesis). The study includes four key constructs identified in applied research in positive psychology, Core Self-Evaluations, Self-Determination Theory, Psychological Capital, and Flow. These constructs have empirically demonstrated relationships with positive work outcomes, but have not been investigated together in the academic context of thesis completion. Using honors undergraduate and graduate students with a thesis requirement, online questionnaires were completed and analyzed using multiple regression techniques. In addition to engagement, outcome variables included time spent on thesis and final GPA. The results of this study will provide very practical information about creating the engagement in thesis work that will increase the likelihood of on-time completion of quality thesis that are more likely to be accepted for presentation and/or publication. In addition, skills developed and used to complete a thesis have been empirically linked to skills required

for success in the workplace.

Sizemore, Alex "An investigation of the 9 May 2014 severe storm macroburst over Evansville, IN" (Joshua Durkee)

On 9 May 2014, a particularly dangerous severe thunderstorm with damaging winds and hail produced over \$60 million in damages, knocked out power to over 50,000 residents, and uprooted or damaged thousands of trees across the Evansville, IN area. Wind gusts measured as high as 89 mph at the Evansville airport, with other gusts estimated up to 120 mph by National Weather Service damage surveys. Initial inspection pointed to the likely cause of this event as being a tornado, but was later determined to be a macroburst – a severe convective downburst of wind and precipitation. Since there are no studies that show the atmospheric variables that led to this unusual event, the probable causes are unclear. The purpose of this study was to provide insight into this event with a thorough atmospheric analysis of variables conducive to these devastating outcomes. Software such as Integrated Data Viewer and GR2Analyst were used, as well as atmospheric and radar data from the National Center for E

Sklenar, Allison; Mienaltowski, Andrew; "Fast Faces: Perceiving Rapidly Presented Faces" (Andrew Mienaltowski)

Emotional stimuli are salient and capture attention. The priority given to emotional information often results in better processing of emotional stimuli. This is particularly true of human faces, and can be largely attributed to interconnections among the amygdala, fusiform gyrus, and visual cortex. The attentional blink is a phenomenon in which a target is not detected when it follows shortly after another target in a rapid serial visual presentation of two target items among a number of distractor stimuli. Emotional stimuli have been shown to enhance or attenuate the attentional blink. Many of these studies use schematic faces as stimuli, which may not have the same impact as pictures of actual faces. The current study uses pictures of positive, negative, and neutral human faces as stimuli to examine the attentional blink in younger adults. Research suggests there is a negativity bias in younger adults such that younger adults allocate more attention to negative stimuli, prioritizing negative information. Therefore, it is expected that negative expressions will have a greater impact on the attentional blink. These results could lead to a better understanding of attention allocation and information processing, as well as of the efficacy of using schematic faces in perceptual research.

Smailhodzic, Armin; Taylor, Morgan; Hahn, Lance; Womble, Phil; Gonzalez, Jennifer; "A Cyber Social Model For Coupled Spatial And Temporal Threshold Memes" (Keith Andrew)

We are tracking the transmission of cyber information through social media events above a critical threshold level. During an active crowd surge, similar to the Hong-Kong political unrest or Arab Spring social activity, data can be analyzed via data mining of active Twitter accounts. Using selected word memes we search the Twitter database for indications of activity, unrest, and transport as indicators of possible life altering events such as the initiation of a riot. Memes of interest relate activity to location and spreading which are coupled to the density of Tweets and re-Tweets. The meme spreads through the community of social users in a fashion similar to a nonlinear diffusive logistic model of wave propagation. The discrete version of the information model consists of nonlinear patterns in Spy and Cobweb plots. We model the spreading of the information as a system of PDEs with a projective subspace isomorphic to a modified Tweet-Erase-Retweet (TER) system of three coupled no

Smith, Autumn; Grubbs, Scott; Meier, Albert; "Asiatic Clam Food Web Ecology: An Experimental Transplant Approach In A Karst Riverine System" (Scott Grubbs)

Asiatic clams are filter-feeding habitat generalists. Carbon isotopic composition ($\delta^{13}\text{C}$) of Asiatic clam body tissue was compared between reaches of Kentucky's Green River that differ in macroalga proliferation. Asiatic clams from an upstream reach with little macroalga were translocated to a downstream reach with high macroalga levels. Individuals from both reaches were placed in mussel silos in the same downstream reach in autumn 2012 and again in 2013 for 77 and 119 days, respectively. Flow during 2012 consisted of no high flow events until late autumn. Flow patterns in 2013 were consistently higher and more variable. In 2012 the upstream Asiatic clams were ^{13}C -depleted over time compared to no temporal change in the downstream Asiatic clams. The trend was opposite in 2013. Upstream Asiatic clams were more ^{13}C -enriched over time whereas, again, there was no temporal change in the downstream Asiatic clams. Estimated dietary contributions of basal resources using IsoSource found between-year trends that suggested that macroalga fragments may represent an important food component during years with low flows and dense macroalgal growth.

Smith, Erik "Teleconnective Analysis Of Winter-season Variability In The Ohio Valley." (Gregory Goodrich)

Winter-season temperature and snowfall are highly variable in the Ohio Valley. This variability leads to uncertainty for decision makers with seasonal preparations. Several well-known teleconnections are known to significantly influence winter weather across the eastern United States. However, the Midwest has weaker correlations to these teleconnections, making forecasting with these processes more of a challenge. This research uses the Accumulated Winter Season Severity Index to quantify the most prolific winters in the Ohio Valley. Multiple teleconnections, such as the North Atlantic Oscillation and East Pacific Oscillation have been used to determine the atmospheric alignment most conducive for extreme winter weather in the Ohio Valley. A synoptic scale blocking pattern most favorable for extreme cold and snow was generated to provide a template for future forecasting of similar events.

Smith, Jordan "The Wrong Propaganda" (Brad Pfranger)

Many incorrect assumptions have been made about Clint Eastwood's newest film about the late Navy SEAL, Chris Kyle. Michael Moore has called it "cowardly." Seth Rogan compared it to the scene in Tarantino's *Inglorious Bastards*, where they are celebrating the film of a Nazi sniper killing Americans. Other celebrities and critics like Bill Maher have also been critical of this film, comparing it to pro-war propaganda. This could not be farther from the truth, however, as Eastwood himself even claims it to be the exact opposite. In fact, he was actually very adamant against the War in Iraq. This film was not intended to promote Islamophobia or a pro-war ideology. It was created to show the horrors that war can cause to life, love, family, and mental behavior. Are the critics correct? Was Chris Kyle some kind of psychopath patriot? The answer is actually "yes." However, that does not make this film propaganda for the military. Clint Eastwood said, "The biggest antiwar statement any film can make is to show the fact of what [war] does to the family and the people who have to go back into civilian life like Chris Kyle did."

Somers, Lucas "Abraham Lincoln's White House Funeral Dream" (Glenn LaFantasie)

Decades before Freud revealed his revolutionary dream theory, Americans became fascinated with the

reported dreams of their greatest hero, Abraham Lincoln. At least a half dozen dreams and visions have been ascribed to the Sixteenth President, but the one that is the most disturbing is also the one whose legitimacy is most doubted. Lincoln's dream of his own funeral in the White House is found in Ward Hill Lamon's Recollections of Abraham Lincoln, published by his daughter, Dorothy Lamon, in 1895, two years after his death. Variant versions of the dream appeared as early as 1874 and received circulation in newspapers and journals by the mid 1880s. Recently, historian Jonathan White has doubted Lamon's credibility because he did not actually write Recollections, and asserts that Lamon's daughter copied the dream from earlier versions and embellished it. However, Lamon wrote an article that circulated newspapers in 1887 about Lincoln's dreams and visions, and he had previously completed a manuscript volume of a Lincoln biography that was never published, which included a different version of the dream. Because this manuscript version can be connected to earlier stories, Lamon's credibility as source and the legitimacy of the dream could be restored.

Soper, James "Public Relations Campaign: The Importance Of Affordable Housing" (Vicki Bagwell)

As a way to encourage participation in a movement against a long-held issue with broad impact yet little reform, this compilation describes the processes of research, planning, organizing, implementing, and evaluating an effective awareness, public relations campaign on homelessness and/or homeownership by breaking down each step in detail. These details include: my experience as a public relations coordinator for Home Matters doing a similar campaign, professional advice from individuals considered to be "experts" in their various careers, and applicable samples of work. This compilation's purpose is to provide individuals and organizations with the knowledge and skills to conduct an effective campaign to reduce homelessness and/or increase homeownership among U.S. residents. Therefore, lack of experience or the absence of a public relations person will no longer hinder anyone from adopting the movement in helping everyone achieve homeownership and to finally end homelessness.

Spraggs, Mary; Gibson, Steven; "Constraining The Physical Properties Of Interstellar Gas Clouds"
(Steven Gibson)

The interstellar medium (ISM) is the dynamic system of gas and dust that fills the space between the stars within galaxies. Due to its integral role in star formation and galactic structure, it is important to understand how the ISM itself evolves over time, including the process of cooling and condensing required to form new stars. This work aims to constrain and better understand the physical properties of the cold ISM with several different types of data, including large surveys of neutral atomic hydrogen (HI) 21cm spectral line emission and absorption, carbon monoxide (CO) 2.6mm line emission, and multi-band infrared dust thermal continuum emission. We are developing an algorithm that identifies areas where the gas may be cooling and forming molecules using HI self-absorption, in which a cold foreground HI cloud absorbs radiation from warmer background HI emission, and analyzes the HI spectral line in parallel with the CO and infrared data. From these inputs, the algorithm can determine the gas temperature, density, molecular abundance, and other properties as functions of position.

Stellaccio, Anthony "Lithuanian Folk Pottery In Context" (Ann Ferrell)

Supported by grants from the US Fulbright program, the American Ceramic Circle, and the Lithuanian Foundation, I conducted an in-country study of Lithuanian folk pottery over the course of several years. This study begins with the advent of ceramic production in the East Baltic region (ca. 5500 BCE), traces the aesthetic and technological lineage of Lithuania's folk pottery and identifies a number of

influential socio-economic, political, and cultural events in its development. In this sweeping review I argue for both a distinct period of renaissance in Lithuanian folk pottery production and identifiable aesthetic tendencies that help trace the tradition's evolution and devolution in the changing historical milieu.

Stone, John "Hollywood's Shifting Priority" (Jerod Hollyfield)

Hollywood is adapting. Since the beginning of Hollywood the American film industry has focused on cultivating content for the consumption of American movie goers. This is no longer the reality. Gone are the days of filmmakers and studio executives tailoring their product predominantly to domestic audiences in the United States. International box-office revenue has become a major factor influencing most major blockbusters in today's industry. International markets outside the United States such as Russia and China have grown to challenge and even overtake American audiences in terms of their ticket buying profit supporting influence. According to the Motion Pictures Association of America (MPAA) seventy percent of ticket sales now come from international markets. As a result, Hollywood has shifted style and altered prior business plans in order to incorporate into their product a wider composition of cultures, ideas, and styles not directly tied to the wants or expectations of Am

Sullivan, Zachary "Forecast Verification For North American Mesoscale (nam) Operational Model Over Karst/non-karst Regions" (Xingang Fan)

Karst is defined as a landscape containing especially soluble rocks such as limestone, gypsum and marble which overtime develop caves, vertical shafts, underground water systems and sinkholes through the dissolution of rock. The cavities and voids within a karst system effect the hydrology of the region and therefore which also influences the soil moisture the region. Recently, the influence karst has on the atmosphere have come into question with such extreme weather events as the May 1st- 2nd, 2010 floods in the Tennessee/Kentucky regions. For this study, five years of forecast data using the North American Mesoscale (NAM) operational model was used in order to check its performance over both karst/non-karst regions. The Equitable Threat Score (ETS), Frequency BIAS (fBias), and Root Mean Square Error (RMSE) scores were calculated and averaged for forecasted precipitation over 13 regions to check model performance with standardized data used to eliminate error from varying climates.

Sun, Qinglong "Improving Medical History Collection Using Greedy Topological Sorting" (Guangming Xing)

The aim of this project is to develop a user interface friendly framework with Greedy Topological Sorting method to improve medical history collection. To manually collect medical history data is relatively complex process, clinics and hospitals start seeking more efficiency way to collect medical history data, web application is the first choice nowadays. Instead of building up a new interrogation web application every time when it is needed, based on Greedy topological sorting method we develop a framework which could help the users to build their own web applications without any computer science background. After a user filling the interrogation content, this framework will automatically generate the corresponding web application as a tool for medical history interrogation collection purpose. Because graphics are more straightforward for humans than other forms, the force directed graph has been chosen as model in this framework. By developing this framework, it provides a high performance platform which will make medical history collection more efficiency.

Taylor, Beth "Methods Required For Writing Successful Grant Proposals For Religious Organizations" (Jeffrey Rice)

Religious organizations rely upon the generosity of their patrons and other outside sources, such as grants, in order to accrue appropriate funding to remain in existence. Without grants to provide funding, these organizations would be unable to operate and beneficially impact their surrounding communities. This study is an investigation of the techniques required in grant proposal writing to allow religious organizations to obtain the funds that they need. Examining the difficulties of writing grants for religious purposes through several individuals familiar with the topic and through additional research, the appropriate method for acquiring grants can be determined. Based upon these findings, grantors do not often wish to provide funds to religious organizations, meaning that these organizations must be aware of rhetorical strategies that will enable them to receive funding regardless. These results will allow not only religious organizations, but also any other organization or individual be aware of the fine details that make a grant proposal successful.

Taylor, Casey "The Disaster At Gallipoli" (Beth Plummer)

“The Disaster at Gallipoli” explores the failed naval campaign of World War I that would severely damage the reputation of British Secretary for the State of War-Lord Kitchener and force the resignation of First Lord of the Admiralty-Winston Churchill. The Campaign was designed to use the power of the British Navy to destroy the antiquated fortifications along the Dardanelles Peninsula and take Constantinople from the Ottoman Turks. Taking the peninsula would serve two purposes. First, capturing the Dardanelles would connect the Mediterranean and Black Sea and the Allies would be able to reinforce their Russian counterparts and open up the “soft underbelly” of the Central Powers to renewed Allied attack. Second, it was hoped that a sound defeat of the Turks would drive them from supporting the Central Powers during the war. Instead, what was supposed to be a rapid naval victory against Turkish battlements became a sound defeat of the British Navy. The factors contributing to the failure at Gallipoli that will be addressed in this paper will be traced back to three primary concerns. First is the overestimation of the capabilities of the British Navy to destroy the emplacements. Second, the British naval leadership severely underestimated the capabilities of the Turks. Third, and most importantly, a series of poor decisions from the fleet leadership in charge of taking the Dardanelles turned minor problems into major catastrophes. In the end, the assault on Gallipoli would result in over 250,000 Allied casualties and gain nothing for the Allies.

Ter-Grigoryan, Svetlana "Sexual Indignity: Representation Of Women And Sex In Glasnost-era Soviet Film" (Marko Dumancic)

Films produced and consumed in the Soviet Union during the perestroika/glasnost era exhibited sex and sexuality in an unapologetic, even brazen format. Differing from pre-glasnost era Soviet films, sex was explicit. Women’s sexuality was most frequently represented in scenes of either rape or prostitution. Theories about why explicit sex scenes swelled in late-1980s Soviet films are numerous and seem obvious. The dominating theory that Soviets had undergone years of sexual repression before glasnost certainly explains the frequency of sexually explicit scenes in Soviet film. However, it does not adequately address the “cruel and joyless” nature of sex in film during this time period, most plainly expressed in scenes of prostitution and rape. This paper seeks to place representations of female sexuality in glasnost-era Soviet film into a larger context of female sexuality during the tumultuous changing years of perestroika/glasnost. Furthermore, its aim is to assist in showing a pattern of sexual

repression for women during the time period, which was in fact more potent than earlier years, suggesting a sexual backlash against women and women's liberation movements as part of the move away from Marxism.

Thomas, Chase "The Prospect Of Democratic China: An Analysis Of The Possibility Of A Transition In Communist China" (Timothy Rich)

Is the possibility of a democratic state in communist China realistic or not based on recent events? I will analyze what different economic and cultural factors can help or hurt the process of developing a democratic state in China. I will be looking at aggregate data conducted both inside and outside the country on economic growth, policy change, and class development, and how that coincides with a development towards a more democratic state. All research gathered and put together will be analyzed and a prediction will be made to determine if a Democratic China is possible or not. The expected result will be that while China is starting to show many signs of becoming a democratic nation, it will not be realized for a long time based on cultural and government restrictions. Though the evidence of economic restrictions being lifted helps Chinese businesses grow and be more competitive with foreign workers, the Chinese are still far from a threshold for political change. I would expect

Thomas, Jacob "A Sustainable Option To Family Fitness" (Shahnaz Aly)

As the fitness industry continues to grow, it will become increasingly important for designers and fitness center owners to be conscious of the sustainable options available to them. Research has been done to explore the different techniques to improve the energy efficiency and sustainability of today's fitness facilities. One of main research topics that will be covered is how the orientation of the sun's path had determined the placement, directions, and tilt of the facilities solar panels to ensure their most efficient use. Extensive research has also been done to explore the opportunities in energy efficiency. This research includes remanufactured and self-powered equipment, green roof for increased thermal performance, and recycled flooring materials. Research has also been done to aim the project's design towards its target market, developing families in the Evansville area. In order to ensure the success of this goal, exploration had to be completed into the families of the area and how the design principles could positively impact them. This research includes the number of high schools in the area, childcare regulations, and current fitness trends. The research shows how the union of energy efficient techniques with sustainable ideas will bring this growing industry to a new level of success.

Thomas, John "A comparison of five tornado-producing events across middle Tennessee" (Josh Durkee)
Over the past twenty years several strong (>EF2 or F2) tornadoes passed through Middle Tennessee. A composite analysis has been completed to compare five severe weather events containing tornadoes to see what mesoscale features in the initiation of these events in the Plains could have potentially caused tornadoes to occur over Tennessee. The five events were broken down as follows: 16 April 1998, 7 April 2006, 5-6 February 2008, 24 January 1997, and 11 May 2003. Using National Archive Regional Reanalysis data in the Integrated Data Viewer, each event was mapped from a synoptic and mesoscale perspective and compared to the others, to discover if there was any common ground among the initiation of these separate events. Gibson Ridge products were also used to plot radar data to give a better depiction of the actual events as they occurred. The data showed that each event began in a similar manner over the West-Central Plains.

Thompson, Derek "The potential influence of rivers on tornado morphology: A local-scale analysis of the Crosstown, MO tornado of 2006" (Josh Durkee)

One common anecdotal perception regarding severe weather is that rivers that intersect storm paths can inhibit development and/or strengthening of tornadoes. At least one particular instance where this belief fails occurred 22 September 2006, when a tornado reached EF-4 strength on a twenty-mile stretch before dissipating eight miles beyond crossing the Mississippi River from Missouri to Illinois.

Interestingly, the National Weather Service storm reports indicated that the tornado intensified once it crossed the river. However, similar to the outcome of this event, other theories purport that rivers and surrounding landscapes may provide an unstable boundary or source of energy that enhance tornado strength. The purpose of this study is to determine why this particular tornado intensified after crossing the river boundary. This study utilized North American Regional Reanalysis model data, as well as archived RADAR data collected by the National Oceanic and Atmospheric Administration.

Thorn, Anthony "Sustainable Design In Educational Venues" (Shahnaz Aly)

The research I conducted, for my senior project, embodies Western Kentucky University's unique style of architecture while still maintaining the core, architectural values of function and aesthetics. My research encompassed things such as: sun patterns; sports teams' behaviors; and sustainable design. I have managed to incorporate all of these elements into one, unique structure that will become a new home for the Lady Topper's soccer and softball teams. The enormous parking lot, adjacent to the soccer and softball field, made the perfect placement for both student-athlete teams to share a common facility for both practice and academia. A green roof design was used to mitigate the large heat island, caused by the surrounding parking lot. This design feature would allow for better "R-values" for the clubhouse and provide an aesthetic appeal to those who access it. Glazing areas and large overhangs are a result of sun patterns within the Bowling Green area. The largest glazing areas are located so the sun (during winter months) will shine into the building, thus, helping heat the interior spaces. During summer months, the large overhangs will shade the solar rays and help cool the building, while also, preventing glare that might, otherwise, ruin an athlete's concentration. A collegiate sports team, no matter how big or small is a tight-knit group of individuals that consider each other family. By integrating a large flex-space, for indoor training, both teams will be able to practice their sport with little to no interruption from the other.

Tinch, Amanda; Pender, Lyndsey; "Incorporating Anthropology Into A K-12 Curriculum" (Kate Hudepohl)

Our presentation discusses a service-learning project undertaken with Preservation Kentucky during the 2014-15 school year. During the course of our internship, we incorporated concepts from anthropology into lessons that are cohesive with the Kentucky Core Curriculum. We did this by discussing the cultural preservation of caves in South Central Kentucky. Focusing on local cultural preservation efforts, archaeological efforts, and the Kentucky history component of the 5th Grade Social Studies Curriculum. we were able to integrate relevant anthropological material into the preexisting lessons. Drawing on the wealth of information about local caves from archival resources and non-profit organizations, we created a multifaceted project that included an annotated PowerPoint presentation, a final performance of understanding skit, and onsite educational resources for teachers to use. Our presentation will focus on the research, methods, and results concerning this service-learning project.

Tockstein, Sarah; Modi, Tulsi; "Direct Aminoglycoside Coated Gold Nanoparticles Synthesis,

Characterization And Antibacterial Susceptibility Testing" (Dr. Rajalingam Dakshinamurthy)

With soaring increase in the cases of multi-drug resistant (MDR) bacteria all over the world, we are on the verge of entering post-antibiotic era if no immediate action is taken against this global crisis. As an alternative route to modify current commercial antibiotics, we made an attempt to design an effective antibacterial agent involving gold nanoparticles (GNPs) capped with an antibiotic (Gentamicin). Unlike conventional methods, unique self-patented green process was used for GNPs synthesis wherein the gentamicin helped in both reducing and stabilizing the GNPs resulting in gentamicin gold nanoparticles (Gent-GNPs) which were morphologically characterized using transmission electron microscope (TEM), UV-Vis spectroscopy, SEM-EDS, and dynamic light scattering (DLS). The presence of ligand (gentamicin) onto GNPs was confirmed using TGA analysis. Antibacterial efficiency was evaluated on Gram-positive and Gram-negative bacterial strains using bacterial growth and spread plate assay. GNPs activity was further confirmed with propidium iodide assay. Superthin sections of bacteria treated with Gent-GNPs observed under TEM showed bactericidal activity by causing perforations and disturbing the cellular environment leading to cell lysis and cell death. The minimum inhibitory concentration (MIC) of Gent-GNPs was significantly less when compared to pure gentamicin drug which proves the synergistic activity of Gent-GNPs.

Tope, Cynthia "Reaction Rates Of The Amino Acids Cysteine, Methionine, And Histidine With Analogs Of The Anti-cancer Drug Cisplatin" (Kevin Williams)

We are studying the reaction of analogs of the anticancer drug cisplatin with amino acids that differ in size and shape. The reaction of cisplatin with proteins likely precedes reaction with DNA in the body and the size and shape of the platinum complexes often affects the rate of reaction with proteins. In this study, analogs of cisplatin differing in bulk were reacted with the amino acids cysteine, methionine, and histidine simultaneously. Using NMR spectroscopy, we were able to monitor these reactions. Preliminary testing suggests that the bulkier ligand reacts faster with the cysteine than the other amino acids when reacted simultaneously. Previous testing shows that bulk slows down reaction.

TRAN, LONG "Bringing The Outside In" (SHAHNAZ ALY)

Everybody understand the importance of art is in our life. Artworks are opportunities to express what we think, feel, love or hate, what we hope, admire and many other feelings that can't be express verbally. It's even proven that participating in art and cultural activities helps increase education attainment. There are improvements in literacy when young people take part in drama and library activities, and better performance in mathematics and languages when they take part in structured music activities. However, many art museums nowadays do not appeared attractive to students, especially those who're not majoring in art. This project involved designing an Art Museum in Bowling Green city, where students form a major part of the city population. The building will not only to serve as a place for exhibition of artworks but it's also designed as a public space where art related activities can be held in order to promote people engagement in art. A large conditioned interior

Turner, Linly; Reece, Thomas; Carney, Erin; Eovino, Juliana; Clark, Brandon; Pitts, Courtney; Cooper, Chelsea; "Factors Influencing The Development Of Muscle Dysmorphia" (Rick Grieve)

Abstract This study examines factors that lead to the development of Muscle Dysmorphia. Variables based on Grieve's (2007) nine-factor model were assessed using self-report questionnaires, independent rating of muscle mass, and measured height and weight. Specific variables assessed

include: perfectionism, negative affect, body dissatisfaction, low self-esteem, sport participation, media pressure, and ideal body internalization. Participants for the study included 145 college age males. The relationships among the variables will be analyzed using correlational and regression analysis.

Varajon, Sydney "Blueprinting Bowling Green: The Work Of James Maurice Ingram" (Michael Ann Williams)

With residential development moving steadily outward from the city's downtown core, the first half of the twentieth century provided opportunities for architect James Maurice Ingram to prosper. Ingram was a prominent local architect in Bowling Green, Kentucky, prolific during the postwar period of 1929-60. Referencing the influence of national trends toward Colonial and Tudor Revival aesthetics, Ingram designed homes that also reflect elements of his own personal style. The large body of work designed by Ingram illustrates how he influenced the design of Bowling Green's suburban development. This presentation will focus on the residential properties of Covington Street, one of the best local residential examples of Ingram's work. I will detail collaborative efforts to document Ingram houses including a survey of Covington Street homes and attempts to match them with architectural drawings found in the collection at the Kentucky Library. This presentation will describe the process and the methods of research, as it moves from the archives and surveys to a nomination for the National Register of Historic Places. I will also discuss the ways in which the preparation of this nomination attempts to highlight the significance of the architectural resources in Bowling Green.

VATANPOUR, AZADEH "Kusa Gelin: Rain-seeking Practices In Iran" (Ann Ferrell)

Rain-seeking rituals have long been performed by residents of different regions in Iran during times of extreme and prolonged drought. During these rain-seeking ceremonies, a set of particular actions are done with the aim of invoking either God or the powers of nature to enforce the formation of rain. In spite of all the modernization in today's world, a variety of these rituals are still being performed by believers across different regions. Kusa Gelin is one of the most widespread of these ceremonies. In general, this ritual consists of two main elements: a group of actors whose main figures is a Kusa (beardless man) and food donation which is shared and eaten by the members of the group. This article is therefore aimed to introduce and analyze this ritual as intangible national heritage.

Vincent, Zach; Khouriyeh, John; Stone, Martin; Willian, Todd; Daday, Jerry; "An Assessment Of Food Safety Practices At Farmers Markets" (Martin Stone)

Increased demand for locally grown produce has quadrupled the number of farmers markets in the U.S. since 1994. Increased consumption of locally-produced food and outbreaks of food-related illnesses has caused concern regarding the safety of food grown for direct-to-consumer-marketing. The project objective is to enhance farmers' knowledge of safe production and handling of fresh produce, reducing the risk of contamination of foodborne pathogens by implementing good agriculture practices (GAP's). Through the use of surveys administered to producers at farmers' markets in Kentucky, the study identified demographic information, and assessed producers' knowledge of GAP's, microbial contamination, as well as current practices and perceived barriers which may prevent implementation of a food safety program. Of the 142 farmers who participated in the survey, 90% indicated familiarity with GAP's, less than 50% indicated water, ice, harvest equipment, refrigeration, storage or transport containers could be a potential contamination source. Only 39% of respondents indicated soil and 42% inadequately composted manure as potential on-farm contamination sources.

About 83% of respondents indicated worker clothing and hands could be a source of contamination and 76% indicate that produce may become contaminated in storage, while on display or during preparation at the market. Cost-(71%) was the major obstacle preventing implementation of GAPs, while not enough time was the second largest obstacle at 68%. Over 85% of respondents indicated they are interested in training opportunities to enhance their knowledge of GAPs. Results support the need for development of educational materials and practical training for small scale producers.

Vittitow, Kirsti; Baston, Allison; Smith, Wesley; Young, Sonia; "Effectiveness Of Dr. Scholl's® Custom Fit Orthotic Inserts" (Harvey Wallmann)

Background: Purpose was to examine effectiveness of Dr. Scholl's® Custom Fit® Orthotic Inserts on outcomes of postural stability and pain. A repeated measures within-subjects design was utilized. Methods: Twenty-four subjects (N=24) 18 years or older with at least six months foot pain participated. Sensory Organization Test (SOT) composite score assessed postural stability on the NeuroCom® Balance Master. Foot Function Index (FFI) and Numeric Pain Rating Scale (NPRS) assessed pain. NPRS and balance scores were assessed pre- and post-inserts and one week after insert wear. Paired samples t-test was performed for FFI day one versus day seven. One-way repeated measures ANOVA analyzed balance differences and a 1x6 within subjects ANOVA observed pain differences with the NPRS. Results: Differences were observed on the FFI from initial session to after one week of insert wear ($p=.001$). Balance scores increased between initial trial without inserts (trial 1) and one week of wearing inserts (trial 3) ($p=.000$) and also between initial trial with inserts (trial 2) and one week post (trial 3) ($p=.000$). There was a difference in the NPRS values ($p = .000$). A 1x6 within subjects ANOVA indicated differences between all trials with the exception of initial pain before balance testing without inserts (trial 1) and pain before balance testing with inserts (trial 3). Discussion: Results of this study indicate that the Dr. Scholl's® Custom Fit® Orthotic Inserts may be effective in managing foot pain and increasing postural stability after one week. Limitations included lack of control group and small sample size.

Vowels, Mckinze; Crandall, Jason; "Intergenerational Service-learning With Exercise Science Students" (Jason Crandall)

Exercise science professionals often work with older adults to help maintain function and independence. Negative attitudes towards older adults have been found in today's undergraduate students. Ageism, or "the discrimination against an individual based on their age", may begin during undergraduate training, as most have not interacted with older adults. Intergenerational service-learning (ISL) may be a useful pedagogy to facilitate interactions with older adults. Service-learning gives students the opportunity to apply the course concepts and skills, while providing service to the community. PURPOSE: To determine if exercise science students' knowledge of older adults and ageism are significantly improved by incorporating ISL into an exercise science course. METHODS: Students ($n = 10$) enrolled in Exercise and Aging and from two additional exercise science courses ($n = 17$) completed pre and post attitudes towards and knowledge of older adults questionnaires. Students implemented Bingocize®, a combination exercise program and bingo game, once a week for 15 weeks at assisted living facilities. Curriculum focused on physical and psychosocial changes with aging. Independent t-tests were used to determine significant differences ($p < .05$). RESULTS: No significant differences were found in students' ageism ($t(25) = .099$, $p = .922$) or knowledge of older adults compared to controls ($t(25) = .729$, $p = .473$). CONCLUSIONS: Although significant improvements were not found, students were positively affected by the service-learning experience based on written and oral reflections. It is

important for exercise science faculty to continue fostering quality intergenerational contact.

Wagner, Shannon "The Development Of Secularized Taoism In The West" (Kate Hudepohl)

Taoism is a religion that can trace its teachings back almost two centuries. This religion is based on the writings of Lao-tzu and act as instructions for proper living based on seeking knowledge from tao, "the Way." Taoism has had to adapt to various historical and political changes as is spread through Eurasia and the West. The texts have been manipulated, translated, and interpreted in a variety of ways that suit the needs of the authors and readers. In this way, Taoism has changed most dramatically by the influence Western scholars. In the West, Taoism has become a secularized recreation rather than a spiritual and religious endeavor.

Walden, Jared "Cracking The Silicon Case: Graphene And Nanoporous Silicon Composite Nanoarchitectures As Stable, High-performance Li-ion Batteries Anodes" (Sanju Gupta)

Intense research activity on alternative energy is stimulated by continuously increasing global demand of electric energy. Electrochemical energy storage/conversion systems represent the most efficient and environmentally benign technologies and the need for next generation stable, high-performance electrode materials and architectures is the driving force. The interaction between graphene-based and other nanomaterials allow to develop novel architectures and tunable physical properties such as specific surface area (via aggregation prevention), mechanical strength (a synergistic effect), and facile electron and ion transport (via higher electron mobility and conductivity). This work presents the development and deployment of composites of graphene and encapsulated mesoporous silicon (po-Si) as practically viable, high-performance Li-Ion batteries (LIB, hereon, rechargeable secondary batteries delivering their energy to load on demand) anodes. We synthesized controlled B-doped mesoporous Si nanospheres by facile electroless etching followed by carbon coating for stable solid-electrolyte interphase (SEI) layer and wrapping with reduced graphene oxide (rGO) nanoplatelets. We have characterized their structure using a range of analytical techniques revealing surface morphology and C-Si interfaces. The electrochemical properties are measured in half-cell format in terms of cyclic voltammetry (CV), charge-discharge (or recharge) cyclability, current carrying capacity and reliability, ac impedance spectroscopy and determining energy and power density, especially the ratio of energy density/(weight x cost). Finally, these anodes with conventional LIB cathodes in full-cell format are also tested aiming to establish microscopic structure-property-performance correlations. The knowledge gained can tap into next-generation scalable high energy density LIB for space applications as well as sodium and co-intercalated multivalent ion batteries.

Walker, Dominique; Malla, Gargya; "Bowling Green Community Farmers' Market And Snap Benefits" (Gretchen Macy)

The poster and its information will highlight the use of the Community Farmers' Market in the Bowling Green, Kentucky area based on the utilization of SNAP benefits. For those who are in the Bowling Green, Kentucky area that are beneficiaries of SNAP, the information presented will look at the utilization of the government funds and programs to increase the consumption of fresh fruits and vegetables among this focus group. The information will also look at the services that are offered by the Community Farmers' Market and government programs to increase health lifestyles among those who receive SNAP benefits in the Bowling Green area. The assessments of these programs will look at the goals of the programs in comparison to the way they are being carried out. And possibly offer

solutions or tips to increase the usage of these programs and services among this focus population in order to achieve the goals of the programs.

Walker, Kimberly; Allen, Mellisa; "National Power Demand Map From Critical Infrastructure Evolution, Climate Change, And Population Migration" (Steven Fernandez)

Hurricane Katrina demographic studies suggested that populations move due to environmental stresses. Rising sea levels and increased frequency of storms due to climate change and non-evolving infrastructure may expand these population shifts. Population migration creates new pressures and deficiencies on critical infrastructure networks through changing electricity demand. By studying population movements, a new electricity demand map can be created to depict where the critical infrastructure nodes and overloaded links are located. Hurricane Isaac Meteorological wind data and electricity outage data were correlated to create fragility maps. These fragility maps can determine these new emerging load centers. The Hurricane Isaac data were obtained from the Plymouth State surface data website, converted to text files, and manipulated in Microsoft Excel. The electricity outage data was generated by Oak Ridge National Laboratory's web streaming tool, Visualizing Energy Resources Dynamically on Earth. Both data sets were correlated to converge on the matching counties to create the fragility maps for the affected areas. The deliverables for this project are: fragility maps for parishes affected by Hurricane Isaac; a comparison to previous Hurricane Katrina fragility maps; a forecast electricity demand map; and comparison of the effects and assumptions about extreme climate change and infrastructure, from the resulting demand map. The fragility maps will provide insight on how infrastructure has evolved to determine which systems are robust and resilient, which will overall improve the strength of the 21st century smart grid.

Walker, Whitney; Barber, Brooke; Stokes, Michael; "Food Preference Trials Of Namaqua Rock Mice And Rodent Density Estimates In The Lowveld Savanna Of South Africa" (Michael Stokes)

Large trees important in the South African savanna are in decline. Initially, climate change and elephants were thought to be the cause. However, all reasons for the decline are unknown. We investigated how Namaqua rock mice potentially affect recruitment of tree seedlings through seed dispersal and predation in South Africa. We used live traps to capture rodents during the dry season of June-August on Balule Nature Reserve (BNR). We exposed the mice to food preference trials in enclosures to determine if they preferred seeds of one of three target tree species; marula (*Sclerocarya birrea*), knobthorn acacia (*Acacia nigrescens*), and red bushwillow (*Combretum apiculatum*). We conducted 18 trials with individual mice. We compared the number of seeds removed and the damage to the seeds to determine if the mice may have an influence on the recruitment of these tree species. We found that Namaqua rock mice preferred first the marula seeds, then acacia seeds and did not eat the red bushwillow seeds. We also conducted density estimates of the Namaqua rock mice, red veld rat, and Smith's bush squirrel. The most caught species was the Namaqua rock mice, followed by the Smith's bush squirrel, then the red veld rat. Our results will contribute to a growing body of literature on decline of African trees. It will be used to provide a general natural history of Namaqua rock mice and density estimates, which will be useful in conservation efforts. Our results will help BNR staff develop a conservation plan for trees.

Walker-Brown, DaMario "Sustainable Lifestyle" (Shahnaz Aly)

Sustainability has been a goal to almost every architect, but what about to the under developed

communities through the structure and use of the building? The community center will be a breath of fresh air to the neighborhood because of the old-worn down feeling that this part of Lexington gives off, which negatively impacts our youth. By incorporating a pit greenhouse to the site, this allows the community to come together, young and old learn patience, respect and even how to be an entrepreneur. Along with this greenhouse will be an irrigation system with exposed piping in areas to show people how water can be recycled and re-used. Mixing recreation with education and sustainability, this Community center can impact those who enter this building through the multiple uses, even have a wedding reception. The eastern side of Lexington will be able to enjoy this and not be scared to be in this neighborhood which in turn will help the youth view life differently and also give the elderly a place to enjoy. The goal is to achieve a sense of safety, hope and to help anybody in need to better prepare them for the future.

Wallace, Frankie; Nee, Matthew; "Surface Enhanced Raman Spectroscopy To Study Photocatalytic Degradation Of Organic Pollutants" (Matthew Nee)

Studies have shown a recent increase in the concentrations of biologically harmful organic pollutants, including hormones from hospital waste and a variety of pesticides from farm runoff. Since current wastewater treatment processes are mainly focused on the removal of biological contaminants, such harmful compounds are subject to pass through into drinking water. A potential method for removing these organic pollutants takes advantage of photocatalytic degradation, which is the breakdown of organic compounds when subjected to ultraviolet radiation in the presence of a catalyst in order to increase the reaction rate so that it will be useful in practical situations. Photocatalytic degradation can effectively remove organic pollutants at the minute concentrations at which they are biologically harmful, however, its mechanisms are not fully understood. This project uses surface enhanced Raman spectroscopy in order to analyze photocatalytic degradation reactions in real time, tracking the progress of the reaction and attempting to identify any intermediate species that may arise over the course of the reaction. This information is crucial to ensuring the safety of implementing photocatalytic degradation reactions into the wastewater treatment process.

Walters, Cicely "Women In Action: Representation Of Women In Action Genres" (Jerod Hollyfield)

A recent study published on Indiewire revealed statistics on the misrepresentation of female characters in the American film industry. America is famously known for women's rights and a strong feminist community. However, in the Korean film directed by Chan-wook Park, *Sympathy for Lady Vengeance* it portrays the plot-line of a strong, driven woman who seeks vengeance against a child murderer. Although, America is considered the most powerful with women's rights, in the action genre of film Korea more accurately portrayed a powerful woman on her quest to revenge. Most American action genres portray a powerful woman, while also attaching stereotypical characteristics of a delicate woman. This is shown through films such as *Lucy*, *Mr. and Mrs. Smith*, *Natural Born Killers*, etc. Although, the women are given masculine characteristics, they almost always have a male counter-part that aids them in their victory. However, *Sympathy for Lady Vengeance* does not follow this model, and breaks free from the stereotypical norms that women are typically granted, most noticeably by having a woman be the main protagonist and participating in her vengeance plan with aid from other women; without the help of a male character.

Warren, Claire "Electronics Cigarettes. A New Generation Of Smoking" (Barbara Bush)

Some people may wonder why people use e-cigarettes. What is the draw to them? The use of electronic cigarettes among people of all ages, especially teenagers, has become common place in the United States. While electronic cigarettes continue to be a growing trend, the effects that they have on the oral cavity and general health are still largely unknown. Do consumers know about the possible harmful effects of electronic cigarettes on their bodies? Do they use them as a way to stop smoking traditional cigarettes? What will future research reveal about electronic cigarettes and health? A survey will be conducted among users and nonusers of electronic cigarettes to determine why individuals choose to use electronic cigarettes. Additionally, this project will inform consumers about the known and potential harms that they pose to the human body and specifically the oral cavity.

Warren, Jon "The Development And Implementation Of WKU Red Wave: The Official Student Group of WKU Athletics" (Paula Upright)

The purpose of this project was to learn of the inner workings of an intercollegiate athletics department and the process for creating a successful marketing plan. Gaining these experiences as a young sport management professional is crucial to job placement and advancement in the sport industry. From the initial idea generation through the first season of operation, I served as creator and the primary administrator of the WKU Red Wave: The Official Student Group of WKU Athletics. The duties for this project included marketing plan development and implementation through the facets of social media marketing, personal selling, and other intercollegiate athletics marketing concepts. The project started in January of 2013 and concluded in May of 2014, beginning with research on other student groups at various Division I benchmark institutions. Funding to start the group was provided by the Honors College and WKU Student Government Association. Creating a sustainable and reputable product and brand was a goal in this project that was seemingly successful as the student group is still in existence today. By working directly with WKU Athletics Marketing and other athletic administration professionals, I was able to take learn outside the classroom and in a real-life setting. This poster will explain this project in detail.

Wassom, Jack; Jahan, Muhammad; "A Study On The Effect Of Operating Parameters During The Micro-electro-discharge Machining Of Ti-6Al-4V" (Muhammad Jahan)

Ti-6Al-4V is one of the most widely used materials in aerospace and biomedical industries because of its excellent mechanical properties, high specific strength, high thermal stability and outstanding corrosion resistance. The objective of the present study is to investigate the effect of different operating parameters during the micro-electro-discharge machining of Ti-6Al-4V. The parameters studied in this study were gap voltage, capacitances, and electrode rotational speed. The effect of those parameters on the micro-EDM machining performance was evaluated by monitoring the machining time, and investigating the surface topography of Ti-6Al-4V after micro-EDM. It was found that the machining time reduced with the increase of gap voltage and capacitance because of the increase in discharge energy. In addition, increasing the electrode rotational speed improved the machining performance up to certain level then affected the surface finish. The surface finish was found to be smoother an

Waterbury, Ronald "Hydrothermal Yttrium Exchange Into A Nanoporous Structure Of A Naturally Occurring Erionite Zeolite Mineral" (Aaron Celestian)

Erionite is a naturally occurring mineral usually formed during the Neogene period as a secondary mineralization of volcanic tuffs located in the Southwest United States and other areas around the

world. Erionite is commercially sought for its unique capabilities as an absorbent and molecular sieve for industrial applications. The current study aims to understand the ion diffusion of Yttrium into the erionite crystal structure under hydrothermal conditions. Zeolites typically are capable of cation exchange at room temperatures and pressures, however, Yttrium exchange only occurs in erionite at elevated temperatures and pressures. Crystal structures before and after ion exchanged materials will be discussed as well as the mechanisms of the exchange process. The results from this study could be applied to future geobarometry and geothermometry studies investigating hydrothermal history in areas, as well as industrial applications to rare earth element sequestration.

Watkins, Tara; Rowland, Naomi; "Influence Of Tillage And Fertilizer Regime On Presence Of Select Fungal Species In A Silt Loam Soil" (Becky Gilfillen)

Varying tillage and fertilizer applications in corn research plots have been ongoing for the past ten years. The research is being conducted in a split plot design where tillage is the primary factor and the fertilizer source is the secondary factor. Tillage treatments are conventional tillage (CT) or No-Till (NT), and fertility treatments were $\frac{1}{2}$ poultry litter + $\frac{1}{2}$ inorganic (HL), full poultry litter (FL), and inorganic (I). DNA was detected within these plots through DNA isolation and PCR. The presence of select pathogenic fungal species (Rhizoctonia, Phytophthora, Pythium, and Fusarium) was analyzed through subsequent DNA sequencing. There were no significant differences found between tillage practices and fertility treatments to influence pathogen presence within the plots.

Weatherholt, Wade; McMullen, Ryne; Inman, Chase; Hoover, Don; Schafer, Mark; "Bone Mineral Density Not Significantly Changed By Cycling Across The United States" (Don Hoover)

Purpose: This study explored the effects of 60 days of cycling upon the bone mineral density (BMD) and body mass composition (BMC) of novice cyclists, who rode across the United States. Methods: Five novice cyclists (21.0.2 +/- 0.71 yr, 187.842 +/- 6.50 cm, 82.84 +/- 5.42 kg) completed laboratory testing prior to and after the ride. Each completed a DEXA scan to assess BMD and BMC of: whole body, femoral head, femoral neck, and lumbar region. . Paired t-tests were used for statistical analysis; the non-parametric tests was also used due to the small sample size. Results: Non-significant differences were found pre- and post-ride for BMD in: whole body ($t(4) = -0.177$, $p = 0.868$), femoral head ($t(4) = 0.382$, $p = 0.722$), femoral neck ($t(4) = 0.498$, $p = 0.545$), and lumbar region ($t(4) = 0.808$, $p = 0.465$). BMD measures for femoral head, femoral neck, and lumbar region were decreased following the ride. Significant differences for BMC were found between in: left arm lean mass ($t(4) = 3.841$, $p = 0.018$), left arm total mass ($t(4) = 4.200$, $p = 0.014$), right arm fat percentage ($t(4) = -3.048$, $p = 0.038$). All other measures were not significantly different. Conclusion: These results suggest non-significant changes in BMD and BMC occurred among these cyclists. Yet findings suggest that BMD and BMC measures may change in relatively short time frames. More study is needed on prolonged cycling on effects on BMD among novice cyclists.

Weatherholt, Wade; McMullen, Ryne; Wells, Samuel; Crandall, Jason; "Effects Of Static And Dynamic Stretching On Vertical Jump Performance" (Jason Crandall)

Purpose: The purpose of the study was to determine which type of stretching (static or dynamic) was most effective for improving an individual's power by assessing a vertical jump test. Methods: The stretching program consisted of four weeks of stretching three times a week for each participant. The participants were 17 college age males (18-22 years). The participants were split into two groups, static ($n=10$) and dynamic ($n = 7$). Participants' vertical jump was measured at baseline, two weeks, at four

weeks. Pre-measurements were taken for both YMCA sit-and-reach as well as vertical jump. Measurements were then taken two weeks later, and again after four weeks. Results: Using an ANOVA statistical analysis, we found that there was no statistical difference in the change in the vertical jumps of the two groups with a $p=0.688$. F-statistics for the vertical jump were: Vertical Jump Trial-1: .029, Vertical Jump Trial-2: .167, Vertical Jump Trial-3: .103. The vertical jump test results

Weller, Kyle; Godinho, Alexandre; "Sound Production In Three Prochilodontid Fish Species From Brazil" (Michael Smith)

Fish species of the family Prochilodontidae are widely distributed in South America, where they are an important fisheries resource. It has been reported that species of this family produce sounds, but these sounds were never recorded or analysed. We recorded sounds of three species from the genus *Prochilodus* – *P. argenteus*, *P. costatus*, and *P. lineatus*. Sounds were recorded using a HTI 96 hydrophone placed 0.3-0.5 m below the water surface within mesh pens placed in outdoor ponds. Fish were placed in the holding pens in either male/female pairs or larger groups containing two or three males and three females. Only males produce sounds in these species, presumably with specialized intercostal muscles that compress the swim bladder. Fish sounds were analyzed using Audacity and SoundRuler software. Raven sound analysis software was used to create spectrograms. Sounds were long trains of stereotyped pulses. For each pulse train, train duration, dominant frequency, and pulse to pulse period were measured. For individual pulses, number of sound peaks and pulse length were quantified. Dominant frequency differed by species, ranging from approximately 350 Hz for *P. costatus* to 540 Hz for *P. lineatus*. A better understanding of the bioacoustics of prochilodontids could be helpful in fisheries management, especially in understanding population movement during migratory spawning seasons in which hydrophone sound recordings could determine temporal shifts in species abundance.

Whitaker, Kendra "Housing Opportunity - Architecture In A Social Context" (Shahnaz Aly)

Architecture is more than buildings; in a social context it is a place of opportunity where benefits outlast structure. The desire was to demonstrate the need for a town square in Milton, and design a sustainable community center which links itself to the community through opportunities within. If people leave a community for opportunities and amenities – how can they build a community? Cities lacking social capital fall hard to economic stresses and evolving interests. Going beyond aesthetics, I pursued significant factors which would allow pure design to strengthen a community's natural versus built environment. Mayor of Milton – Denny Jackson – advised that the concept reflect the community, revive the community, and mesh with the community. After observations and case studies, I determined that a revived town center would impact a community; not by the building itself but through the opportunities provided within. According to available literature a place of opportunity can enhance the education of youth, reduce alcohol dependency, reduce mental illness, and retain youth; because of the resulting sense of belonging. The significance goes deeper than architectural appeal. A community center provides non-structured interaction, diversity, and opportunity to citizens of all age groups. Benefits abound and design stretches further than structure.

White, Samuel; Annarapu, Shashidhar; "Thermal Analysis Of Titanium Dioxide: Adsorption/desorption Of Some Organic Pollutants" (Matthew Nee)

Many highly stable man-made chemicals, such as pesticides and cosmetics, find their way into water sources, and many are not effectively removed by current water treatment processes. Since some of

these are known or suspected to have adverse effects on humans or the environment, it is desirable to develop new technologies to eliminate them from wastewater. One promising method is photocatalytic degradation, in which a light-activated catalyst is used to break down the chemicals, either directly, if the chemicals will adsorb onto the catalyst particles, or indirectly through reactions with the solvent. Here, the adsorption of three common chemicals (a pharmaceutical, an antibacterial, and a pesticide) onto titanium dioxide (the catalyst) was investigated. For each chemical, samples were prepared by mixing titanium dioxide with a solution of the chemical, then removing the titanium dioxide from solution. Thermal analysis techniques were employed to determine whether the chemicals were adsorbed to titanium dioxide while in solution, how much was adsorbed, and how strongly it was adsorbed. Results suggest that all three of the compounds adsorb onto titanium dioxide with varying strengths. Each adsorbs sufficiently well that the direct reaction is a plausible mechanism. This is an important step in understanding the chemical process of photocatalytic degradation in these chemicals, which may become a useful tool for keeping pollutants out of the water supply.

Whitehead, Aaron "â€œFattyâ€ Arbuckle, Will Hays, And The New Censorship Of The 1920s" (Anthony Harkins)

In 1921, silent film star â€œFattyâ€ Arbuckle stood trial for murder in San Francisco. The outrage levelled against Arbuckle specifically and Hollywood culture in general fed into an existing cultural narrative of Hollywood excess. In response to the scandal, Republican Party operative Will Hays was hired to serve as â€œfilm czar,â€ ostensibly to supervise the morals of the industry. However, Haysâ€™ real legacy was to stem the growing tide of censorship by championing the virtues of â€œself-regulationâ€ and co-opting reform movements under the umbrella of a Public Relations Council. This policy of self-regulation, combined with the careful manipulation of public opinion, successfully stemmed the tide of state and federal censorship. Haysâ€™ successful system of negotiated morality would set the standard for all genres of popular culture well into the twenty-first century.

Wilkins, Jacob "A local analysis of the historic lake-effect snow event in Buffalo, NY during November 2014" (Josh Durkee)

Recently during 17-21 November 2014, a record lake effect snow storm developed over Lake Erie that produced up seven feet of snow over Buffalo, NY and the outlying areas. This lake effect snow storm killed 13 people, collapsed hundreds of roofs, stranded thousands of motorists, and caused gas and food shortages due to impassable roads. Currently, there are not any studies that have examined the mesoscale dynamics that came together to produce this record lake effect storm. The purpose of this study is to provide a thorough mesoscale understanding of the atmospheric circulation conducive to this historic event. Archived North American Mesoscale Model data and information from the National Weather Service were used to analyze this event. Initial findings suggest that when a cold air mass is advected over a body of relatively warm water, instability values are adequate enough to yield convective bands of precipitation. We also found that the aforementioned air mass is cold enough to supp

Williams, Joshua "Time Series Analysis Of The Kepler Light Curve Of The Seyfert Galaxy Ii Zzw 229.015" (Michael Carini)

In addition to exciting discoveries of exo-planets, NASAâ€™s Kepler mission has made important contributions to a number of areas of astrophysics, including the study of Active Galactic Nuclei (AGN). II

ZW 229.015 is the brightest AGN in the Kepler field of view. It was monitored with the Kepler spacecraft with a time resolution of 30 minutes throughout the entire prime Kepler mission. The light curve from Kepler is unmatched by any optical light curve ever obtained for an AGN. I present the results of an analysis of the power spectral density (PSD) of this light curve using a methodology known as Power Spectral Response (PSRESP). Not only will I present the PSD of the full Kepler light curve, I will also discuss the effects that the length of the time series analyzed has on the PSD and investigate alternatives to traditional fourier time series analysis.

Wilson, Sarah; O'Connor, Stephen; Ellis-Griffith, Gregory; Carter, Daniel; Hunt, Mathew; Shake, Matthew; "Examining The Validity Of A Usual Care Screening Instrument For Identifying Individuals In Rural Communities With Ptsd Symptoms And Related Concerns" (Stephen O'Connor)

Introduction: Individuals with posttraumatic stress disorder (PTSD) are likely undertreated in rural communities (Colon-Gonzalez et al., 2014). The current study represents efforts to integrate mental health services into usual care practices of the Institute for Rural Health at Western Kentucky University, which operates two mobile units providing free health services throughout the region. We sought to examine associations between the PRIME-MD mental health items in the universal screening instrument and validated screeners for PTSD and related concerns. Methods: Consented participants completed a structured assessment consisting of the PCL-C, PHQ-9, AUDIT, Scale for Suicidal Ideation, McGill Pain Questionnaire, SF-12 and a medical literacy examination. Seven days after the interview, follow-up calls were conducted asking open-ended questions regarding barriers and preferences for mental health services. Analysis: We conducted a series of regression models to examine the associations between the PRIME-MD items and the instruments in the battery and found significant associations. We also conducted a thematic analysis of the qualitative data concerning utilization of health services and preference for receiving future health services. We found that only about 13% out of 22% of participants meeting criteria for PTSD received mental health care in the past year even though the rural population is typically willing to receive care management mental health services.

Wong, Chi Fai; Yan, Jun; "Estimating Historical Croplands Distribution Over The Past 300 Years In China" (Xingang Fan)

This study is to reconstruct a historical dataset depicting the spatial distribution of cropland in China over the past 300 years (from 1661 to 1912). Existing studies (Ramankutty and Foley, 1999; Goldewijk, 2001) have extended such reconstruction back in time for 300 years at 10-year intervals. Some available historical records of China indicated that there is a good relationship between cropland coverage and population in preindustrial periods, which was one of the methods used by Goldewijk (2001). By a refined relationship between cropland coverage and population, we hypothesize that we can develop and reconstruct a historical cropland-distribution dataset. The reconstruction will utilize population data and cropland data. Also, we use ArcGIS application to digitize two Chinese historical maps (ver. 1820 and 1911) for showing the historical cropland-distribution dataset. We had developed a historical population table, digitized Chinese historical maps, and croplands and population distribution maps. People can better understand the relationship between population and croplands distribution, the historical development of croplands, and spatial distribution of cropland from the historical cropland-distribution dataset. Moreover, it may contribute to a better understand climatic trends and model future climate.

Wood, Audie "Does The Way That You Meet Your Partner Affect Relationship Satisfaction?" (Donielle

Lovell)

There is a contentious debate about whether or not the use of the internet changes human relationships, and whether or not that change is positive or negative. At the heart of this debate is how relationships are created and maintained. One side of the debate claims that since our relationships are now based more in cyberspace we are losing what makes human relationships special (Turkle, 2011). The other says cyber romance, and cyber friendship, are just new ways for people to overcome loneliness (Levy, 2007). Using data gathered by Stanford University I analyzed the relationships of both heterosexual and homosexual individuals who met their partner online. The results showed that there was no correlation between the participant being happy in a relationship and how the participant met their partner. People who met online were no more or less likely to be satisfied with their romantic relationship than those who met in person. The acceptance of the partner by family and friends™ was

Wright, Alexandra; Blair, Morgan; "Reaction Of Platinum Complexes With A Methionine Analog" (Kevin Williams)

Several platinum(II) compounds have been shown to have anticancer activity. Recently, complexes with a single chloride leaving ligand and three nitrogen containing ligands have been found to have significant activity. We have synthesized analogs of these complexes in which one ligand coordinates to the platinum atom through three distinct nitrogen atoms in a ‐tridentate‐ complex. Such compounds react with the amino acid methionine via the sulfur atom; however, in some cases, a nitrogen atom of the methionine displaces one of the nitrogen atoms of the tridentate ligand. We have therefore used a methionine analog, 2-hydroxy-4-(methylthio)-butyric acid; this analog lacks a nitrogen atom. We therefore expect the analog to react only via the sulfur atom, leaving the tridentate ligand coordination intact. The resulting complex can then be reacted with biological targets (methionine or DNA nucleotides) to determine which ligands are preferentially displaced. The methionine analog is a potential alternative ‐leaving ligand‐ to chloride that could alter cellular uptake and/or biological activity of the complexes.

Wurth, Jonathon "Where The Rocks Bleed Ink: Palestinian Images Of Self In Political Cartoons" (David DiMeo)

This presentation looks at the ways in which Palestinian political cartoonists depict Palestine/Palestinians. Political cartoons in the Middle East are meant to express not the opinions of the elite but of the common person and carry a weight among the populace that is lacking in cartoons in the United States. Understanding the ways in which average Palestinians view themselves is critical to forming an informed opinion on a region that is continually in the headlines. Palestinian political cartoonists draw from an assortment of cultural, religious, historical, and national images to give identity to their people. This presentation will look at what these images are and what sort of picture they paint about the Palestinian people.

Xu, Xingya; Zhao, Qin; "The Effect Of Anticipated Feedback Proximity On Performance: Exploring The Moderating Role Of Self-efficacy And Task Type" (Qin Zhao)

The present study investigated the effect of anticipated feedback proximity on performance and the moderating role of self-efficacy and task types (analytical or creative). I hypothesized that expecting rapid feedback should yield better performance than expecting delayed feedback, particularly for people with high self-efficacy or those who receive analytical tasks. For low self-efficacy individuals or

those who receive creative tasks, expecting rapid feedback may produce negative impact on performance. One hundred and fifty six students (97 female) between the ages of nineteen and twenty-nine ($M=19.69$) from Western Kentucky University were recruited as the participants. Participants were randomly assigned to one of four conditions resulting from a 2 (feedback: immediate or delayed) x 2 (type: analytical or creative) between-subjects design. Self-efficacy for each task type was measured and participants' ACT scores were also accessed to control for academic ability. The dependent variables included the actual performance on both analytical and creative tasks. Participants in analytical task group completed sample math and verbal questions from the American College Testing-(ACT); creative task group required participants to complete task of the Remote Associate Test-(RAT) and the Abbreviated Torrance Test for Adults-(ATTA). The results indicated a trend of main effect of anticipated feedback proximity. Specifically, participants performed better when they expected immediate feedback relative to expecting delayed feedback. There was also a main effect of task type. Performance on the analytical tasks was better than performance on the creative tasks. However, neither self-efficacy nor task type moderated the effects of anticipated feedback proximity.

XUE, YAO; Gray, Elmer; "The Threat Of Global Warming On Meeting Chilling Requirements Of Perennial Fruits Grown In Kentucky" (Elmer Gray)

Temperate Region perennial fruit and nut trees require requisites cold winter temperatures (chilling hours) to ensure regular production in the following season. Temperate Regions are characterized by variable winter and spring temperatures. Failure of meeting sufficient chilling requirements results in plant deformities. Chilling requirements are expressed as number of accumulated hours within a range of approximately 32 to 45 F. Kentucky needs an inventory of base line chilling hour's production. Necessary temperature data are available through Kentucky MESONET. The study is to utilize the data according to an established chilling hour model in the calculation of available chilling hours. Significant differences have been found among chilling hour production for sites, years, and distribution across months.

Yousofi, Zehra "No Country For Diasporic Men: The Psychological Development Of South Asian Masculinity In A Diaspora" (Deborah Logan)

What is it to be a man? Sociologist Raewyn Connell theorizes that hegemony-based constructions of masculinity determine male cultural dominance according to certain dynamics—economic and social status, education, and national identity—and these attributes empower the men who acquire them in proper amount and denigrate those who do not. In particular, masculinities rooted in cultures outside of the white, hegemonic culture must also negotiate their male identity through —performance,— as captured in South Asian diaspora novels like V.S. Naipaul's *The Mimic Men* and Hanif Kureishi's *Buddha of Suburbia*. This performance emphasizes the psychological development of their masculinity—through the protagonists' tumultuous relationships with their fathers; their interactions with their peers; and mirroring of expected gender ideas in dominant culture.

Yousuf, Mohammed Adnan "Problematic Alcohol Drinking Among Msm" (Frank Fan)

Objective: To estimate the prevalence of alcohol use disorders using three standardized alcohol use measures among men who have sex with men (MSM), and explore potential predictors for these three alcohol-related outcomes. Methods: A cross-sectional study was conducted among 391 MSM in Chongqing, China to collect drug and alcohol use, sexual behaviors, and other related factors through a

computer-assisted self-administered questionnaire. Problem alcohol drinking in the past 12 months was evaluated by three measures, such as the Alcohol Use Disorders Identification Test (AUDIT) score ≥ 8 , AUDIT-C ≥ 4 , and binge drinking defined as 6 or more drinks on one or more occasion. Results: HIV prevalence was estimated to be 19.2%, and syphilis was 4.1%. 13.3% and 7.2% had AUDIT score ≥ 8 and AUDIT-C score ≥ 4 , respectively. 16.4% reported binge drinking in the past year. AUDIT scores were associated significantly with no condom use due to alcohol use in the past 6 months (adjusted odds ratio [AOR], 5.81; 95% confidence interval [CI], 2.89-11.70). AUDIT-C scores were correlated with alcohol use before or during sex in the past 6 months (AOR, 4.84; 95% CI, 1.87-12.55). Binge drinking was found to be associated with no condom use due to alcohol use in the past 6 months (AOR, 3.80; 95% CI, 2.01-7.19). Conclusions: AUDIT score and binge drinking can find more problematic drinkers among MSM, than AUDIT-C score, but AUDIT-C is more sensitive to link with risky sexual behaviors. There is a need to incorporate alcohol-related measures into HIV prevention among MSM in Chongqing.

Yousuf, Nohammed Adnan "Hiv, Syphilis, Hcv And Behavioral Risk Factors Among Men Who Have Sex With Men In A Drug-using Area (2013-2014)" (Frank Fan)

Objective: To assess HIV, syphilis, HCV and behavioral risk factors among MSM in Guangxi of China where HIV was beginning as a drug-driven epidemic and shifting to main heterosexual transmission. Design: These cross-sectional studies were conducted yearly from 2013 to 2014 in eight of 14 main cities in Guangxi of China. Participants: Total number of MSM participated in 2013 were 1996 and in 2014, the numbers of participants were 1965. Data included demographic and sexual behavioral variables, used illegal drug, received HIV counseling, testing and condom, and received peer education. Participants were tested for HIV, syphilis and HCV with whole blood specimens. Results: Prevalence of HIV was 6.6% in 2013 and 8.4% in 2014. From 2013 to 2014, prevalence of syphilis was 9.3% in 2013 and 9.8% in 2014. After adjusting for socio-demographics, participants enrolled in 2014 has odds of HIV infection significantly increased by 30% (AOR: 1.30; 95% CI: 1.03-1.66); 45% higher odds of having unprotected anal intercourses with any male partners in the P6M (AOR: 1.45; 95% CI: 1.26-1.66); 47% lower odds of received HIV counseling, testing and condom in the P12M (AOR: 0.53; 95% CI: 0.45-0.63); 24% lower odds of received peer education in the P12M (AOR: 0.76; 95% CI: 0.67-0.87). Conclusion: It is an urgent need for intervention strategies like education regarding safe sex, HIV and other sex-related diseases, condom distribution, HIV counseling and free testing in Guangxi to curb and prevent HIV among MSM.

Zenthoefer, Amy "Tlac And Pbis Strategies In High Poverty Schools" (Jennifer Cribbs)

School and classroom climate are imperative to student achievement. Many strategies and frameworks are available for schools. This study was performed to evaluate the effectiveness of Teach Like a Champion Strategies and Positive Behavioral Interventions and Supports in a high-poverty middle school. Teachers took surveys on the school and classroom climates both before and after the implementation of the frameworks, were observed upon two to three occasions, and participated in a round table discussion about the frameworks. Two teachers also included behavior records before and after the implementation of the strategies. The study lasted only four weeks and eleven teachers participated; however, the results were positive for the utilization of these frameworks at the participating school.