ALPHABETICAL LISTING OF AUTHORS WITH ABSTRACTS AND PRESENTATION TIMES AND LOCATIONS

Alli, Sparkil — Health Professions — BRESNAHAN II ROOM 1:30 - 3:00

HIV Testing Among College Students

The study "Human Immunodeficiency Virus (HIV) Testing and False Disclosures in Heterosexual College Students" conducted at California State University by William Marelich and Tonya Clark was replicated at Youngstown State University Fall semester, 2006. A convenience sample of 373 YSU students enrolled in HSC 1568 Healthy Lifestyles was approached to complete a self administered survey to assess if they have been tested for HIV and if they know their HIV status. They were also asked their history in disclosure of their HIV status. This number of respondents was identified from among the students enrolled in HSC 1568 Fall semester to provide results with a probability level of 95%, with a confidence interval of 5. The research instrument was provided to this investigator by Professor Marelich of California State University who provided written permission to replicate this study using his instrument. The project and data collection instrument were approved by YSU Human Subjects. YSU data is provided along with a comparison with the California State Data. The results of this study can be used by YSU to plan and provide appropriate educational programming related to HIV testing and truthful communication about HIV status. This can contribute to effective HIV prevention among YSU students. This project was conducted as part of the YSU STARS Program.

Amolsch, Dawn — Biological Sciences — OHIO RM 8:30 - 10:00

Estrogen Modulation of Dopamine Transporter Activity in the Corpus Striatum

Degeneration of the nigrostriatal dopaminergic system has been shown to be responsible for the onset of Parkinson's disease. This disease is more prevalent in males than females and experiments from several laboratories have demonstrated that estrogen may play a protective role for the dopaminergic system. Other experiments have shown that estrogen may modulate the activity of the dopamine transporter, however, the mechanism of action of estrogen in modulating transporter activity remains unknown. These experiments were designed to further investigate the role of estrogen in modulating dopamine transporter activity in the corpus striatum of rats. The technique of in vivo electrochemistry was used to record "real time" dopamine clearance in the corpus striatum of ovariectomized rats in order to assess transporter function. On the day of the experiment the probe assembly consisting of a micropipette attached to the sensor electrode was stereotaxically directed to the corpus striatum in anesthetized rats. Dopamine alone (control) or a combination of dopamine and estrogen was infused via the pipette and dopamine clearance was recorded by the electrochemistry system. Results demonstrated that estrogen significantly slowed the clearance of dopamine. These data confirm that estrogen acts to modulate the dopaminergic system by inhibiting dopamine transporter activity. Further experiments will investigate the cellular mechanisms by which estrogen exerts its rapid effects on dopamine transporter activity.

Anderson, Patrick — Chemistry — OHIO RM 10:30 - 12:00

Following Alcohol to Azide Conversions by IR Spectroscopy

We have developed a new conversion of primary alcohols to primary azides that uses a safe and affordable azide source, namely p-acetamidobenzenesufonyl azide. Since the OH and N3 functional groups have such distinct absorbances in the Infra Red spectrum we have used this technique to study the alcohol to azide conversion on several alcohols using different bases to promote the reaction.

Angelis, Dan — OHIO RM 1:30 - 3:00

Heater Design for RF Sputter Deposition

RF Sputter-Deposition is used in the fabrication of solid state semiconductors. The quality of the semiconductors depends on many factors. A key factor to producing good semiconductor properties is the temperature of the substrate during deposition. These substrates can vary from 0C to over 1000C using a electric heater. Our heater design uses a high efficiency Silicon Controlled Rectifier circuit that is adjusted using a microprocessor. The microprocessor is a Freescale 68hc11 8-bit microprocessor. The microprocessor continually monitors a thermocouple and adjusts the SCRs to provide more power to the heater. The microprocessor has an LCD display that shows the user temperature and time settings and allows for temperature and time settings to be adjusted by a keypad. The design is user friendly and cost effective.

Arif, Asra — Biological Sciences — OHIO RM 8:30 - 10:00

Characterization of Inetraction Between Rehydration Buffer and Bradford Reagent

The Bradford Assay is often used to determine protein content in 2-dimensional (2d) electrophoresis. We tested the hypothesis that the dehydration buffer used in 2-d gel electrophoresis would not react with the Bradford reagent to produce a positive result. Four Bradford assay samples were incubated at the room temperature and read at 495 nm using a Hewlett Packard model 8453 spectrophotometer. Standards for these assays ranged from 1.2 to 10.9 ug/ml. The dehydration buffer tested positive for protein with values ranging from 69.6 to 1408.6 ug/ml. We observed that protein content increased as the sample dilution increased. In summary, our results demonstrate that the dehydration buffer will react with Bradford reagent and may interfere with accurate measurement of proteins in our gel electrophoresis samples. Future studies will investigate alternative methods for quantitating collagen protein in gel samples or alternative sample buffers.

Arnio, Mark Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Human Powered Vehicle

A Human Powered Vehicle (HPV) is a means of transportation for one or more people, powered by human muscle. Although motorization has reduced the effort in transport, many human-powered machines remain popular for leisure or exercise and for short distance travel. In today's world, with rising fuel and energy costs, HPV's offer an affordable option to consumers on a tight budget, especially those living in heavily populated areas. HPV's also have engineering and design elements that are of great importance for engineers. This paper presents the design and testing of a three wheeled, single rider HPV that is similar to a recumbent bike. The desired outcome of this project is to successfully engineer an HPV with focus on: safety, elegance, ingenuity of design, and practicality of design.

YSU's HPV has been constructed at the university in previous years and for this reason some of the existing components and parts will be reused. Our efforts for the design of the 2007 HPV began by stripping the existing bike down to its frame, as many components were analyzed and revised. Some revisions included a partial frame redesign, brake system upgrade, steering system improvement, frontal fairing enhancement, and seat, to maximize ergonomics, efficiency, safety, and ease of use. The components were modeled and analyzed using computer software such as SolidWorks, Algor FEA, and Working Model in order to obtain accurate results and make design trade-offs.

The 2007 HPV competed in a series of tests sponsored by the American Society of Mechanical Engineers (ASME): 1) Design Event, 2) Sprint Event, and 3) Endurance Event. This national competition was at the University of Central Florida in May, 2007.

At the competition a separate design component is built in, where emphasis in judging is based on the new work that has been completed in the last year. Judges considered both a formal written report and an oral presentation given by team members. Vehicle designs were also judged with an emphasis on originality and engineering soundness. Safety, as always, was considered in the design by testing the braking, turning radius, roll bar, and safety belt. The timed portion of the sprint event was a 100 m (0.062 mi) straight a way after a short distance was allowed to attain maximum speed. The Endurance Event tests the vehicle's abilities on a 65 km (40 mi) course with all vehicles competing. Ultimately, the judge's decisions were based on how well the HPV team, as well as, the HPV itself performed in the competition.

Asturizaga Hurtado de Mendoza, Vivianne Dana School of Music PUGSLEY ROOM 10:30 - 12:00

Bye bye Butterfly - Welcome Caterpilar

Bye Bye Butterfly, elected by John Rockwell in among the 15 masterpieces in between the 60's, and by Heidi von Gunden one of Pauline Oliveros' most outstanding electronic compositions, is her first work as real-time tape composition. In an interview the composer made clear that the architecture of the piece was planned, but not the content. It is said that she just picked a record randomly and used it in her composition. A formal analysis of the piece will explain that this piece is not only a masterwork but also a personal good bye to old aesthetics, a greeting to new ideas, and most importantly a summary of her train of thought.

Austin, Calvin Chemistry OHIO RM 10:30 - 12:00

C-H Insertion Chemistry on Furanose Platforms

The goal of this project is to synthesize structures that are commonly found in natural product chemistry using readily available carbohydrates as an inexpensive source of chiralty. These types of compounds are known to have important pharmaceutical properties and can potentially be created utilizing C-H insertion chemistry on gluco- and xylofuranose platforms. Azidodeoxy sugars with diazoesters attached will be constructed and then decomposed in the presence of a rhodium(II) catalyst. The stereoselectivity and regioselectivity of the reactions will be studied using NMR, Mass Spectrometry, and X-ray crystallography.

Babbey, Joshua Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Work Measurement and Standards Development at Altronic Inc.

Work measurement and standards development at Altronic Inc. usin a series of analysis including field observation, video recording, stopwatch data collection, pre-determined time systems including Most and MTM, and aslo work sampling techniques.

Bailey, Carrie Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Design of a Water-Glycol Exchanger for a Hydronic Heating System

The design of the heat exchanger optimized the initial cost of a hydronic system by reducing the amount of ethylene glycol required to protect a single building territory loop from freezing. A typical building's heating system requires the flow of glycol throughout the entire system, which can be very expensive to fill and maintain. The optimization of the heating system was achieved through the design of a water-glycol heat exchanger that was utilized as a median to transfer heat required to temper combustion air at 0°F (-18°C) and prevent the exposed water lines from freezing. Comparison of the heat transfer results using ChemCad software versus manual calculations determined the style and size to achieve the design of the heat exchanger. The goal was to create an accurate numerical model from which the heat exchanger was built and tested. The overall outcome of the project produced a functioning heat exchanger to which was capable of accepting a water flow rate of 3 gal/min (1.94 x 10-4 m^3/s) at 180°F (82.22°C) and reducing it to an exit temperature of 150°F (65.56°C), by means of a 30% ethylene glycol counter flow at a rate of 2 gal/min (1.24 x 10-4 m^3/s) at an inlet temperature of 70°F (21.11°C) and an exit temperature of 120°F (48.89°C). Other than meeting the required specifications, the heat exchanger design is made of the smallest amount of materials and the simplest construction making the heat exchanger's initial cost an absolute minimum while saving money by using a less amount of glycol in the heat exchanger compared to the use of glycol throughout the entire system.

Barlow, Mark Electrical & Computer Engineering OHIO RM 1:30 - 3:00

Affects of Spherical Contact Terminal Geometry on the Electrical Performance of Diodes

In many high voltage applications modifying the way electrodes or insulators are shaped can greatly reduce the intensity of electric field stress surrounding a device. This technique is used to reduce breakdown voltages in large scale high voltage systems which implement designs that feature physical dimensions with large radii of curvature. Possible advantages could result in applying these techniques to small scale devices such as metal contacts on semiconductors. The most basic of metal semiconductor devices is the Schottky diode. This type of diode is made when metal makes contact with a semiconductor surface. Schottky diodes have fast switching speeds and good high frequency performance. Schottky diodes also have a low forward voltage drop and support high current densities. With the use of wide band gap materials like silicon carbide (SiC) higher voltage applications can be realized. These factors make Schottky diodes a popular choice for radio frequency and power electronics applications.

This research will concern Schottky contact diodes on Silicon Carbide (SiC) and investigate how different metal contact terminal geometries will degrade or enhance diode performance. The data will reflect how spherical and planar geometries of the metal Schottky contacts affect the operational characteristics of the diodes. It is anticipated that spherical contacts with large radii of curvature will enhance the diodes performance by reducing electric field and thermal stress. The following work features aspects of the fabrication process, test, and analysis of these experimental semiconductor devices.

Barton, Cliff JAMES GALLERY 3:30 - 5:00

Single to Three Phase Conversion Using a Rotary Style Design

The group of senior electrical engineering students proposes to design and build a working single to three phase power converter. The converter will be designed to receive an input of 220 VAC single phase, and output 220 VAC three phase. The design of the converter will be of a rotary design type and also the converter will incorporate a power factor correction control loop, and an automatic motor starter to improve energy loss and usage. The efficiency of the converter will be monitored with the micro-controller in the control loop and displayed via an LCD display. The group also proposes the estimated cost and time line that will be adhered to as close as possible during the stages for the development. The rotary design will be used because it is a good deal more efficient than a static converter system that is easier to build.

Becker, James Geological and Environmental Sciences JONES ROOM 10:30 - 12:00

Depositional Patterns and Coastal Change at Sandy Point, San Salvador, Bahamas

Sandy Point is a prominent landform located at the southwestern corner of San Salvador. It has formed as a result of the combination of long shore drift along the southern and western shores of the island and intense wave refraction. Investigations performed in March 2003 through March 2006 indicate that sediment accumulates rapidly at the point and dramatically shifts position in response to major storm events. The initial investigation in 2003 concluded an average calculated progradation rate of approximately 10 feet per year over a 32 year period. Subsequent investigations in 2004 through 2006 showed significant annual changes in shoreline position.

A GPS survey of the low tide shoreline and bounding sand dune line was performed in order to further define the rate of sediment accumulation and annual movement of the deposits. In addition, eight beach profiles were constructed from the tide line to the sand dunes bounding the beach on the landward side. The resulting shoreline position was plotted on the topographic map of the island (1971) using ArcGIS. The results show major changes in the shoreline configuration over the past year. The combination of beach profiles and shoreline position enable an estimation of the volume of sand displaced since March 2006.

Bedenis, Gregory Business Administration COFFELT ROOM 3:30 - 5:00

Improving Cash-Flow Management through an Activity-Based Costing Implementation

Focusing on growth is important for a small business. The ability to fund growth internally is directly related to the ability of the organization to generate positive cash flows. This presentation highlights a Mahoning Valley small consumer products manufacturer's implementation of a simple Activity-Based Costing (ABC) system to improve cash-flow management. The developed ABC model allocates resource costs and assets to activities to better manage inventory, as well as overhead costs, by calculating return on sales (ROS) and return on investment (ROI) data for product lines and customers. In addition, the ABC implementation spurred business process improvements that both improved operational efficiency and increased data accuracy. The presentation concludes with a discussion of selected ABC-implementation issues likely faced by small manufacturers.

Beegle, Erik Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Human Powered Vehicle

A Human Powered Vehicle (HPV) is a means of transportation for one or more people, powered by human muscle. Although motorization has reduced the effort in transport, many human-powered machines remain popular for leisure or exercise and for short distance travel. In today's world, with rising fuel and energy costs, HPV's offer an affordable option to consumers on a tight budget, especially those living in heavily populated areas. HPV's also have engineering and design elements that are of great importance for engineers. This paper presents the design and testing of a three wheeled, single rider HPV that is similar to a recumbent bike. The desired outcome of this project is to successfully engineer an HPV with focus on: safety, elegance, ingenuity of design, and practicality of design.

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Benton, Cherise Biological Sciences OHIO RM 8:30 - 10:00

Proteomic Studies of A Selenite Resistant Strain of Ecoli

Stenotrophomonas maltophilia (S. maltophilia) ORO2 demonstrated the ability to precipitate the selenium derivative, selenite. The S. maltophilia ORO2 plasmid pOR1 was transferred to the selenite-sensitive Escherichia coli (E. coli) strain HB101, resulting in the new selenite-resistant strain called, HB101(pOR1). The purpose of our project is to identify proteins and genes involved in selenite-resistance in Luria-Bertani (LB) medium through proteomic techniques. We grew cultures of the E. coli strains HB101 and HB101(pOR1) side by side in the presence and absence of selenite, and then measured the protein concentration to track the effect of selenite on the growth of the four E. coli cultures. These proteins were separated on 2-dimensional gels according to charge and size. Comparison of spots on gels containing treated samples with spots on gels containing untreated samples will identify proteins that are expressed in response to toxic concentrations of selenite. The proteins expressed under toxic selenite conditions will be further identified through mass spectrometry and will hopefully increase our knowledge of how bacteria process selenium in presence of high selenite concentrations.

Bierdeman, Jennifer Criminal Justice HUMPHREY ROOM 3:30 - 5:00

Female Delinquency: Growth & Response

The U.S. Department of Justice (2005) reported that delinquent acts have increased in the female juvenile population between 1994 and 2003. While female delinquency is increasing, there has been a steady decrease in overall criminal acts for all other offending populations. This paper focuses on the increased pattern of female delinquency and the treatment options available for this population. Three data set were collected and evaluated: survey responses from individuals who deal with and treat these girls; information obtained from focus groups with girls currently arrested and being detained; and demographic information obtained from a juvenile detention facility pertaining to their female population.

Blower, Michelle Biological Sciences OHIO RM 8:30 - 10:00

Micro Assay for Testing of AB-5-89

Infection by Staphylococcus aureus has become difficult to control due the fact that it rapidly becomes antibiotic resistant. Capsular polysaccharides contribute to the virulence of the organism, and are a target for new treatment options. We will test drugs synthesized by Dr. Norris' organic chemistry lab for effectiveness in preventing capsule production by Staphylococcus aureus type 5. These compounds are modified sugars which have different functional groups attached, the hope is that they will either inhibit production of capsule or be incorporated but not extended. Prevention of capsule production will allow normal immune defense mechanisms to kill the bacteria.

Blue, John Political Science HUMPHREY ROOM 10:30 - 12:00

The Rise of Islamic Extremism from the Muslim Brotherhood to Bin Laden

With tension and violence increasing exponentially in the Middle East, it is extremely important for us to evaluate and understand that which has come to be known as "Islamic extremism". In researching this arena, I am going to attempt to explain certain aspects of this phenomenon. Some of the areas that I am going to cover include: What is Islamic fundamentalism and extremism and who are the primary actors or leaders?, What is the Muslim Brotherhood and what role does their rise in the 20's play in the movement today?, Who is Osama Bin Laden? Where does he come from?, Did Al-Qaeda exist prior to Bin Laden's rise?, Are Al-Qaeda's tactics and actions widely accepted by the rest of the fundamentalist and extremist movements or are his actions being resisted?

Answering these questions will be beneficial in understanding the way that violence and ideology effect political tides in states. This research will also be helpful in understanding the mentality of the Islamic movement. In addressing these issues, I am also going to attempt to ascertain what options states may have in dealing with this type of movement.

It is easy to make many assumptions when dealing with this topic. It is my belief that the Islamic fundamentalist movement is a political movement that utilizes violence as a primary tool of persuasion. It is also my contention that because violence has become so ingrained in the movement that diplomatic means may have already become useless when attempting to deal with this movement.

Boes, Amy Physical Therapy JONES ROOM 3:30 - 5:00

Progressive Resistive Exercise for Fibromyalgia: Function, Pain, and Sleep

Although aerobic exercise, stretching, and relaxation exercises have been shown to benefit women with Fibromyalgia Syndrome (FMS), strength training has received not been studied in depth. The purpose of this case report is to study the effects of resistive exercise on function, pain and sleep for a woman with Fibromyalgia.

Setting: Local Fitness Center for pre- and post-tests and woman's home for exercise. A 58 year old Caucasian female diagnosed with FMS by a certified rheumatologist over 30 years ago. Diagnosis included identification of 12 of 18 possible trigger points; she has painful areas at the chest, knees, shoulders, between shoulder blades, and both forearms. Pre and post intervention strength was measured using the 1-Repetition Maximum (1-RM) test. The female with FMS performed resistive exercises of the biceps, triceps, chest muscles, abdominals, back extensors, and hips, with increasing amounts of resistance and repetition twice weekly over a 6-week period. Four outcome measures were: 1) strength; 2) a visual analog scale (VAS) to measure the amount of pain with each intervention session; 3) the Fibromyalgia Impact Questionnaire (FIQ) to monitor the intervention's impact on function; and 4) a sleep log to chronicle the effect of the intervention on sleep patterns. Strength of 1-RM increased in all muscle groups tested. FIQ scores decreased from 57/100 to 27/100, indicating that the fibromyalgia was having less impact on the woman's life. Pain level at baseline was 7/10 (pre-exercise) and 5/10 (post-exercise) on a VAS scale and declined but spiked at week 2 of the study to 6/10 (pre) and 5/10 (post). At the conclusion of the study, the end pain level was 1/10 on the VAS scale. Average hours per week of sleep ranged from 7.6 hours to 8.9 hours. The most hours of sleep was achieved in the second week of the study and the least in the first week. Strength training had positive effects in all four areas for a female with FMS. A 6 week twice per week low intensity strength training program not only increased muscle strength, but also improved function, decreased pain, and improved quality of sleep.

Bonar, Noell Teacher Education JONES ROOM 10:30 - 12:00

Annual Changes of the Pigeon Creek Delta Bathymetry, San Salvador, Bahamas

The Pigeon Creek Tidal Estuary is a major feature on the Island of San Salvador, the Bahamas. The estuary covers an area of approximately seven square miles and fills during high tides and subsequently drains during the intervening low tides. Discharging water at low tide transports a tremendous amount of sediment that is deposited as a large submerged delta inside Snow Bay at the mouth of the estuary. The delta bathymetry has been mapped annually since 2005. The bathymetry of the delta changes with time as a result of daily tidal influences and tropical storms and hurricanes. The purpose of the research is to characterize bathymetric changes that have occurred over the past two years and to investigate potential sedimentation patterns. Using GPS receivers for location coordinates and jacobs staffs for measuring water depth, approximately five hundred individual batymetric values were measured. The bathymetry data were mapped using the RockWorks computer assisted mapping program. The resulting map was georeferenced and imported into ArcGIS. The 2007 bathymetry was compared to the 2005 and 2006 bathymetries using ArcGIS spatial analyses tools.

Brenner, Paul History JONES ROOM 1:30 - 3:00

The 360: British Use of Force in Ireland

England governed Ireland for almost a millennium, during which time there developed a set relationship between the two nations. This has meant that the Irish were oppressed by the English as the occupying force. At the end of the 19th century, however, this policy changed and the British government decided to back off their heavy handed policies. There are any number of possible reasons for this including the disastrous Irish Potato Famine of 1845-1849 when large portions of the population died and the English proved unwilling or unable to help the problem. Whatever the reason, there was a change in policy at around this time. This change led the British Government to eventually accept Irish independence of some kind as an inevitability. To this end in 1914 there was an admittedly imperfect but still momentous Irish Home Rule Act passed through Parliament and ready to be enacted. Ireland was left to an essentially caretaker government until after the war, and would then be a free dominion like Canada or Australia. After the 1916 Easter Rising, though, the British government reacted by tightening restrictions again, including the imposition of martial law and the use of summary courts. This paper will show this renewed use of force led to resentment that made the later Anglo-Irish War possible. It will use primary accounts of the time to achieve a picture of what Irish opinion was on the return of the British use of force in 1916. It will then seek to determine if this was a significant factor in widening the Anglo-Irish war.

Brown, Zachary Physics & Astronomy OHIO RM 10:30 - 12:00

Calibrating and Analyzing data from the BOKS Project

We present the procedures and steps needed to analyze the Burrell-Optical-Kepler Survey (BOKS) data, a variability survey intended to find transiting extra-solar planets. We show the adapation of ultra-deep surface photometry reduction code used on the Burrell Schmidt telescope applied to this new data set. We also present the co-added image of the 1,936 r-band images taken during the survey.

Buffone, Steven Geological & Environmental Sciences OHIO RM 1:30 - 3:00

Relationship Between Polyaromatic Hydrocarbons in Groundwater and the Mahoning R

Due to past industrial use of the Mahoning River (MR) the sediment and soils are contaminated with a variety of pollutants including petroleum, heavy metals, and other chemical compounds. This has lead to the need for remedial action to be considered for the protection of human health and the environment. This also would open the river for future use and help end the sigma of being a "dirty town" placed on Youngstown and its surrounding communities. The Army Corps of Engineers has assessed the MR and decided on the course to take for remedial action. The Corps plans to use a vacuum dredging technique on the river sediment and then landfill the sediment after dewatering. The Corps is operating under the assumption that the contaminated soils of the MR banks are contained and do not pose a threat for recontamination of the MR itself. Therefore, the Corps is taking the stand of "no action" in regards to the MR bank contamination. This assumption may prove to be incorrect and has the potential to cost much time and money if recontamination does occur. This could also endanger human health if the river were ever to be used for recreational purposes. The hydrologic connection between ground water and river water must therefore be characterized to assess the recontamination potential.

The purpose this study is for the evaluation of hydrology in relation to the MR, its banks, and the contamination therein. The scope of the project will include soil type, petroleum hydrocarbon analysis (specifically for PAH's) and will cover the 31 mile stretch of the MR between between Leavittsburgh and Lowellville. It will be determined whether there is a relation between the groundwater in the banks and the MR channel water. This water will be analyzed to determine if there is a concentration of petroleum and what types of petroleum are present. This will be done through monitoring the elevations (hydraulic heads) of the bank and river water. Characterization of sediment (lithology) will be done noting the depth to contamination, thickness of contamination, depth to bedrock, depth to ground water, and features such as the presence of metal oxides. This is to then be correlated with feasibility of in-situ bioremediation of the hydrocarbons within the MR banks.

Busby, Justine Chemistry OHIO RM 10:30 - 12:00

Molecular Modeling and Ring Conformation in Honors Organic Chemistry

In Chemistry 3719 and 3720 we discuss molecular conformation and the use of Nuclear Magnetic Resonance Spectroscopy (NMR) in working out the structures of organic molecules. For the Honors component of these classes we have studied molecular modeling using the ChemDraw and Chem3D package to build and analyze more complex molecules. Consideration of both NMR and molecular modeling results allows the development of a deeper understanding of the uses and applications of both in Organic Chemistry.

Caguiat, Jonathan Sigma Xi OHIO RM 1:30 - 3:00

Screening of Metal-Resistant Bacterial Isolates from Poplar Creek in Oak Ridge, TN

The Y-12 plant in Oak Ridge, TN has played a vital role in national defense. It processed uranium to make atomic bombs during World War II and lithium to make hydrogen bombs during the Cold War. These activities released mercury and other heavy metal wastes into East Fork Poplar Creek and the surrounding area. Strenotrophomas maltophilia Oakridge strain O2 (S. maltophilia ORO2), which was isolated from the East Fork Poplar Creek, grew in the presence of toxic levels of zinc, copper, platinum, mercury, gold, cadmium, lead, silver, chromium, and selenium. In 1989 and 1990, nine hundred aerobic bacterial colonies from soil contaminated with 86 ppm mercury were isolated using R2A medium and saved as glycerol stocks. In addition, one thousand six hundred other colonies from a downstream site contaminated with 2 ppm mercury were grown in R2A medium and saved as glycerol stocks. We used replica plating to screen these isolates for several different metal-resistances at minimal inhibitory concentrations (MICs) determined for E. coli strain HB101 in the presence of the following metal salts: CuSO4 (500 µM), K2CrO4 (250 µM), Pb(NO3)2 (1300 µM), HgCl2 (10 µM), Na2SeO3 (2 mM), ZnCl2 (700 µM), and CdCl2 (65 µM). To minimize precipitation of Pb(II) and Cd(II), R3A medium, buffered with 10 mM Tris-HCl instead of with phosphate, was used for the screening experiments. Of the 48 isolates examined from the site contaminated with 86 ppm mercury, 85% grew on Cu(II) plates, 81% grew on CrO42- plates, 54% grew on Hg(II) plates, 46% grew on Cd(II) plates, 42% grew on Zn(II) plates, 58% grew on Pb(II) plates and 29% grew on SeO32- plates. Of the 24 isolates examined from the site contaminated with 2 ppm mercury, 96% grew on Cu(II) plates, 88% grew on CrO42- plates, 75% grew on Hg(II) plates, 33% grew on Cd(II) plates, 38% grew on Zn(II) plates, 33% grew on Pb(II) plates and 50% grew on SeO32- plates. Some known genes that confer the metal resistances in S. maltophilia ORO2 were amplified using the polymerase chain reaction (PCR). We will clone and sequence these amplified segments to verify their identity and use them to identify similar genes in other isolates in Southern blotting experiments. Finally, we will sequence 16s ribosomal DNA from these isolates to determine their identities. Using this strategy, we hope to determine the distribution of known metal-resistance genes in the population of aerobic bacteria that can be cultured and possibly identify new mechanisms for metal-resistances.

Caldwell, Nathaniel Physics & Astronomy JONES ROOM 8:30 - 10:00

Real Time Physics Simulation

With increases in computer hardware, real time physics simulation is showing up in more and more places. I have created a real time user interactive physics simulation with an editor to design experiments and query the simulation. I will present my program, showing various features, and will describe the various algorithms used. I will also discuss the various applications for which it can be used, and propose my future improvements to the engine.

Callow, Mark Chemistry OHIO RM 10:30 - 12:00

Following Alcohol to Azide Conversions by IR Spectroscopy

We have developed a new conversion of primary alcohols to primary azides that uses a safe and affordable azide source, namely p-acetamidobenzenesufonyl azide. Since the OH and N3 functional groups have such distinct absorbances in the Infra Red spectrum we have used this technique to study the alcohol to azide conversion on several alcohols using different bases to promote the reaction.

Canavan, Shaun Computer Science & Information Systems COFFELT ROOM 10:30 - 12:00

Imaging and Characterization of Facial String in Long Video Sequences

This paper presents a method for computing strain images of a deformable object in a video sequence. The method includes two steps: in the first step, the motion data between a pair of video frames is generated using a robust optical flow algorithm. In the second step, a strain image is computed by applying a gradient filter to the motion data. The efficacy of the method was demonstrated using 30 video sequences that captured human facial expressions under different lighting conditions. Several key factors and their impact on the quality of the strain images were also discussed.

Canavan, Shaun Computer Science & Information Systems OHIO RM 1:30 - 3:00

Face Rocognition with 2D and 3D images using Support Vector Machines

This paper presents a comparison of 2D and 3D images using support vector machines. The 3D images are gathered by fusing 2D images together to obtain the 3D space knowledge. Our hypothesis is that the knowledge gained from the 3D space will improve the recognition rate, when both types of images are used with support vector machines.

Carlon, Phil Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Collapsible Spreader Bar for Trenching (Project Orange)

In today's day of construction, trench shields are required for digging trench depths greater than five feet. Due to the length of the various trenches, this shield must be mobile so it can be moved from time to time throughout the construction period. Currently, the shield walls are held apart with a simple spreader locked into place with two forged steel pins. However, when removal of these shields is necessary, the current process is to cut the spreaders and then start again. The solution is a quick release design that would help in the mobility and cost efficiency of the shields. This consists of a spreader bar that is connected by three pin joints that allows the walls of the shields to be pulled away from the trench walls prior to removal. These pin joints are reinforced by a thick metal sleeve that is slid over the aforementioned three pins. For disassembly purposes, the sleeve is slid away from the pins, allowing the spreader bar to collapse. Collapsing the spreader bar can be accomplished by either a worker at the job site or assisted by the available equipment (such as a backhoe or bulldozer). This design increases the efficiency of the overall trench digging process due to several reasons. First and foremost, the spreader bars do not need to be destroyed like they currently do, eliminating an expensive and time consuming process. It also increases the mobility and speed with which the trench system can be assembled. When looked at in a proper magnitude of today's construction projects, this design can potentially save thousands of dollars annually.

Carney, Kevin JAMES GALLERY 3:30 - 5:00

Single to Three Phase Conversion Using a Rotary Style Design

The group of senior electrical engineering students proposes to design and build a working single to three phase power converter. The converter will be designed to receive an input of 220 VAC single phase, and output 220 VAC three phase. The design of the converter will be of a rotary design type and also the converter will incorporate a power factor correction control loop, and an automatic motor starter to improve energy loss and usage. The efficiency of the converter will be monitored with the micro-controller in the control loop and displayed via an LCD display. The group also proposes the estimated cost and time line that will be adhered to as close as possible during the stages for the development. The rotary design will be used because it is a good deal more efficient than a static converter system that is easier to build.

Cartright, Ginger Geological & Environmental Sciences OHIO RM 1:30 - 3:00

Assessment of the Hurricane Impact Scale, San Salvador, Bahamas

Hurricanes have long been studied by scientist hoping to understand and more accurately predict the landings of these catastrophic storms. Within the last decade, a new scale for measuring the impact of hurricanes has been proposed, and this research is applying the aspects of the new scale to the passing of Hurricane Frances over San Salvador in September of 2004 with the currently accepted hurricane assessment scale, the Saffir-Simpson Scale.

Casey, Christine Human Ecology OHIO RM 3:30 - 5:00

Students' Knowledge of Standard Serving Sizes and Ability to Estimate Portions

Obesity is an epidemic with one in three Americans classified as obese and utilization of 12% of the national healthcare budget to deal with complications and comorbidities. Poor portion control is suggested as one of the contributing factors to obesity. This study will investigate visual recognition of standard serving sizes of selected foods from all food groups. Gender differences in knowledge about serving size and ability to estimate standard serving sizes by weight/volume will also be determined. A convenience sample (n=100) of YSU undergraduate students will be surveyed to assess their knowledge about standard food and beverage serving sizes and their ability to identify weight/volume amounts of standard serving sizes. Students will be compared by gender and whether they have completed an introductory nutrition course that included education on food portions. Female students are anticipated to be more knowledgeable about serving sizes and more skilled at estimating weight/volume of standard serving sizes than males. The researchers also anticipate that there will be a benefit to study participation in that awareness about standard serving sizes and portion control will be raised in the study population.

Catchpole, David Dana School of Music PUGSLEY ROOM 10:30 - 12:00

The Appropriation and Integration of Wagner

The appropriation and integration of Wagner in Brucknerâ€™s Third SymphonyFor a musicologist Brucknerâ€™s Third Symphony presents formidable challenges. It exists in three distinct editions, as well as two versions published in the composerâ€™s life time. Because Brucknerâ€™s students Ferdinand Lowe and Franz Schalk, who were ardent Wagnerians, made unauthorized changes while preparing his Symphonies for publication, resulting in questions of authenticity. This convoluted history poses a problem in determining which edition represents the composerâ€™s intent, a controversial issue in the literature. It also contains prominent quotations of Magic Sleep music from Wagnerâ€™s The Valkyrie, as well as passages from Tristan and Isolde. Brucknerâ€™s treatment of these quotations, as presented in different editions, provide musicologists with an avenue of inquiry into the composers intent, which has not been fully explored.My paper explores the different editions of Brucknerâ€™s Third Symphony and the appropriation of Wagnerâ€™s music in this work. Using the analytical method presented in Harold Bloomâ€™s The Anxiety of Influence, I will demonstrate that Bruckner was ambivalent toward the Wagnerian ideology and with successive revision of his work, he distanced himself from Wagner. Through the revisions he establishes therefore his own musical aesthetics.

Chizmar, Jeffrey JAMES GALLERY 3:30 - 5:00

Autonomous Robot

An autonomous robot will be designed and built. This robot will operate as an independent entity using only onboard systems to navigate and find its way to specific points of interest. The robot is designed to be versatile and will require minimal control of the environment, which is not normally the case. This will allow the robot to be adapted to most environments by just changing the programming that controls how the robot operates. For example, it could be used to move bins in a factory that fill with a part throughout the day from the end of one assembly line to the beginning of another assembly line.

Citarella, Matt Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

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Coffey, Robert Teacher Education JONES ROOM 10:30 - 12:00

Depositional Patterns and Coastal Change at Sandy Point, San Salvador, Bahamas

Sandy Point is a prominent landform located at the southwestern corner of San Salvador. It has formed as a result of the combination of long shore drift along the southern and western shores of the island and intense wave refraction. Investigations performed in March 2003 through March 2006 indicate that sediment accumulates rapidly at the point and dramatically shifts position in response to major storm events. The initial investigation in 2003 concluded an average calculated progradation rate of approximately 10 feet per year over a 32 year period. Subsequent investigations in 2004 through 2006 showed significant annual changes in shoreline position.

A GPS survey of the low tide shoreline and bounding sand dune line was performed in order to further define the rate of sediment accumulation and annual movement of the deposits. In addition, eight beach profiles were constructed from the tide line to the sand dunes bounding the beach on the landward side. The resulting shoreline position was plotted on the topographic map of the island (1971) using ArcGIS. The results show major changes in the shoreline configuration over the past year. The combination of beach profiles and shoreline position enable an estimation of the volume of sand displaced since March 2006.

Cole, Jenna Human Ecology OHIO RM 3:30 - 5:00

Students' Knowledge of Standard Serving Sizes and Ability to Estimate Portions

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Connell, Maureen Dana School of Music PUGSLEY ROOM 10:30 - 12:00

The Reception of Schoenberg's Twelve-Tone Compositional Techniques

From the moment the Viennese composer Arnold Schoenberg formulated the method of composition with "twelve notes related only to one another" in 1921, his compositional system has been controversial. While his techniques have been accepted by generations of composers, his music has been received with hostility from audiences and critics, notably in studies such as William Thomson's Schoenberg's Error. Indeed, Schoenberg caused a paradigm shift by abandoning the tonal harmony from the common practice period in music and replacing it with the twelve-tone system, therefore changing the outcome in his compositions.

In this light, my paper addresses the polemics generated by Schoenberg's twelve-tone system and the reception of his music. While the historical significance of Schoenberg's achievements is undeniable, there is still a confusion in its reception history between the method of composition and its aesthetic result. Through a consideration of both, Schonberg's achievement opened new avenues in the development of modernism in music.

Conway, Ryan Chemistry OHIO RM 10:30 - 12:00

Scalable Syntheses of Aminosugars Found in S. aureus Capsular Polysaccarides

The following describes the attempted syntheses of the rare sugars N-acetyl-L-fucosamine (L-FucNAc) and N-acetyl-2-amino-2-deoxy-D-mannopyranose uronic acid (D-ManNAcA). L-FucNAc and D-ManNAcA are components of the capsular polysaccharide (CP) of Staphylococcus aureus, which protects the bacterium from the body's immune response. The termination of the CP may provide alternative therapies against S. aureus and possibly other pathogens.

Corman, Kevin Biological Sciences OHIO RM 8:30 - 10:00

Pilot Study of the Effects of Partial Sciatic Nerve Ligation on Recovery in Rats

This investigation examined the effects of environmental enrichment on injury-induced allodynia in rats with partial sciatic nerve ligation (PSNL). Male, Long-Evans rats were used in this study. Rats were randomly selected to a standard cage (food, water and bedding) or an enriched cage (food, water, bedding, polycarbonate shelters, and chew toys). Additional studies are being performed to test social and non-social factors contributing to recovery. A PSNL was performed on a hind leg of all rats. Behavioral measurements, including mechanical allodynia, mechanical hyperalgesia and paw withdrawal threshold (PWT) to a mechanical stimulus, were taken 7, 14, 21, 28, and 35 days after surgery.

Cornfield, Jeffrey Teacher Education HUMPHREY ROOM 1:30 - 3:00

Napoleon Triangles- A Brief Presentation

Napoleon Triangles states that given equilateral triangles erected outwardly on the sides of triangle ABC and containing centers X, Y, and Z; the triangle formed from the vertices X, Y, and Z is also an equilateral triangle. I will demonstrate a proof of the Napoleon Triangles, give a brief history of the Napoleon Triangles, and discuss further research and applications of the Napoleon Triangles, especially Fermat Points.

Corsale, Matthew Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Increasing the Torque and Efficiency of a Permanent Magnet Motor

The permanent magnet motor design on which this study focuses is the Stephen Kundel Motor. However, the motor under investigation was the second prototype of the original Stephen Kundel design and was originally constructed by the 2006 Undergraduate Senior Design Team of Youngstown State University Mechanical Engineers.Increasing the overall torque and efficiency of the motor was achieved by developing a design which employs more efficient components, reduces the inertial forces acting on the linear strokes of the motor, and implements optical sensors. Some of the components that were improved were the bearings, the magnets, and the shafts of the motor. Optical sensors were also employed in the design to replace the mechanical brush switches in the former design. Having done so, the friction between the rotating shaft and the brushes was eliminated. Thus, more energy input was conserved and converted into usable mechanical energy.The overall design of the motor was achieved by comparing manual calculations to experimental data gathered from the prototype of the design. The goal was to use a theoretical model of the motor to improve the overall design of the actual motor. These improvements are both mechanical and electrical in nature. Experimental data can then be collected from the improved motor to determine how much of an improvement was made and how close the results match the theoretical model.

Cox, Adam Chemistry OHIO RM 10:30 - 12:00

Scalable Syntheses of Aminosugars Found in S. aureus Capsular Polysaccarides

The following describes the attempted syntheses of the rare sugars N-acetyl-L-fucosamine (L-FucNAc) and N-acetyl-2-amino-2-deoxy-D-mannopyranose uronic acid (D-ManNAcA). L-FucNAc and D-ManNAcA are components of the capsular polysaccharide (CP) of Staphylococcus aureus, which protects the bacterium from the bodyâ€™s immune response. The termination of the CP may provide alternative therapies against S. aureus and possibly other pathogens.

Coy, Kevin JAMES GALLERY 3:30 - 5:00

Smart House

Due to high costs of electricity, we are going to design a Smart House. This house will be able to switch power sources from solar power, to supplied power, to generated power and vise versa. We will create a generator that is made to be powered by both solar energy and a gas powered engine. The project will include designing a system that is capable of supplying an entire house with power on a continual basis using solar energy, while still being able to rely on a backup line power and using a gas powered engine as an emergency backup when the solar cells are not able to gather enough energy and the line power is not able to supply power. This house will also be able to perform tasks of a normal house with a more high tech approach.

Culler, Krystal Sociology & Anthropology OHIO RM 3:30 - 5:00

Respecting the Will of the People: Death with Dignity Legislation

Physician assisted death occurs everyday in every state and laws will not prevent terminally ill patients from seeking other health threatening alternatives or doctors from illegally assisting their patients. In all fifty states terminal sedation and dehydration is a legal way to end a patient's life even though this process may take up to two weeks. Euthanasia is illegal in every state, yet only the state of Oregon has legalized physician aid in dying. Since Oregon's Death with Dignity (DWD) Law has come into effect Physician aid in dying has become a heavily debated topic among numerous state legislators. The United States Supreme Court has ruled adopting death with dignity legislation is left to the discretion of each individual state. This presentation will explain the difference between Euthanasia and physician aid in dying, the requirements set forth by the state of Oregon's DWD Law, and also discuss the effects of Oregon's DWD Law and how other states are also trying to enact a type of death with dignity legislation.

Davenport, Gary English BRESNAHAN I ROOM 3:30 - 5:00

Till Eulenspiegel And His Role As Trickster In Late Middle Ages

Till Eulenspiegel, a folkloric trickster traditionally believed to have lived in the 14th century and popularized with the anonymous publishing of two editions in the 16th century, has devolved into a children's character devoid of the scatological elements and seemingly cruel pranks of his original persona. Upon examination of the original texts, his nature of absurd language interpretation and deft attacks on craftsmen begs the question of his role in that society. The paper explores such factors as church power, economy, the Plague, and the status of guilds, nobles, politicians, and humor in the Late Middles Ages in order to explain why Till became, and remains to this day, part of popular German folk psyche.

David, Martin Mathematics & Statistics OHIO RM 10:30 - 12:00

Evaluation of the Effective Fragment Potential Method of Molecular Modeling

The development of computational methods is generally characterized by two conflicting objectives: the maximization of efficiency and the maximization of accuracy. Unfortunately, achieving satisfactory levels of one of these qualities often requires compromising its counterpart. Therefore, it is natural that the overall purpose of computational chemical research is to develop methods which are simultaneously efficient and accurate. The Effective Fragment Potential (EFP) method is an extremely efficient method of modeling intermolecular forces, in particular, solvation processes. The method, developed by Dr. Gordon and his research group at Iowa State University as a component of GAMESS, has two branches: EFP1, which has fitted parameters and deals exclusively with modeling water molecules (other molecules may be present but will not be modeled via EFP1), and EFP2, a purely ab initio generalization of EFP1 which can be applied to any molecule.3

The present research pertains exclusively to the EFP2 method, which is highly promising due to its broader applicability. The primary purpose was to evaluate the agreement between the EFP2 and the MP2 (computationally more costly) methods while exploring via Monte Carlo simulations the least energy structures of dimers of various solvents, as well as small water clusters (2-6). The energetic ordering of the least energy structures was the same for both methods in all cases.

Davis, Patrick History JONES ROOM 1:30 - 3:00

The Queen of Steam; Steam Locomotive No. 765

This is a paper on the restoration and operation of a modern steam locomotive called the Nickel Plate Road #765. This report details the restoration process along with the costs of doing this and how the steam engine was restored without the benefit of modern equipment. Also, what it takes to maintain the engine and some of the difficulties with equipment and fuel. Also, the people involved and what they contributed on a massive scale to this project over the past two decades. In addition, much factual information is presented that many people rarely hear about or know of.

Davis, Candice Counseling & Special Education OHIO RM 3:30 - 5:00

School Based Conflict Resolution: A Review of the Four Most Common Approaches

Every day in America 4,356 children are arrested, 181 children are arrested for violent crimes, 1,900 public school students are corporally punished, and 16,964 public school students are suspended (Children's Defense Fund, 2005). Given the rise of violence in schools, school counselors need to be aware of the effective programs available to deal with conflict resolution (Bell, Coleman, Anderson, & Whelan, 2000). Delinquency and violence are symptoms related to a juvenile's inability to constructively handle conflict (LeBouef & Delany-Shabazz, 1997). The ineffectiveness of punitive approaches such as zero tolerance policies has been confirmed (Asherman, 2002).

This session will provide evidence for the need of conflict resolution programs and a review of available and effective programs for schools. There is preliminary evidence that conflict resolution programs have be shown to reduce aggression and violence, build social skills, and develop moral reasoning (Hydenberk, Hydenberk, & Perkins-Bailey, 2003; Munoz, 2002). Schools should be places were students have the opportunity to resolve their problems independently using the skills they learned through a conflict resolution program (Johnson & Johnson, 1996).

Programs to be discussed will include peer mediation, process curriculum, social skills builders, peaceable classrooms and peaceable schools. The increase in conflict has taken away time for instruction in the classroom therefore giving students the responsibility to handle conflicts on their own will not only improve the lives of students but school environments as well.

Day, Stephanie Geography COFFELT ROOM 1:30 - 3:00

A Spatial and Temporal Overview of Urban Structure in Sub-Saharan Africa

Urban structure in Sub-Saharan Africa can be classified into four subtypes: indiegenous, Islamic, colonial, and post-independence. Each of these subtypes have associated spatial and temporal characteristics. I will be briefly examining these characteristics, starting with the earliest known Sub-Saharan African cities and continuing until present day. By examining form and function of the cities, we can better understand the implications of a rapidly growing urban population in Sub-Saharan Africa.

Day, Stefanie Geography JONES ROOM 10:30 - 12:00

Storr's Lake Archaeological site Mapping

The Storr's Lake Archaeological Site (SS-4) on San Salvador Island in the Bahamas was initially opened for archaeological excavations by Dr. Gary Fry in December 1995. Archaeological excavations have been on-going at the site since that time under Dr. Fry and then later under the supervision of Tom Delvaux. The site boundaries have never been officially identified and mapped nor have individual excavations within the site been mapped in conjunction with a general boundary delineation. Utilizing GPS technology in concert with GIS mapping software we mapped the location of the site boundaries in December 2006 under the supervision of Tom Delvaux. Individual excavation pits were mapped as part of the process. This archaeological site is threatened by potential resort development and mapping the site boundaries was considered critical in order to receive permission to set aside this area and preserve it from immediate development until additional site excavations can be performed. We report on the process of the field mapping and present the final results of the GIS products generated from the field data.

DeChant, Danielle Biological Sciences OHIO RM 8:30 - 10:00

Transposon Mutagenesis of the Multi-metal Resistant Bacterium S. maltophilia ORO

Stenotrophomas maltophilia ORO2 (S. maltophilia O2) was isolated from East Fork Poplar Creek which was contaminated with heavy metals by the nearby Y-12 plant in Oakridge, TN. This plant processed uranium to make atomic bombs during World War II and lithium to make hydrogen bombs during the Cold War. S. maltophilia O2 grew in toxic levels of zinc, copper, platinum, mercury, gold, cadmium, lead, silver, chromium and selenium. The goal of this project is to use PCR and transposon mutagenesis to identify metal-resistant genes from this strain. The polymerase chain reaction (PCR) experiments suggested that it contained known genes for mercury- and copper-resistance. The EZ-Tn5 transposome from Epicentre Biotechnologies was used to randomly insert DNA segments into the genome of this strain. Of the 882 Tn5 transformants screened, 9 had mutations in a metal resistance gene. Two did not grow on minimal media, one showed poor growth on minimal media, one was sensitive to lead, zinc, and cadmium, three were sensitive to zinc and cadmium, one was sensitive to cadmium, and one was sensitive to selenium. We are in the process of rescuing and identifying the mutagenized genes. These identified genes will be used to detect metal-resistances from 2,500 other isolates from East Fork Poplar Creek and possibly lead to the discovery of new metal resistance genes.

Dechelis, Matt OHIO RM 3:30 - 5:00

Gia Russa (Zidian Manufacturing)

The presentation will be a production analysis of the Gia Russa (John Zidian) manufacturing. The presentation will include results on a time study and other work sampling techniques. A summary of field observation, video recording, stopwatch data collection, pre-determined time systems,including most and MTM will also be included.

DeMar, Ben Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Hinged Release System

A problem was presented concerning the disassembling of a trench protection shield. The previous design did not include the vacuum force created by the earth, and therefore made removal of the shield systems a problem. Because of this issue, support beams were burned or cut out in order to release the system from the ground pressure. This in turn minimized cost efficiency and resulted in a limited unit lifetime. A new design had to be created that would deal with all of these issues as well as incorporate diverse weather conditions and government and industry safety standards.

The design that was created utilized simple components due to the desire of cost efficiency and simple assembly and disassembly. The boss supports on the shield walls were used as well, allowing only the need for change in the support shaft. The shaft design had four members connected by three pivot points. The central pivot point was reinforced by a steel bar running parallel with the shaft which was easily removable and replaceable by operators. This reinforcing bar was included for safety reasons only, with the expectation that it would never undergo significant pressure. The shaft members that were used included link tabs on the ends, with the exception of the outer two members which were not given linkable tabs on the ends so as to fit on the existing boss supports. All members were made out of standard galvanized steel in standard sizes.

This design met all of the requirements lain out by the manufacturer. It allowed the quick disassembly of the system using tools as basic as a five pound (22.24 Newton) hammer. It also improved cost efficiency and unit lifetime. This new design also stood up to the harshest of weather conditions and met all Occupational Health and Safety Administration safety requirements.

Dicken, Taylor Dana School of Music PUGSLEY ROOM 10:30 - 12:00

Between Nietzsche and Wagner: Richard Strauss's Ein Heldenleben

When Ein Heldenleben was premired in Vienna 1899, it quickly became one of Strauss' most controversial pieces. It caused an uproar because of its chromatic harmonies as well as the volume at which the piece was performed. The score required nearly as many instruments and musicians as Berlioz's Symphonie Fantastique and was three times the length of his other symphonic poem, Don Juan. Strauss intended Don Quixote and Ein Heldenleben to be paired works as they were contrasting pieces and suggested that they be performed together. Contrary to expectations, Ein Heldenleben did not center around a tragic anti-hero, but Strauss himself. The parallels between the comic hero of Don Quixote and the serious hero of Ein Heldenleben were apparent to early twentieth-century listeners, but the ideals behind the work were not. In my paper I will consider the influence of Nietzsche's philosophy and Wagnerian ideals in relation to the character of the piece. This will demonstrate the interaction between the musical characterization of Strauss's autobiography and the large-scale formal organization of the work. Through Nietzsche's philosophy, I argue, Strauss reaches both the climax and the beginning of a new musical aesthetics.

Dikun, Joseph Biological Sciences COFFELT ROOM 1:30 - 3:00

Identification of a Cell Size Regulator in the Proteome of Penicillium marneffei

Penicillium marneffei is a dimorphic fungus. The species grows as a multinucleated, hyphal mold phase at 25oC or as a single celled pathogenic yeast form at 37oC. This dimorphic switch results in the formation of the infectious yeast form. The mechanism of dimorphism is unknown, but potentially involves changes in cellular size. Target of rapamyacin (TOR) is a protein kinase that plays a central role in the control of cell mass by the phosphorlyation of certain cell mass determining proteins, such as the ribosomal subunit S6. Fungal proteins were prepared from both mold and yeast cells and the protein composition was analyzed and compared by 1D SDS-PAGE and 2DGE techniques. Proteomic profiles at fixed pH ranges of 3-10 and 5-8 were determined by 2DGE, showing visible changes in protein regulation Using immunoblot analysis, anti-mTOR was employed as a probe to identify TOR in the proteome of Penicillium marneffei. Phosphoprotein staining techniques were used to label phosphorylated proteins, identifying candidates capable of cellular regulation within the phosphoproteome.

Dikun, Joseph Biological Sciences OHIO RM 8:30 - 10:00

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Dilullo, Kristen JAMES GALLERY 3:30 - 5:00

Autonomous Robot

An autonomous robot will be designed and built. This robot will operate as an independent entity using only onboard systems to navigate and find its way to specific points of interest. The robot is designed to be versatile and will require minimal control of the environment, which is not normally the case. This will allow the robot to be adapted to most environments by just changing the programming that controls how the robot operates. For example, it could be used to move bins in a factory that fill with a part throughout the day from the end of one assembly line to the beginning of another assembly line.

Dobosh, Brian Chemistry OHIO RM 10:30 - 12:00

A One-Pot Synthesis of Azides from Alcohols

Traditional azide synthesis from alcohols normally involves the SN2 displacement of the functional group by an azide nucleophile. Before this substitution occurs, however, the alcohol must be converted into a more suitable leaving group. Due to this requirement, typical azide synthesis from alcohols is a two-step process involving intermediate work-up procedures and isolations, which prove to be time consuming. This research proposes a “one-pot” azide synthesis using relatively inexpensive reagents that afford a successful azide substitution in a short time, with high yields. Reactions will be carried out at room temperature and also under microwave (MW)-assisted conditions. It has been found that the reaction of a primary alcohol with an azide source that can act as an effective leaving group, in the presence of a strong base such as sodium hydride or DBU, allows the in-situ generation of the azide nucleophile for an efficient SN2-type displacement in one pot.

Dobritch, Marianne Sociology & Anthropology HUMPHREY ROOM 10:30 - 12:00

Complexities and Inequalities of Post- 9/11 Politics

A thorough perusal of scholarly publications reveals detrimental patterns of pronounced inequality concerning race and gender in post- 9/11 politics. Although extensively discussed, the issue of political inequality as a result of 9/11 still lacks statistical analysis. Utilizing a hybrid of Marx’s Conflict Paradigm and Ernest Becker’s concept of the “alter-organism,” we will examine the three most prominent facets of this issue. These include a hyper-masculine patriarchal stereotype which portrays female candidates as less capable of holding a high-level political position in times of war, a resulting lack of public support for female candidates, and an acute social prejudice that will prevent Middle Eastern candidates from winning their elections. The data collected through a series of surveys and interviews, will then be subjected to rigorous testing and analysis.

Donnadio, Tammy Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

YSU Channel Guard

The goal of the design was to implement a quick removal system for a mass-produced trench shield. Many designs were suggested and in the end, a design utilizing a T-fitted section of tubing to support the shield walls was deemed to be the most effective. The proper sizes of tubing were chosen after adequate analysis was performed. The design utilizes an easily usable channel to install and remove the pipe supports. This design is more time efficient than the previously used pin design. With the T-channels in the walls, the pipes are secured effectively, can be reused, and easily assembled. Removal is simplified with the use of common construction machinery such as a crane, trencher, backhoe, etc. Multiple channels are to be machined into the walls for adaptability to multiple load situations and lengths of pipes. The unif

Drennen, Brad Technology OHIO RM 1:30 - 3:00

Structural Steel Fireproofing

According to the National Fire Protection Association (NFPA), in 2002 there were almost 1.7 million fires reported in the United States, causing property losses estimated at $10.3 billion. Research is amied at the materials (fireproofing) that can be applied to structues which will enable the structure to withstand high temperatures present during a fire so that failure of the structure doesn

Drombosky, Tyler Mathematics & Statistics BRESNAHAN I ROOM 1:30 - 3:00

Statistical Comparison of Discrete Audio

It's easy for a person to tell if two samples of audio are similar or not, but how hard would it be to do mathematically? While this is a seemingly simple concept, this creating this process proved to be difficult. To add complications, the algorithm needed to be designed to work with every type of digital audio file regardless of the compression method or quality used in for the media storage. We take a look at comparing two real songs on a computer in a journey to find their similarity. Computer science, statistical programs, and moment sequences all play a critical role in finding the answer.

Dubiel, Brian Human Ecology OHIO RM 3:30 - 5:00

Students' Knowledge of Standard Serving Sizes and Ability to Estimate Portions

Obesity is an epidemic with one in three Americans classified as obese and utilization of 12% of the national healthcare budget to deal with complications and comorbidities. Poor portion control is suggested as one of the contributing factors to obesity. This study will investigate visual recognition of standard serving sizes of selected foods from all food groups. Gender differences in knowledge about serving size and ability to estimate standard serving sizes by weight/volume will also be determined. A convenience sample (n=100) of YSU undergraduate students will be surveyed to assess their knowledge about standard food and beverage serving sizes and their ability to identify weight/volume amounts of standard serving sizes. Students will be compared by gender and whether they have completed an introductory nutrition course that included education on food portions. Female students are anticipated to be more knowledgeable about serving sizes and more skilled at estimating weight/volume of standard serving sizes than males. The researchers also anticipate that there will be a benefit to study participation in that awareness about standard serving sizes and portion control will be raised in the study population.

Dunn, Molly Psychology COFFELT ROOM 8:30 - 10:00

The Effects of Background Noise on Memorization

For this study, he research participants will be volunteer General Psychology students attending Youngstown State University. To participate in this study these students will be filling out a short survey, inquiring aspects of their study habits. Next these students will be given a short list of non-sense syllables that they are asked to do their best to memorize, while sounds such as white noise, ocean waves, rain falling, are playing in the background. Then the students will be asked to fill out a new survey filling in certain letters that they had just viewed. There will also be a control group test, where they are no sounds playing. The participants' identities and performance will be kept anonymous. Data will be collected in group form only and reported in the co-investigator's Psychology Department senior capstone.

Duran, Jonathan Computer Science & Information Systems OHIO RM 1:30 - 3:00

Online Multiplayer Gaming Environment Capable of Real-time Interaction

SmartFoxServer, a multi-platform socket server, will be integrated with Macromedia Flash Professional 8 to develop a framework supporting real-time multiplayer gaming across the Internet. Topics will include: 1) project work flow – strategies for conceptualizing, developing, implementing, and debugging an application built for the Internet, 2) object-oriented design – programming practices that break code into reusable objects thus eliminating redundancy, 3) database design – the use of entity-relationship diagrams to model data schemas for saving user and character information during online play, 4) server-side process optimization – methods to minimize client-side handling of secure data without dramatically reducing overall server performance, 5) security measures – secure login techniques including how the Challenge-Handshake Authentication Protocol (CHAP) combined with MD5, a one-way hash, is used to encrypt user data during transfer.

Durda, Merissa Psychology COFFELT ROOM 8:30 - 10:00

The Judgement Study

This experiment is a work in progress. The findings that have been acquired thus far will be presented. For this experiment, conducted at Youngstown State University, undergraduate students completing a general psychology course volunteer to act as participants. The participants fill out a survey in the basement of DeBartolo Hall that requires approximately 15-20 minutes of participation. The data from the surveys, which remains
anonymous, is handled strictly by the experimenter, Merissa A. Durda, and the Faculty Advisor, Dr. Steve Ellyson.

The survey consists of 48 questions. This two part survey includes 30 questions that have been previously used and approved by the HSRC, and 18 questions compiled by the experimenter for comparison purposes. Answers from the surveys will be used to discover correlations between the acceptability of homosexuals and numerous other factors. Along with some general demographics such as age, gender, religion, and political affiliation, the experiment will also examine various other anonymous information including living situation while growing up, personal beliefs about homosexuality, and the participants previous interaction with homosexuals. This information will help determine if there are correlations between these factors and the participant's acceptability of homosexuals in society.

Edirisooriya, Sithari Biological Sciences OHIO RM 8:30 - 10:00

DNA Analysis of Stenotrophomonas maltophilia, a Bacterial Strain from Oak Ridge

The purpose of the research is to gain a better understanding of Stenotrophomonas maltophilia and selenium. I plan to sequence and analyze fragments of the DNA of S. maltophilia in order to better understand the properties of selenium. There is still much to learn of selenium and its effects on bacteria. My goals are to sequence all of the plasmids and to conduct analysis of each plasmid's DNA. I plan to learn how to do plasmid preps by the beginning of February and hope to complete 20 reactions by April 2007. The rest of the reaction would be continued during summer and fall of 2007. There are many things that I hope to discover when my research is finished. I hope to find the replication origin of selenium. I would also hope to find that the bacterial strain would show that certain genes would be responsible for selenium removal from cells.

Elias, Jaclyn Teacher Education HUMPHREY ROOM 1:30 - 3:00

Motivating Middle School Students to Read in and out of the Classroom

As a future middle school Language Arts teacher, reading will be an essential part of daily classroom activities. It is imperative to keep students motivated to read, in order to ensure success in school, as well as in life. Several motivational techniques for reading will be researched and compiled, in order to encourage reading both in and out of the classroom. Motivational techniques for reading will include activities such as literature circles, readers’ theater, and journal writing, as well as other researched techniques. Selected techniques will be tested in the classroom. Student responses to the techniques, both written and oral, will be observed and recorded. The results of this study will provide insight as to which reading motivation techniques could be used to encourage reading among middle school students.

Elias, Alexis Physical Therapy JONES ROOM 3:30 - 5:00

FES Bike Training Impact on Ambulation after a Chronic Spinal Chord Injury

The purpose of this case report was to determine if training with an FES cycle impacts a person's ability to ambulate following a chronic spinal cord injury. Many different forms of treatment are available for patient's who have had a SCI. Functional electrical stimulation (FES) bike training allows an individual to ride a bike while stimulating the appropriate muscles needed to pedal with electrical stimulation. The case subject used in the study was a 61-year-old male with a chronic Brown-Sequard SCI status post twenty years. The subject rode a FES ERGYS 2 recumbent style bike. The ERGYS (FES) bike uses computerized functional electrical stimulation to allow individuals to pedal by generating low-level electrical impulses transmitted through surface electrodes that cause a coordinated contraction of the leg muscles. Sensors are located in the ERGYS to provide feedback to the computer that controls the sequencing of the muscle contractions. Treatment sessions were held 3x/wk x 6wk for one hour (including preparation time); for a total of 30 minutes of actual exercise each session. Prior to beginning the exercise regimen and at the completion of the treatment program ambulation assistance and distance tolerated, ambulation via the 6MWT, an ASIA Assessment, and a WISCI (Walking Index for SCI) assessment were determined. Improvement were made in each category, showing the positive impact FES bike training can have on a person's ability to ambulate following a chronic SCI.

Emery, William Geological and Environmental Sciences JONES ROOM 10:30 - 12:00

Annual Changes of the Pigeon Creek Delta Bathymetry, San Salvador, Bahamas

The Pigeon Creek Tidal Estuary is a major feature on the Island of San Salvador, the Bahamas. The estuary covers an area of approximately seven square miles and fills during high tides and subsequently drains during the intervening low tides. Discharging water at low tide transports a tremendous amount of sediment that is deposited as a large submerged delta inside Snow Bay at the mouth of the estuary. The delta bathymetry has been mapped annually since 2005. The bathymetry of the delta changes with time as a result of daily tidal influences and tropical storms and hurricanes. The purpose of the research is to characterize bathymetric changes that have occurred over the past two years and to investigate potential sedimentation patterns. Using GPS receivers for location coordinates and jacobs staffs for measuring water depth, approximately five hundred individual batymetric values were measured. The bathymetry data were mapped using the RockWorks computer assisted mapping program. The resulting map was georeferenced and imported into ArcGIS. The 2007 bathymetry was compared to the 2005 and 2006 bathymetries using ArcGIS spatial analyses tools.

Evans, Michael Chemistry OHIO RM 10:30 - 12:00

Mimics of Sugars Related to S. aureus Microcapsules

The synthesis of N-acetyl-D-fucosamine derivatives has been attempted from inexpensive commercially available starting materials. The final products will contain medicinally important markers such as fluorine that can be viewed easily by examining 19F nuclear magnetic resonance (NMR) spectra. This synthesis will incorporate protective group chemistry so that we can selectively insert markers into the compound. This synthesis also includes inverting the stereochemistry at C-4. These types of compounds are likely candidates for antibiotics against bacteria such as Staphylococcus aureus.

Eve, Nicole Geological & Environmental Sciences OHIO RM 1:30 - 3:00

GIS Techniques for Mapping Ground Water Pollution at a BFI Landfill

As a means of determining the environmental risks that a community is being exposed to, the pollution potential of a sanitary landfill is to be evaluated with this case study of contrasting landscapes. The BFI Carbon-Limestone Sanitary Landfill located on Stateline Road in Poland Township, Ohio, shares a common boundary with the Mahoning Sportsmen Association (MSA) – a recreation and conservation club in Hillsville, Pennsylvania. The disposal site in question has always been highly regarded for its public involvement and safety procedures; most local residents live nearby with little concern. But if a problem involving leachate contamination has occurred or would emerge, the water quality of the surrounding area may be in great peril. With the ultimate goal of verifying the health and safety of the people in contact with the land and water features immediately surrounding the landfill, this project is aimed at examining the environmental conditions that currently exist around the landfill, and forming conclusions about the likelihood of future contamination. Residential well water quality data obtained from the Mahoning County District Board of Health Department, BFI ground water quality data obtained from the Ohio EPA, and surface water quality test results from a certified lab will be organized into GIS-compatible databases. The hydrogeological, political, and physical properties of the area will be mapped within a Geographic Information System (GIS), and several interpolated contaminant concentration raster surfaces will be created. Then, through spatial, 3D, and overlay analysis of hydrogeological, contaminant concentration, and DRASTIC pollution potential layers, predictions will be made about areas most susceptible to future contamination. Both geographical and environmental analysis will be conducted as conclusions are made about the overall pollution potential of the landfill to the surrounding region.

Fabian, Roslyn Human Ecology JONES ROOM 3:30 - 5:00

Pre-Service Students Knowledge about Prenatal Addiction

This study is being conducted to determine the knowledge pre-service students who are enrolled in Pre- Kindergarten-grade 3, B.S. in Education or Pre-Kindergarten, A.A.S. programs at Youngstown State University have about prenatal substance abuse and the effects on children. Knowledge of social/emotional characteristics, biological factors and environmental risks faced by children who have been prenatally addicted to alcohol and drugs help teachers work effectively with these children.

The data will be drawn from questions administered in the Early Childhood Education and Child & Family courses. The objective of this study are 1) to detemine the relationship between the knowledge pre-service students have about prenatal addiction in children and their level of education, 2) to identify attitudes of teachers servicing these children and 3) to identify where pre-service students are learning about the topic.

A survey is being created using true/false responses to knowledge questions, a Lickert scale to assess attitudes concerning prenatal addiction and an open-ended question to determine where students learned infomation about prenatal addiction. Ater reading the consent letter, students will complete the survey. The data will be collected at the end of March and analyzed using a t-test and Pearson correlation methodology.

Fagan, Diana Sigma Xi OHIO RM 1:30 - 3:00

Carbohydrate Mimetics for Staphylococcus aureus Capsule

There is a need for the development of new treatment methods for antibiotic-resistant S. aureus. Capsule production appears to be an important virulence determinant, as capsular types 5 and 8 account for 75-90% of hospital acquired infections and anti-capsular antibodies have been shown to decrease mortality following S. aureus peritoneal infections in mice. S. aureus vaccines will likely prove effective in preventing infections following surgery, but vaccines are less promising for the treatment of patients with acute infections or a weakened immune response. Important recent advances in understanding the enzymatic pathways used to make the individual aminosugars, and the capsular polymers themselves, make type 5 and 8 capsular biosynthesis viable targets for disruption with carbohydrate mimics. In order to measure capsule production by the bacterium, monoclonal antibodies were produced from mice immunized with formalin-killed S. aureus, type 5. Monoclonal antibody SM.T5.B2.A12.C9 was shown by ELISA to specifically bind to purified capsular carbohydrate, type 5 and to type 5 whole bacteria (no binding was seen with S. aureus type 8 or type 8 whole bacteria). To test the effect of carbohydrate mimics on capsule synthesis, a whole bacteria ELISA was developed, using killed, encapsulated bacteria. Bacteria were incubated with carbohydrate mimics overnight, then formalinized and trypsinized prior to use in the ELISA. Treatment of bacteria with the modified carbohydrate MV-II-065 (N-glucosyl 1,2,3-triazole) significantly decreased capsule production (50-75%) by the bacteria. Preliminary studies with AB-5-83 (analog of L-FucNAc) also indicated inhibition of capsule synthesis (60-80%). Modifications of the ELISA method are being tested to improve assay speed and to allow testing of additional compounds. Effective compounds will be tested to determine any effect on phagocytosis of treated bacteria.

Feldmeier, John Sigma Xi OHIO RM 1:30 - 3:00

Burrell-Optical-Kepler Survey (BOKS) I: Survey Description

The Burrell Optical Kepler Survey (BOKS) is a ground-based, high cadence, stellar variability survey over a portion of the planned science field for the Kepler mission. The survey was carried out at the 0.6m Burrell Schmidt telescope, with an observed field size of 1.36 square degrees. Over 60,000 stars were observed within the BOKS field in the SDSS r-band spanning a time period of 39 days, with a 4.5 minute cadence. We give a basic description of the survey, and calculate the observability function for stellar variablity of different types.

Feldmeier, John Sigma Xi OHIO RM 1:30 - 3:00

Burrell-Optical-Kepler Survey (BOKS) II: Early Variability Results

We present preliminary results for the photometric time-series data obtained with the BOKS survey (see BOKS I poster Feldmeier et al.). The BOKS survey covers about 1 square degree in the constellation of

Cygnus. We obtained nearly 2000 SDSS r-band images spanning a total time period of 39 days. Each point source in our BOKS survey is also present in the single epoch, 7-color photometric survey atalogue being produced by the NASA Discovery program Kepler mission. Light curves of approximately 60,000 point sources, spanning r=14 to 20, are examined and discussed. We will present variability emographics for the BOKS survey including characterization of the light curves into variable classes based on type,

color, amplitude, and any extra-solar planet transit candidates.

Ferrell, Anthony Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Wind Turbine

We will design an alternator which can easily be changed for many applications. The alternator will be the generator for a wind turbine. The design has many factors playing into the output. The main tool used for design is Faraday's law. We use faradays law to relate the output voltage, the number of turns in a coil, the coil area and the field subjected to each coil. Once we decide which voltage output we want we can use Ohm's law to determine the current being supplied to the battery bank or device. With a known length of wire we can calculate the resistance and figure out the current. We need to design a rotor size and choose a number of magnets to figure out how many coils are needed. There must be an even number of magnets to have alternating poles. There will be 3 coils for every 4 magnets. The rotor size and number of magnets dictates how large our coils can be. With the coil size determined we can build test coils and determine resistance and area. A weather station controlled by a Freescale 68hc12 will be used to monitor wind speed and direction as well as the alternator's performance. The microcontroller will send this data to a pc where a C# application will graph the different values. This will allow us analyze our data and improve performance and efficiency. It will also allow us to determine what setup is best suited for a particular environment.

Foster, Krista JONES ROOM 10:30 - 12:00

A Preliminary Study of Entombed Beach Debris On San Salvador Island, The Bahamas

The problems associated with ocean-borne debris accumulating on world beaches are well documented. Materials carried ashore by wave action create an eyesore, incur cleanup costs, act as a threat to wildlife in the coastal setting and create health hazards for residents and visitors to coastal settings. Little work has been done on the long-term accumulation of beach debris in coastal environments. What ultimately happens to the material that washes up on the shores of coastal communities? Is this material washed back out into the ocean with changing tides or is it incorporated into the sand load of coastal sand dunes? Our study examined beach debris entombment on a beach on San Salvador Island in the Bahamas. We conducted excavations away from the low tide line and ended in the swale behind the primary dunes lining the beach. Our research revealed an absence of progressive beach litter accumulation in the sands of the wash zone between the high tide and low tide markers. Beach litter entombed in the sands beyond the high tide line indicate some degree of progressive beach debris accumulation as more buoyant materials are transported beyond the wash zone by wind and wave action. Concentrations of debris were found at distinct levels in the swale between the primary and secondary dunes indicating debris deposited as a result of high wind and wave activity. Future excavations are planned to examine the effect differences in beach topography have on the transport and entombment of surface debris along the beachfront.

Fox, Michael Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Hinged Release System

A problem was presented concerning the disassembling of a trench protection shield. The previous design did not include the vacuum force created by the earth, and therefore made removal of the shield systems a problem. Because of this issue, support beams were burned or cut out in order to release the system from the ground pressure. This in turn minimized cost efficiency and resulted in a limited unit lifetime. A new design had to be created that would deal with all of these issues as well as incorporate diverse weather conditions and government and industry safety standards.

The design that was created utilized simple components due to the desire of cost efficiency and simple assembly and disassembly. The boss supports on the shield walls were used as well, allowing only the need for change in the support shaft. The shaft design had four members connected by three pivot points. The central pivot point was reinforced by a steel bar running parallel with the shaft which was easily removable and replaceable by operators. This reinforcing bar was included for safety reasons only, with the expectation that it would never undergo significant pressure. The shaft members that were used included link tabs on the ends, with the exception of the outer two members which were not given linkable tabs on the ends so as to fit on the existing boss supports. All members were made out of standard galvanized steel in standard sizes.

This design met all of the requirements lain out by the manufacturer. It allowed the quick disassembly of the system using tools as basic as a five pound (22.24 Newton) hammer. It also improved cost efficiency and unit lifetime. This new design also stood up to the harshest of weather conditions and met all Occupational Health and Safety Administration safety requirements.

Franz, Christine Biological Sciences OHIO RM 8:30 - 10:00

Screening of Metal-Resistant Bacterial Isolates from Poplar Creek in Oak Ridge,

During World War II, the Y-12 plant in Oakridge, TN processed uranium to make the first atomic bomb and during the Cold War, it processed lithium to make hydrogen bombs. As a result of these processes, the nearby stream, East Poplar Creek, was contaminated with mercury and other heavy metals. Stenotrophomas maltophilia Oakridge strain O2 (S. maltophilia ORO2) was isolated from East Polar Creek and grew in the presence of toxic levels of zinc, copper, platinum, mercury, gold, cadmium, lead, silver, chromium and selenium. Nine hundred aerobic bacterial colonies were isolated from a site contaminated with 96 ppm mercury, and one thousand six hundred additional colonies contaminated with 2 ppm mercury were isolated from a downstream site. These colonies are being screened for metal resistances in the presence of toxic concentrations of mercury, copper, zinc, cadmium, chromate and selenium. The genes, which encode metal resistances in S. maltophilia ORO2, will be identified using the polymerase chain reaction (PCR), and used to identify similar genes in the other isolates in Southern blotting experiments. Finally, by sequencing their 16s ribosomal RNA, the identity of some of the isolates will be determined. The ability of some of these bacteria to precipitate metals from their growth medium can be exploited for cleaning up metal contaminated sites.

Frech, John Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Increasing the Torque and Efficiency of a Permanent Magnet Motor

The permanent magnet motor design on which this study focuses is the Stephen Kundel Motor. However, the motor under investigation was the second prototype of the original Stephen Kundel design and was originally constructed by the 2006 Undergraduate Senior Design Team of Youngstown State University Mechanical Engineers.Increasing the overall torque and efficiency of the motor was achieved by developing a design which employs more efficient components, reduces the inertial forces acting on the linear strokes of the motor, and implements optical sensors. Some of the components that were improved were the bearings, the magnets, and the shafts of the motor. Optical sensors were also employed in the design to replace the mechanical brush switches in the former design. Having done so, the friction between the rotating shaft and the brushes was eliminated. Thus, more energy input was conserved and converted into usable mechanical energy.The overall design of the motor was achieved by comparing manual calculations to experimental data gathered from the prototype of the design. The goal was to use a theoretical model of the motor to improve the overall design of the actual motor. These improvements are both mechanical and electrical in nature. Experimental data can then be collected from the improved motor to determine how much of an improvement was made and how close the results match the theoretical model.

Fryda, Andrea Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Human Powered Vehicle

A Human Powered Vehicle (HPV) is a means of transportation for one or more people, powered by human muscle. Although motorization has reduced the effort in transport, many human-powered machines remain popular for leisure or exercise and for short distance travel. In today's world, with rising fuel and energy costs, HPV's offer an affordable option to consumers on a tight budget, especially those living in heavily populated areas. HPV's also have engineering and design elements that are of great importance for engineers. This paper presents the design and testing of a three wheeled, single rider HPV that is similar to a recumbent bike. The desired outcome of this project is to successfully engineer an HPV with focus on: safety, elegance, ingenuity of design, and practicality of design.

YSU's HPV has been constructed at the university in previous years and for this reason some of the existing components and parts will be reused. Our efforts for the design of the 2007 HPV began by stripping the existing bike down to its frame, as many components were analyzed and revised. Some revisions included a partial frame redesign, brake system upgrade, steering system improvement, frontal fairing enhancement, and seat, to maximize ergonomics, efficiency, safety, and ease of use. The components were modeled and analyzed using computer software such as SolidWorks, Algor FEA, and Working Model in order to obtain accurate results and make design trade-offs.

The 2007 HPV competed in a series of tests sponsored by the American Society of Mechanical Engineers (ASME): 1) Design Event, 2) Sprint Event, and 3) Endurance Event. This national competition was at the University of Central Florida in May, 2007.

At the competition a separate design component is built in, where emphasis in judging is based on the new work that has been completed in the last year. Judges considered both a formal written report and an oral presentation given by team members. Vehicle designs were also judged with an emphasis on originality and engineering soundness. Safety, as always, was considered in the design by testing the braking, turning radius, roll bar, and safety belt. The timed portion of the sprint event was a 100 m (0.062 mi) straight a way after a short distance was allowed to attain maximum speed. The Endurance Event tests the vehicle's abilities on a 65 km (40 mi) course with all vehicles competing. Ultimately, the judge's decisions were based on how well the HPV team, as well as, the HPV itself performed in the competition.

Furrie, Tyler JONES ROOM 10:30 - 12:00

A Preliminary Study of Entombed Beach Debris On San Salvador Island, The Bahamas

The problems associated with ocean-borne debris accumulating on world beaches are well documented. Materials carried ashore by wave action create an eyesore, incur cleanup costs, act as a threat to wildlife in the coastal setting and create health hazards for residents and visitors to coastal settings. Little work has been done on the long-term accumulation of beach debris in coastal environments. What ultimately happens to the material that washes up on the shores of coastal communities? Is this material washed back out into the ocean with changing tides or is it incorporated into the sand load of coastal sand dunes? Our study examined beach debris entombment on a beach on San Salvador Island in the Bahamas. We conducted excavations away from the low tide line and ended in the swale behind the primary dunes lining the beach. Our research revealed an absence of progressive beach litter accumulation in the sands of the wash zone between the high tide and low tide markers. Beach litter entombed in the sands beyond the high tide line indicate some degree of progressive beach debris accumulation as more buoyant materials are transported beyond the wash zone by wind and wave action. Concentrations of debris were found at distinct levels in the swale between the primary and secondary dunes indicating debris deposited as a result of high wind and wave activity. Future excavations are planned to examine the effect differences in beach topography have on the transport and entombment of surface debris along the beachfront.

Gaffney, David Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Moonbuggy 1

Youngstown State University (YSU) will be participating in The Great Moonbuggy Race April 13th and 14th 2007. This is the third straight year that YSU has sent a team to the competition that takes place in Huntsville, Alabama. The team from the 2006 competition made a dramatic design change in that the moonbuggy had a back-to-back seating arrangement. This was a big change from the entry from the first year which had side-to-side seating. The 2006 design performed better in the competition than did the 2005 design. This year's team has decided to keep the frame design from the 2006 competition while making some modifications to the steering system, suspension, and drive train.

The rules of the competition state that there must be two team members on the moonbuggy at all times. One of the riders must be a man and one must be a woman. There is no specific weight requirement for the moonbuggy. However, the moonbuggy must be carried 6.10 meters (20 feet) to the starting line by the two riders, so the weight of the moonbuggy can not be excessive. Another rule of the moonbuggy competition is the moonbuggy must fit into a 1.22 meter (4 foot) cube. Once it was determined that the moonbuggy fit into the cube, the vehicle was unfolded and prepared to navigate the course. In preparation to travel the course the moonbuggy was checked for safety by representatives from the competition. At this point the moonbuggy was ready to travel the course which was an imitation of the actual lunar surface. The course has rocks, craters, and lunar simulated soil. Teams were timed during the assembly stage and elapsed time it took to complete the course. Winning teams were those who had the shortest combined times.

Garthwaite, David Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Design and Implementation of a Industrial Machine Monitoring System

The principal of this presentation is to explain the process that is implemented in the design of a company wide system used for management purposes when all one has is an idea. Areas discussed will be: Coming up with the intented function of the system, Locating the resources needed to implement the system, Purchasing, designing, and testing the system, and Future plans for system adaptation and expansion. David Garthwaite will discuss the design and construction of the monitoring system, while my collegue and Supervisor, Ian Thompson, will discuss the Management aspects of the design and purpose of the system.

Geilhard, Jenny Geography JONES ROOM 10:30 - 12:00

Storr's Lake Archaeological site Mapping

The Storr's Lake Archaeological Site (SS-4) on San Salvador Island in the Bahamas was initially opened for archaeological excavations by Dr. Gary Fry in December 1995. Archaeological excavations have been on-going at the site since that time under Dr. Fry and then later under the supervision of Tom Delvaux. The site boundaries have never been officially identified and mapped nor have individual excavations within the site been mapped in conjunction with a general boundary delineation. Utilizing GPS technology in concert with GIS mapping software we mapped the location of the site boundaries in December 2006 under the supervision of Tom Delvaux. Individual excavation pits were mapped as part of the process. This archaeological site is threatened by potential resort development and mapping the site boundaries was considered critical in order to receive permission to set aside this area and preserve it from immediate development until additional site excavations can be performed. We report on the process of the field mapping and present the final results of the GIS products generated from the field data.

Ghauri, Wajiha OHIO RM 1:30 - 3:00

Heater Design for RF Sputter Deposition

RF Sputter-Deposition is used in the fabrication of solid state semiconductors. The quality of the semiconductors depends on many factors. A key factor to producing good semiconductor properties is the temperature of the substrate during deposition. These substrates can vary from 0C to over 1000C using a electric heater. Our heater design uses a high efficiency Silicon Controlled Rectifier circuit that is adjusted using a microprocessor. The microprocessor is a Freescale 68hc11 8-bit microprocessor. The microprocessor continually monitors a thermocouple and adjusts the SCRs to provide more power to the heater. The microprocessor has an LCD display that shows the user temperature and time settings and allows for temperature and time settings to be adjusted by a keypad. The design is user friendly and cost effective.

Gilida, Kristin Civil/Environmental & Chemical Engineering BRESNAHAN I ROOM 10:30 - 12:00

Carbon Dioxide Corrosion and Inhibition Studies

The objective of these corrosion studies was to determine the effectiveness of imidazole as a corrosion inhibitor in a solution of water, carbon dioxide and sodium hydroxide at room temperature. An electrochemical cell was used to gather data in the form of electrochemical impedance spectroscopic Nyquist plots and Tafel plots. The results showed an increase in corrosion inhibition when imdazole was added to the solution. XPS studies can be done to determine surface film composition and more electrochemical tests at varying temperatures would yield useful data for comparison.

Gillam, Emily Human Ecology OHIO RM 3:30 - 5:00

The Super Bowl Food Phenomenon

On Super Bowl Sunday an estimated 125 million Americans gather to watch the game, and the foods served at these gatherings have become as much a part of the culture as the event itself. This study will explore the foods associated with the Super Bowl, the food related advertising, and the post game quarterly earnings of the food companies who bought advertising time during the televised game. A random sample (N=100) of residents of the Mahoning Valley will be surveyed about their food associations with the Super Bowl and published records of company earnings will be analyzed for financial data. It is anticipated that there will be a greater increase in the quarterly earnings for the period immediately following the Super Bowl. It is also anticipated that the foods and beverages associated with the Super Bowl will be calorie dense and that subjects' age and gender will not significantly influence food associations.

Giovannone, Amy English BRESNAHAN I ROOM 3:30 - 5:00

Cross-Cultural Complaint Speech Acts: Taiwan vs. American

The work in progress is a sociolinguistic study comparing Taiwanese college student complaints with American college student complaints. The data is being collected through a Discourse Completion Task (DCT). Using the DCT method is necessary to ensure the exact speech act conditions occur for both the Taiwanese and American students. The specific speech act being studied pertains to a college student with a legitimate complaint about the instruction practices in which he/she needs to express to the professor in order to pass the class. The purpose of the study is to discover one of many reasons for cross-cultural miscommunication.

From a sociolinguistic stand point, cross-cultural miscommunication is not the result of poor linguistics, but a direct result of massive misunderstanding of cultural differences in speech act performance. For instance, Taiwanese culture complaint performance is mostly delivered as indirect complaints (not directly complaining to the offender); whereas, American culture complaint performance is often freely expressed as a direct complaint.

The findings will show some similarities, but also many differences in strategies used to complain. These different complaint strategies derive from different cultural norms. Discovering these differences and the reasons behind them is imperative to the success of cross-cultural communication. Understanding the different cultural speech act strategies and the conceptions behind these strategies will result in more successful communications worldwide. Different cultures are aware of how to successfully communicate through compliments, but cross-cultural communication cannot survive on compliments alone. Complaints inspire improvement and progress; therefore, to ensure progressive, amiable relationships, such as those with Taiwan, these cross-cultural speech act strategies of complaints need to be thoroughly explored. Understanding these cultural differences may prevent potential tragic results that would otherwise be unavoidable.

Gittis, Margaret Sigma Xi OHIO RM 1:30 - 3:00

Choosing a Career in Psychology: Dilemmas for Women

An on-line survey was conducted to determine whether women in Psychology have career profiles similar to those of women in other sciences. The survey examined factors listed by the respondents as important determinants of their employment, with special emphasis on their partners' attitudes toward their jobs. The results reveal several commonalities between women in Psychology and women in other sciences.

Gittis, Margaret Sigma Xi OHIO RM 1:30 - 3:00

Psychology of Women as Laboratory

Participants learned one of three lists of names paired with occupations. Pairings were either gender-typical (e.g., Michael – welder; Darlene – typist), gender-atypical (e.g., Michael – typist; Darlene – welder), or mixed. As predicted, the list of atypical pairings was significantly harder to learn than the other two lists. The discussion includes inferences about the gender-based assumptions of the research participants.

Glass, Ashleigh Biological Sciences OHIO RM 8:30 - 10:00

The Effects of Environmental Variables on Inflammation-Induced Nociception

Pain is a costly health care issue prevalent worldwide. Studies in humans have shown that persistent pain results not just from physical insult, but is affected by a combination of emotional, physiological, and social factors. The aim of this study was to determine if housing supplementation and social interaction affect the duration and/or magnitude of inflammatory pain. Male, Long-Evans rats were used in this study, and researchers blinded to the housing treatment groups collected all data. Behavioral data measurements included paw withdrawal latency to a heat stimulus, paw withdrawal threshold to a mechanical stimulus, and testing for mechanical allodynia and hyperalgesia. Rats were assigned to a standard cage (food, water, and bedding) or a supplemented cage (food, water, bedding, polycarbonate shelters, and a variety chew toys). In addition to housing supplementation, the influence of social interaction was investigated by housing rats in either a social (three rats) cage or nonsocial (one rat) cage. Rats were randomly placed into their housing assignment just after weaning (postnatal day 21-23). Following a seven-week period in the assigned housing condition, pretreatment behavioral data was collected, and then rats received an intraplantar injection of complete Freund's adjuvant (CFA). Post-inflammation behavioral data was collected at 2 hours, 7, 14, 21, 28, and 35 days after administration of CFA. Our data indicate that the magnitude and duration of inflammation-induced pain behaviors is significantly less in rats living in a supplemented, social cage environment.

Glenn, Lauren Education HUMPHREY ROOM 1:30 - 3:00

Literacy Strategies for Special Needs Students

Special Education teachers are challenged to find ways of making sure that students' literacy needs are met. This session will present analysis of current research concerning literacy issues and specific strategies that teachers can use to help special needs students with reading. Before, during, and after reading strategies, as well as vocabulary and fluency activities will be presented.

Gordon, Tonie English OHIO RM 3:30 - 5:00

Bridging America's Digital Divide

As civilization seeks to better itself through technological advances, consequences abound. Although not all of these consequences are negative, America has become increasingly dependent on technology. Access to this technology opens doors to new and exciting opportunities. However, all Americans do not reap in these technological rewards to the same extinct. The U.S. Census Bureau identifies Blacks and Hispanics as the largest minority groups requiring the most attention in terms of technological participation. Moreover, socioeconomic factors as well as age and race, also play a role in how technology is dispersed. A study of the issues that limit access to the internet and other crucial technologies (such as advanced machinery within the healthcare system) must be undertaken to break down the barriers to equal access. Currently, a number of youth-oriented programs (although most are small in terms of the number of youths involved) are geared toward exposing inner city and other at-risk adolescences to technologies that could better their lives. An evaluation of these programs can lead to a long-term and large scale implementation of computer literacy, to children not receiving it otherwise. Moreover, a more intensive evaluation of all groups experiencing separation from technology must be overtaken to truly bridge the digital divide.

Greenawalt, Benjamin Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Moonbuggy 1

Youngstown State University (YSU) will be participating in The Great Moonbuggy Race April 13th and 14th 2007. This is the third straight year that YSU has sent a team to the competition that takes place in Huntsville, Alabama. The team from the 2006 competition made a dramatic design change in that the moonbuggy had a back-to-back seating arrangement. This was a big change from the entry from the first year which had side-to-side seating. The 2006 design performed better in the competition than did the 2005 design. This year's team has decided to keep the frame design from the 2006 competition while making some modifications to the steering system, suspension, and drive train.

The rules of the competition state that there must be two team members on the moonbuggy at all times. One of the riders must be a man and one must be a woman. There is no specific weight requirement for the moonbuggy. However, the moonbuggy must be carried 6.10 meters (20 feet) to the starting line by the two riders, so the weight of the moonbuggy can not be excessive. Another rule of the moonbuggy competition is the moonbuggy must fit into a 1.22 meter (4 foot) cube. Once it was determined that the moonbuggy fit into the cube, the vehicle was unfolded and prepared to navigate the course. In preparation to travel the course the moonbuggy was checked for safety by representatives from the competition. At this point the moonbuggy was ready to travel the course which was an imitation of the actual lunar surface. The course has rocks, craters, and lunar simulated soil. Teams were timed during the assembly stage and elapsed time it took to complete the course. Winning teams were those who had the shortest combined times.

Grzebieniak, Anna Biological Sciences OHIO RM 8:30 - 10:00

Assessing the Quality of Reporting Methods in the Primary Literature

Previous studies have shown that the housing conditions of laboratory animals affect data outcome. Due to these findings, it is essential that the all components of the laboratory environment and animal care facilities be clearly reported when publishing in a peer-reviewed journal. This study was conducted to assessing the quality of reporting methods in the primary literature through conducting a retrospective study. Research databases used to search for the journal articles included ISI Web of Knowledge, Medline, and Biological Abstracts. Within these databases, the search was limited to peer-reviewed articles, written in English, and published in 2005. Inclusion criteria included the words "pain" AND "rats" AND "behavior" in all fields. A total of 195 manuscripts met the implemented search criteria. All results were imported into EndNote, and duplicate records were omitted. Data analysis suggested that some elements, such as adhering to proper care and use guidelines set by Institutional Animal Care and Use Committee, were common in most studies. Other important aspects however, such as whether or not the experimenter was blinded, were not reported as consistently. More care and attention to detail must be given when doing preclinical research involving animal models.

Guerrieri, Danielle Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

YSU Channel Guard

The goal of the design was to implement a quick removal system for a mass-produced trench shield. Many designs were suggested and in the end, a design utilizing a T-fitted section of tubing to support the shield walls was deemed to be the most effective. The proper sizes of tubing were chosen after adequate analysis was performed. The design utilizes an easily usable channel to install and remove the pipe supports. This design is more time efficient than the previously used pin design. With the T-channels in the walls, the pipes are secured effectively, can be reused, and easily assembled. Removal is simplified with the use of common construction machinery such as a crane, trencher, backhoe, etc. Multiple channels are to be machined into the walls for adaptability to multiple load situations and lengths of pipes. The unif

Gurney, Robert Physics & Astronomy JONES ROOM 8:30 - 10:00

Theory and Design of an Energy-release Experiment on Silver-108

Nuclear isomers are long-lived excited states that can store large amounts of energy in compact samples. They can be synthetically produced, as in the case of the silver isotope. The metastable isomer Ag-108m is a special case, because it is one of very few that can be produced in an almost pure sample.Ag-108m sits 109KeV above the ground state, and is known to decay naturally to Pd-108 mainly by Electron Capture with a 418 year half life. The more active ground state, Ag-108, has a 2.37 minute half life and is known to decay by a high energy beta emission to Cd-108.This project aims to demonstrate that if a sample of the metastable isomer 108-Ag is subject to a controlled x-ray burst, it will follow a depletion path to the ground state, which will in turn decay by beta emission, releasing this energy. If this as-yet untested effect can be utilized, and the energy captured, it could yield a new form of nuclear energy.An experiment to observe this effect is scheduled for spring 2007 in YSU

Hamer, David Chemistry OHIO RM 10:30 - 12:00

Identification of a Cell Size Regulator in the Proteome of Penicillium marneffei

Penicillium marneffei is a dimorphic fungus. The species grows as a multinucleated, hyphal mold phase at 25oC or as a single celled pathogenic yeast form at 37oC. This dimorphic switch results in the formation of the infectious yeast form. The mechanism of dimorphism is unknown, but potentially involves changes in cellular size. Target of rapamyacin (TOR) is a protein kinase that plays a central role in the control of cell mass by the phosphorlyation of certain cell mass determining proteins, such as the ribosomal subunit S6. Fungal proteins were prepared from both mold and yeast cells and the protein composition was analyzed and compared by 1D SDS-PAGE and 2DGE techniques. Proteomic profiles at fixed pH ranges of 3-10 and 5-8 were determined by 2DGE, showing visible changes in protein regulation Using immunoblot analysis, anti-mTOR was employed as a probe to identify TOR in the proteome of Penicillium marneffei. Phosphoprotein staining techniques were used to label phosphorylated proteins, identifying candidates capable of cellular regulation within the phosphoproteome.

Hamer, David OHIO RM 8:30 - 10:00

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Hamilton, Brian Physics & Astronomy JONES ROOM 8:30 - 10:00

Symmetries and the Damped Kepler Problem

The Kepler problem, which concerns the motion of a body in a central 1/r potential, contains many interesting features not present in other central field situations. These features are well understood and can be described in group theoretic terms. It will be shown that when a dissipative force is added to the situation, some of these features remain, while others do not. The reasons for this will be explored in a group theoretic context.

Hanuschak, Jennifer History JONES ROOM 1:30 - 3:00

The Iconography of Ivan the Terrible in Stalin's USSR

This paper analyzes Stalin's use of the arts to glorify one of his role models, Ivan IV (Ivan the Terrible). It concentrates on five pieces. The first two are paintings by Pavel P. Sokolov-Skalya, a prominent Socialist Realist painter, including Meeting of Ivan the Terrible with Wedding Ambassadors and Ivan at Livonia (The Capture of the Livonian Fortress of Kokkengauzen by Ivan the Terrible). The third is the famous film by Sergei S. Eisenstein, Ivan the Terrible. Next is the bust of Ivan by Mikhail M. Gerasimov, commissioned by Stalin, at Ivan's gravesite at the Cathedral of St. Michael the Archangel, in Moscow. The last piece to be analyzed is Sergei S. Prokofiev's ballet, Ivan the Terrible.

Harris, Chris Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Wind Turbine

We will design an alternator which can easily be changed for many applications. The alternator will be the generator for a wind turbine. The design has many factors playing into the output. The main tool used for design is Faraday's law. We use faradays law to relate the output voltage, the number of turns in a coil, the coil area and the field subjected to each coil. Once we decide which voltage output we want we can use Ohm's law to determine the current being supplied to the battery bank or device. With a known length of wire we can calculate the resistance and figure out the current. We need to design a rotor size and choose a number of magnets to figure out how many coils are needed. There must be an even number of magnets to have alternating poles. There will be 3 coils for every 4 magnets. The rotor size and number of magnets dictates how large our coils can be. With the coil size determined we can build test coils and determine resistance and area. A weather station controlled by a Freescale 68hc12 will be used to monitor wind speed and direction as well as the alternator's performance. The microcontroller will send this data to a pc where a C# application will graph the different values. This will allow us analyze our data and improve performance and efficiency. It will also allow us to determine what setup is best suited for a particular environment.

Hartline, Shauna Computer Science & Information Systems OHIO RM 1:30 - 3:00

"We are IT" – A Quest to Increase the Interest in Computing among Young Girls

"We are IT" is a state-funded event, targeted towards middle and high-school aged girls. The overall idea is to pique their interest in careers where women are usually the minority: technology and computers. Youngstown State University hosted one of the locations of the conference that occurred across the state of Ohio.

This poster presents an overall assessment regarding the impact of this event, based on the distributed pre- and post-surveys. Those surveys, completed by every girl who participated, included both technology related multiple-choice and open-response questions but also demographic related questions. After aggregating, interpreting and analyzing the results we concluded that girls from all school districts use technology in their every day lives, however not all of them realize that computers are useful tools for professionals in any field. Overall, the first conference was a success and the girls had a good time.

Hartranft, Charles Chemistry OHIO RM 10:30 - 12:00

A One-Pot Synthesis of Azides from Alcohols

Traditional azide synthesis from alcohols normally involves the SN2 displacement of the functional group by an azide nucleophile. Before this substitution occurs, however, the alcohol must be converted into a more suitable leaving group. Due to this requirement, typical azide synthesis from alcohols is a two-step process involving intermediate work-up procedures and isolations, which prove to be time consuming. This research proposes a "one-pot" azide synthesis using relatively inexpensive reagents that afford a successful azide substitution in a short time, with high yields. Reactions will be carried out at room temperature and also under microwave (MW)-assisted conditions. It has been found that the reaction of a primary alcohol with an azide source that can act as an effective leaving group, in the presence of a strong base such as sodium hyride or DBU, allows the in-situ generation of the azide nucleophile for an efficient SN2-type displacement in one pot.

Heinselman, Frank Biological Sciences OHIO RM 8:30 - 10:00

Identification of a Potential Selenite Resistance Gene in E. coli strain HB101

The bacterium, Stenotrophomonas maltophilia ORO2, was isolated from Poplar Creek in Oak Ridge, Tennessee nearby the Y-12 plant that processed lithium and uranium for atomic and hydrogen bombs. This strain was able to grow in the presence of toxic levels of mercury, gold, cadmium, lead, chromium, silver, and selenite, a derivative of selenium. A 100 kb plasmid named pOR1 conferred resistance to 40 mM selenite and was transferred to Escherichia coli strain HB101 to create the new strain HB101(pOR1). Selenite in high concentrations is toxic in the environment; however, it is also an important component of many enzymes found in bacteria and animals. The goal of this research is to identify the genes in selenite resistance using transposon mutagenesis. Transposons carrying a kanamycin antibiotic resistance genes were transformed into HB101(pOR1). Of the 2127 kanamycin resistant colonies screened, 141 or 6.6% were sensitive to selenite. The colonies of bacteria that were unable to grow on the selenite probably had a gene interrupted by the inserted transposon. One of the interrupted genes was rescued and its DNA sequence was determined. Basic Local Alignment Search Tool (BLAST) suggested that the gene may encode an efflux pump which removes selenite as it enters the cell. This protein may provide a strategy for HB101(pOR1) to maintain a balance or homeostasis between the amount of selenium that is incorporated into proteins and the amount that is removed by the efflux pump.

Hepfner, Robert Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Brainard Rivet Company Time Study

A time study was performed at Brainard Rivet Company. It is a certificated world class manufacturer of small rivets, large rivets, clevis pins knurled pins, grooved pins and special shaved fasteners. The time study was one of many processes which included: most, MTM1, and MTM2. Data was collected from the following processes: 1. Make the box, 2. Slide the box through the machine, 3. Pick up the box, and place it on the pallet, and 4. Fork lift. After the data was computed, allowances were added and the result was a fair time standard for the worker.

Hershman, Alaina-Marie Physical Therapy JONES ROOM 3:30 - 5:00

Use of a Posterior Wheeled Walker to Improve

As one ages, changes in the musculoskeletal system occurs. One change is the tendency for kyphotic spine posture to develop. Kyphosis has been associated with an increased risk of falls, with resulting increased medical costs if the fall results in broken bones. When kyphotic posture is present, the person may be required to use a walking assistive device to maintain standing. However, the traditional walker which is placed anterior to the user is thought to promote even more kyphotic posture. The purpose of this project was to determine if using a newly developed posterior wheeled walker (PWW) versus an anterior wheeled walker (AWW) changes kyphotic posture. Case Description. The participant was a seventy-six year old female, five feet four inches tall, and weighed 165 pounds. Her past medical history includes hypertension, high cholesterol, ten to twelve spine surgeries including spinal fusions beginning at the age of twenty-two. She required the use of an AWW for standing balance stability and exhibited the characteristic kyphotic posture when using the AWW. Methods. The participant's standing posture and gait parameters when using the AWW was compared to the same variables when using the PWW. A digital video camera was used to record sagittal view standing posture. The participant was video recorded both standing and walking to obtain static and dynamic posture measures. To highlight body areas for posture measurement, colored stickers were placed on the participant's head of the humerus, lateral epicondyle of the humerus, center of the wrist, greater trochanter, and lateral epicondyle of the femur during video recording. Gait parameters were obtained using the GAITRite® Computerized Gait Analysis System. The device measured temporal and spatial gait parameters as the participant walked on the computerized mat which is 4.6 m long and 0.9 m wide. The gait parameters recorded were step time (sec), step length (cm), stride length (cm), velocity (cm/sec), distance (cm), and cadence (steps/min). The posture and gait measures were first taken with the participant using the AWW. The participant was then instructed in the proper use of the PWW and the measures were retaken while using the PWW. This sequence of data collection occurred at 4 sessions over a 2 week period of time. Multiple measurements over time allowed the participant to become more proficient with the new PWW device making the measures more valid. In addition to the posture and gait variables, the participant also completed a researcher developed questionnaire asking for her perceptions about using the AWW and PWW functionally in her home and community. The Modified Falls Efficacy Scale, a standardized self report measure, was used to obtain data about how confident the participant felt that she would not fall while performing tasks with each walker. Observations. There was an overall decrease in kyphotic posture when using the PWW with the most consistent change noticed in trunk flexion angle as compared to the neck and thigh angles. For gait, step length, stride length, distance, and velocity all increased with the PWW while cadence was greater with the AWW and the step time saw no change. Despite improved posture and gait parameters, the participant's perception of both walkers showed a preference for the AWW. We had attempted to find the lightest and most compact PWW, yet there was still considerable weight and size to it. Folded, the PWW would not fit into the back seat of a four door sedan easily. The participant had difficulty maneuvering the PWW, especially in small places such as a bathroom. The participant's feeling of safety as identified by the Modified Falls Efficacy Scale did not change by much although the total score comparison did show that the participant had slightly more confidence about not falling when using the PWW. Perhaps this confidence was due to the heavier, sturdier feel of the walker design. Conclusion. The participant did show improved gait characteristics and decrease non-structural kyphotic posture when using the PWW as compared to AWW use. However, product design adjustments need to be made in order for the PWW to be functionally useful in similar geriatric participants.

Hileman, Barbara Sociology & Anthropology OHIO RM 3:30 - 5:00

Determination of Sex and Ancestry Through Non-Traditional Bone Measurements

This study uses non-traditional bone measurements to determine sex and ancestry of human skeletal remains. Measurements were taken on the skulls and humeri of 200 skeletons from the Hamann-Todd Osteological Collection at the Cleveland Museum of Natural History; 100 males and 100 females distributed equally by race (i.e., whites, blacks). Using standard measurement techniques, two measurements were taken on the skull (foramen magnum length, foramen magnum breadth) and six on the humerus (max length, epicondylar breadth, minimum and maximum diameter at midshaft, maximum head diameter, circumference at midshaft). Several statistical analyses were run and show that determination between sex (male, female) and ancestry (white, black) can be made.

Hird, John Mathematics & Statistics BRESNAHAN I ROOM 1:30 - 3:00

Inradius and Circumradius of a Triangle

We will solve an American Monthly Problem proposed by Cezar Lupu, University of Bucarest and Tudorel Lupu, Decebal High School relating the ratio of inradius and circumradius of an acute triangle to its side lengths.

Hoffman, John Physics & Astronomy JONES ROOM 8:30 - 10:00

Evaluation of Low Stress Crystal Oscillator Stability

Oscillators based on quartz crystals are the main method used to generate stable frequencies in many electronic devices. With increasing electrical technology, demand for more stable oscillators grows. Quartz crystals work well, but can be quite unstable so effort has gone into attempting to make these oscillators more stable. This project examines the frequency of a low-stress crystal oscillator by comparing to an atomic clock.

Houston, Jennifer Art BRESNAHAN I ROOM 3:30 - 5:00

Bread Stamps in the Early Medieval World

From the fourth to the eighth centuries AD, Christians around the Mediterranean area decorated their bread with symbols created by bread stamps or moulds. The use of these bread stamps during early medieval times was a widely practiced phenomenon yet the majority of the public knows little or nothing about this topic. This practice is attested in cities around the Mediterranean where excavators have found numerous Christian bread stamps. This presentation addresses the origin of the Christian bread stamp and the development of the Christian bread stamp from the fourth to the eighth century. The majority of the surviving bread stamps are circular with the images carved in relief or in intaglio. They range from three to twenty-one centimeters in diameter. The presentation will also cover an in-depth analysis of the wooden stamp, its symbols, and its place in Christian worship. It will argue the importance of the stamp in the lives of Medieval Christians and the part it played in the liturgy.

Hsu, Chia-Chi BRESNAHAN I ROOM 3:30 - 5:00

Cross-Cultural Complaint Speech Acts: Taiwan vs. American

The work in progress is a sociolinguistic study comparing Taiwanese college student complaints with American college student complaints. The data is being collected through a Discourse Completion Task (DCT). Using the DCT method is necessary to ensure the exact speech act conditions occur for both the Taiwanese and American students. The specific speech act being studied pertains to a college student with a legitimate complaint about the instruction practices in which he/she needs to express to the professor in order to pass the class. The purpose of the study is to discover one of many reasons for cross-cultural miscommunication.

From a sociolinguistic stand point, cross-cultural miscommunication is not the result of poor linguistics, but a direct result of massive misunderstanding of cultural differences in speech act performance. For instance, Taiwanese culture complaint performance is mostly delivered as indirect complaints (not directly complaining to the offender); whereas, American culture complaint performance is often freely expressed as a direct complaint.

The findings will show some similarities, but also many differences in strategies used to complain. These different complaint strategies derive from different cultural norms. Discovering these differences and the reasons behind them is imperative to the success of cross-cultural communication. Understanding the different cultural speech act strategies and the conceptions behind these strategies will result in more successful communications worldwide. Different cultures are aware of how to successfully communicate through compliments, but cross-cultural communication cannot survive on compliments alone. Complaints inspire improvement and progress; therefore, to ensure progressive, amiable relationships, such as those with Taiwan, these cross-cultural speech act strategies of complaints need to be thoroughly explored. Understanding these cultural differences may prevent potential tragic results that would otherwise be unavoidable.

Huck, Allison Human Ecology OHIO RM 3:30 - 5:00

Students' Knowledge of Standard Serving Sizes and Ability to Estimate Portions

Obesity is an epidemic with one in three Americans classified as obese and utilization of 12% of the national healthcare budget to deal with complications and comorbidities. Poor portion control is suggested as one of the contributing factors to obesity. This study will investigate visual recognition of standard serving sizes of selected foods from all food groups. Gender differences in knowledge about serving size and ability to estimate standard serving sizes by weight/volume will also be determined. A convenience sample (n=100) of YSU undergraduate students will be surveyed to assess their knowledge about standard food and beverage serving sizes and their ability to identify weight/volume amounts of standard serving sizes. Students will be compared by gender and whether they have completed an introductory nutrition course that included education on food portions. Female students are anticipated to be more knowledgeable about serving sizes and more skilled at estimating weight/volume of standard serving sizes than males. The researchers also anticipate that there will be a benefit to study participation in that awareness about standard serving sizes and portion control will be raised in the study population.

Hughes, Cameron Computer Science & Information Systems COFFELT ROOM 10:30 - 12:00

A Multiparadigm Approach to Epistemic Representation of Interrogative Domains

So far the Artificial Intelligence research community has not produced a grand unified theory for representing knowledge in Q&A intensive decision support systems. The temptation to use a one-paradigm-fit-all approach to knowledge representation in this class of system is all to seductive. But such approaches result in unnatural architectures. In our paper we explore a multiparadigm approach to knowledge modeling and acquisition for interrogative domains.

Hughes, Tracey COFFELT ROOM 10:30 - 12:00

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Hughes, Stephanie Criminal Justice HUMPHREY ROOM 3:30 - 5:00

Juvenile Boot Camps and Detention Centers: Is there a better one?

The purpose of this paper is to determine the best way to reduce recidivism rates in both dentention facilities as well as boot camps. The main focus of this paper is to look at the juveniles perspective as to what will help achieve lower recidivism rates. The research will be gathered through surveys and focus groups from both the boot camp residents as well as the dentention center residents. Through this study I hop to gain data of how to prevent future recidivism among juvenile offenders. Recommendations will be made available at the conclusion of the study

Hughes, Rachel JAMES GALLERY 3:30 - 5:00

An Automated System for the Hargreaves Method

The purpose of this project is to design, build, and implement a device that will track and apply a controlled stimulus to the paw of a lab rat in a research setting. This will provide a new and accurate way to measure the temperature of the stimulus and the time for the response of the rat. The system is built on both a digital and an analog knowledge base, which will utilize aspects of both circuit design and digital programming. A color camera will input the tracking data to an Altera DE-2 educational board, and this board will be programmed using VHDL. After digital processing of the camera's information, data will be sent to a digital to analog converter. This will convert the information to an analog signal to position the galvanometers, which will direct the laser to the correct coordinates on the floor of the cage. The final product will be useful to continue research by a biology faculty member.

Humphrey, Brittny Chemistry OHIO RM 10:30 - 12:00

The Synthesis and Characterization of Ferrocenyl Polymers Using Atom Transfer Ra

The synthesis and characterization of ferrocenyl alcohols. The ferrocenyl alcohols will be used to prepare monomers, such as 2-Ferrocenylethyl Acrylate (FEA) and 2-Ferrocenylethyl Methacrylate (FEMA). The monomers will be used to make ferrocenyl polymers using Atom Transfer Radical Polymerization. Characterization H1 Nuclear Magnetic Resonance (NMR) Spectroscopy.

Hurd, Ellen Psychology BRESNAHAN II ROOM 10:30 - 12:00

The Influence of Facial Feedback on a Weight Bias

This experiment will analyze facial feedback and its effect on implicit weight bias. Participants will use a vigilance task while being instructed to hold a pencil in their mouths while viewing pictures of fat and thin faces. This facial manipulation will be used to make the participants smile without knowing a smile is being formed. After viewing the pictures, participants will perform a self report mood measure, a distractor task of circling E's among a field of letters, an Implicit Association Test, and a self report exam measuring explicit bias. I expect that the results will indicate that participants instructed to smile while viewing fat faces will have less weight bias than participants instructed to smile while viewing thin faces.

Hurt, Anthony Psychology COFFELT ROOM 8:30 - 10:00

My Last Scent: Effects of Background Scents on Behavior and Cognition

Two studies will expand on the thought that odors can influence people's cognitive and behavioral structures. I will introduce the background scents of fresh cut pine and cedar to examine if it primes and increased anticipation of novel stimuli. Testing participants in a room with a fresh cut pine and cedar, I will examine if there is an increased recall of outdoor related words compared to neutral words in a memory test. In addition, I will observe if the background scents produce more outdoor related activities in a questionnaire asking "what activities do you planning on doing today?" This research will be a replication and extension of a study by Holland, Hendriks, and Aarts (2005).

Jackson, James JAMES GALLERY 3:30 - 5:00

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The purpose of this project is to design, build, and implement a device that will track and apply a controlled stimulus to the paw of a lab rat in a research setting. This will provide a new and accurate way to measure the temperature of the stimulus and the time for the response of the rat. The system is built on both a digital and an analog knowledge base, which will utilize aspects of both circuit design and digital programming. A color camera will input the tracking data to an Altera DE-2 educational board, and this board will be programmed using VHDL. After digital processing of the camera's information, data will be sent to a digital to analog converter. This will convert the information to an analog signal to position the galvanometers, which will direct the laser to the correct coordinates on the floor of the cage. The final product will be useful to continue research by a biology faculty member.

James, Krishna Computer Science & Information Systems COFFELT ROOM 10:30 - 12:00

The Sarbanes-Oxley Act: A Guide for IT Students and Professionals

The Sarbanes-Oxley Act of 2002 (SOX) has changed the landscape of American business forever. CEO's and CFO's of publicly traded companies are now required to certify the accuracy of the firm's financial statements, as well as the effectiveness of internal controls over financial reporting. Financial statements, as well as other financial reports, are produced from information systems designed and maintained by information technology (IT) professionals. A working knowledge of SOX allows IT professionals and students to prepare for, and assist with, SOX compliance. Therefore, this project will examine the Sarbanes-Oxley Act from the perspective of the information technology professional or student. It will start with an overview of the major provisions of SOX. An in depth analysis of the each section of SOX that affects the IT function will follow. Finally, the project will discuss the future of SOX and any new impact it may have on the IT environment.

James, William Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Mac Trailer Time Study

A time study was performed at Mac Trailer this semester. The company deals with making large trailers for the back of semi trucks. The time study was one of many processes which included: most, MTM1, and MTM2. Data was collected for two processes. One was the walking throughout the shop to find parts for creating shocks for a large trailer, and the other was the assembly of the pair of shocks. After the data was computed, allowances were added and the result was a fair time standard for the worker.

Jasenec, Ashley Biological Sciences OHIO RM 8:30 - 10:00

Proteomic Profiling of S. maltophilia ORO2; A Selenite Resistant Bacterium

The bacterium Stenotrophomonas maltophilia Oak Ridge strain O2 (S. maltophilia ORO2) was isolated from the Polar Creek near the Y-12 plant in Oak Ridge, TN. This strain grew in the presence of toxic levels of heavy metal salts, including selenite, a derivative of selenium commonly found in soils in the western United States. This research examines differential protein expression of S. maltophilia ORO2 using proteomic techniques. Established growth curves show that S. maltophilia ORO2 requires L-cysteine for selenite resistance. Cells were cultured in M-9 minimal salts medium in the presence and absence of L-cysteine and selenite. At specific time points, immediately before and one hour after the addition of selenite, cells were harvested for protein analysis by two-dimensional gel electrophoresis (2DGE). Protein profiles were created and differential protein expression due to selenite sensitivity and resistance was examined. This processs lead to the identity of proteins, which could potentially play a role in selenite uptake and resistance.

Jenyk, Jonathan Computer Science & Information Systems COFFELT ROOM 10:30 - 12:00

Time Out: Get Control of Your Cell Phone Minutes

Cell phone usage has become an increasingly relevant part of our lives over the past decade. Most people use a cell phone every day, and unfortunately, most people face ugly overage charges every month on their cell phone bill. Generally, it is not convenient to monitor cell minute usage. However, JenykSoft's Time Out is giving control back to the cell phone user. A simple computer application sends alerts such as a text message or an e-mail when the user reaches a set limit on their minute usage. The user has complete control of when he or she is notified, and can even personalize the text message or e-mail sent. This application can save households hundreds of dollars over the span of their cell phone contract. It can also be used by businesses looking to cut costs by reducing overage charges on employee cell phones. Time Out works with Sprint, Alltel, Verizon, T-Mobile, and Cingular cell phone plans and was written in VC++.

Jewell, Ryan Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Design and Installation of a Dumbwaiter into a Two-Story Restaurant

The movement of food, drinks, and dishes from the first floor kitchen to the second floor dining area poses a problem for the current waiting staff. It would be advantageous for the waiting staff to move the loaded trays and bus equipment up and down this story via a dumbwaiter rather than to carry it up two flights of steps. The current process can both be hazardous for the waiting staff and could cause a loss of profit for the restaurant owner should a tray be dropped. Several steps were completed in this project: 1)design of a dumbwaiter system, 2)construction of the dumbwaiter box and shaft, and 3)installation the dumbwaiter system into the restaurant.

The design process was completed using mechanical drawings and Algor and Solid Works software. The remodeling of the restaurant included a removal of an upstairs window for the placement of one of the entrances to the exterior shaft and the removal of a countertop in downstairs service area to make room for the placement of a hole in the wall for the downstairs entrance to the shaft. The construction took place on site at the restaurant. The installation of the shaft was the last item to be completed.

The design challenge for the dumbwaiter was to apply current knowledge and new ideas to the construction and installation of the equipment. The goal of the project was to improve daily operations of the restaurant and provide a safer, more worker-friendly environment. The primary task when completing the project was to install the dumbwaiter without interrupting the current operations of the business. This meant that the majority of the work had to be done on Sunday and Monday, the days in which the restaurant was closed. Ultimately, the project was completed successfully using teamwork, determination and engineering acumen.

Jones, Darla Teacher Education BRESNAHAN I ROOM 1:30 - 3:00

The Order of Groups

The order of a group, denoted by |G|, is the number of elements G contains. For instance, the set of integers Z is a group under the operation +. Two groups are said to be isomorphic if all their elements interact the same way via their operations so that the only difference between them is the particular symbols used to denote their elements. For example there is only one group of order two is . Yet, on the other hand, the order eight has five groups, and . Why are these the only groups of theses orders? In this research we want to classify all groups of small order up to isomorphism.

Jones, Jason Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Collapsible Spreader Bar for Trenching (Project Orange)

In today's day of construction, trench shields are required for digging trench depths greater than five feet. Due to the length of the various trenches, this shield must be mobile so it can be moved from time to time throughout the construction period. Currently, the shield walls are held apart with a simple spreader locked into place with two forged steel pins. However, when removal of these shields is necessary, the current process is to cut the spreaders and then start again. The solution is a quick release design that would help in the mobility and cost efficiency of the shields. This consists of a spreader bar that is connected by three pin joints that allows the walls of the shields to be pulled away from the trench walls prior to removal. These pin joints are reinforced by a thick metal sleeve that is slid over the aforementioned three pins. For disassembly purposes, the sleeve is slid away from the pins, allowing the spreader bar to collapse. Collapsing the spreader bar can be accomplished by either a worker at the job site or assisted by the available equipment (such as a backhoe or bulldozer). This design increases the efficiency of the overall trench digging process due to several reasons. First and foremost, the spreader bars do not need to be destroyed like they currently do, eliminating an expensive and time consuming process. It also increases the mobility and speed with which the trench system can be assembled. When looked at in a proper magnitude of today's construction projects, this design can potentially save thousands of dollars annually.

Jones, Tim Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Mac Trailer Time Study

A time study was performed at Mac Trailer this semester. The company deals with making large trailers for the back of semi trucks. The time study was one of many processes which included: most, MTM1, and MTM2. Data was collected for two processes. One was the walking throughout the shop to find parts for creating shocks for a large trailer, and the other was the assembly of the pair of shocks. After the data was computed, allowances were added and the result was a fair time standard for the worker.

Juby, Joe OHIO RM 3:30 - 5:00

Time Study at Patriot Seating

Abstract not available at time of printing

Jugenheimer, Sara Human Ecology JONES ROOM 3:30 - 5:00

Factors Affecting Job Satisfaction in the Child Care Workplace

Job turnover and satisfaction in child care centers were examined for 92 female child care workers participating in the study. Pearson correlations revealed that satisfaction with the following factors was significantly and negatively related to intention to leave the job: salary, benefits, hours worked per week, appropriateness of teaching styles, and overall job satisfaction. Again, Pearson correlations revealed that satisfaction with the following factors was positively related to overall job satisfaction: salary, relationships with coworkers, opportunities for social learning, emotional growth, physical development, language development, and cognitive development for the children, appropriateness of teaching styles, the way the children's progress is assessed, health standards set by the center, education required of teachers, relationship with families worked with, sensitivity to families worked with, use of community resources, indoor physical environment, the center's policies and procedures with staff, the center's policies and procedures with children and families, the overall management of the center, the overall quality of the center, the stress level of the job, and intention to leave the job. There were significant differences in satisfaction with quality measures between employees of centers accredited by the National Association for the Education of Young Children and employees from non-accredited centers.

Jung, Wook Rak Geography COFFELT ROOM 1:30 - 3:00

GPS/GIS Applications for Local Event Planning

This paper presents an evaluation of the potential application of GPS and GIS mapping technology to event planning and space utilization for the Canfield Fair in Canfield, Ohio. The Canfield Fair is one of the largest local fairs held in the state of Ohio. It is held on an annual basis, hosts thousands of visitors and a large number of commercial vendors. Maps of the fairgrounds are generated a new each year to reflect the changing venues for events and activities. We investigated the applications of GPS/GIS technology to generation updated maps of the Canfield Fairgrounds on an annual basis. Accurate mapping would allow for better space utilization and would provide for better planning for vernacular and pedestrian traffic flow. We surveyed the fairgrounds using a GPS receiver linked to PDA's loaded with ESRI's ArcPad 7.0 program. We translated the field data into a map that had the potential to be incorporated into the Canfield Fair's website and which could potentially be utilized to produce maps of the fairgrounds for distribution to visitors to the fair.

Kallamadi, Ramnath Chemistry OHIO RM 10:30 - 12:00

Synthesis and Reactions of Bis(2,2,2-trifluoroethy) Phosphonoalkynes

Organophosphosphorus compounds play important biological role in living system. My presentation deals with synthesis of Bis(2,2,2-trifluoroethyl)phosphonoalkynes and mainly focussed on the cycloaddtion reaction reaction of the same by using Diels-Alder reaction. The products and by-products were elucidated by using the Gas Chromatography(GC), Mass Spectroscopy(MS), and Nuclear Magnetic Spectroscopy(proton, carobon and phosphorus NMR)

Kaur, Amanpreet Biological Sciences OHIO RM 8:30 - 10:00

The Anti-Epileptic Drug Retigabine and its Effects on Neuronal Hyperexcitability

Epilepsy is a chronic neurological condition, which is characterized by seizures due to the spontaneous activation of a few hyperexcitable neurons in the brain. One form of epilepsy results from a mutation in the M channel, a voltage-gated potassium channel in brain neurons that opens with depolarization. Retigabine is an experimental antiepileptic drug, currently in human clinical trials, which may control the symptoms of epilepsy. It is hypothesized that Retigabine acts through activation of the M channel. Opening of the M channel produces an outward M-current which resists action potential firing and thus dampens neuronal excitability. To establish the mechanism of action of Retigabine, current and voltage clamp protocols were carried out on neurons obtained from sympathetic ganglia of bullfrogs. Through these protocols, action potential firing rate, membrane potential, and M current amplitude were measured before, during, and after drug application. Our findings suggest that the overall impact of Retigabine is to decrease the excitability of sympathetic neurons by more readily activating M current, hyperpolarizing the neuron and therefore decreasing its action potential firing rate.

Kayyali, Tareq Chemistry OHIO RM 10:30 - 12:00

Following Alcohol to Azide Conversions by IR Spectroscopy

We have developed a new conversion of primary alcohols to primary azides that uses a safe and affordable azide source, namely p-acetamidobenzenesufonyl azide. Since the OH and N3 functional groups have such distinct absorbances in the Infra Red spectrum we have used this technique to study the alcohol to azide conversion on several alcohols using different bases to promote the reaction.

Keller, Christopher Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Shield Quick Release Mechanism

A trench shield manufacturer needed a quick release design to release the pressure from the dirt on the pipes, in order to pull out the trench shield. The load on the shields can be quite large, as they are designed to be used down to a depth of 15.24 meters (50 feet). The distribution of the load on the shield was given as 9.426 kpa/m depth (60 psf/ft depth). Under full compression the support pipes must be cut or burned out in order to release the vacuum created by attempting to pull out the shield from the earth. In the current design there is no provision for the pipes to be removed from the shield while in ground.

To solve this problem, a three-sectioned pipe was created in order to allow the pipes to be released and removed from the shield. The quick release mechanism was to be designed in such a manor to allow simple removal with the use of specialized equipment, such as hydraulics, pneumatics, etc. while insuring the safety of the workers involved. Our design allows a worker to attach one or more support pins in the pipe to the crane, thus pulling out the pins and releasing the pressure from the dirt. The design allows the workers to be out of the trench, avoiding any injury or accidents from possible trench collapses. An intermediate section of pipe is used between the main support pipe and the shield allowing the shield to move in when the pin is released. Slide stops could be used in order to prevent the shields from moving in more than is necessary to release the vacuum created. Manufacturing the mechanism along with the shields will create very little additional cost while meeting the Occupational Safety and Health Administration standards.

Khumprakob, Elizabeth Nursing HUMPHREY ROOM 10:30 - 12:00

Global Warming Crisis: An Individual and Informed Plea for Change

Global warming is now an internationally recognized threat. It has the potential to affect human life much more dramatically in the near future if action is not taken to reverse our contributing effects. I learned a great deal about this phenomenon from former vice president Al Gore's documentary film, An inconvenient Truth. While reiterating some major points from this film for audience information, I hope to do more than offer What You Can Do to Help solutions by offering my own and other critical points for the reversal of this climate crisis and the better-conservation and use of the planet and its resources. Because America contributes roughly 2/3 of the CO2 emissions causing the buildup of greenhouse gasses (and more heat) in the earth's atmosphere, we are each socially and morally responsible for changing our ways and our actions. A major change that must be demanded by consumers is for products that are environmentally responsible, especially where fossil fuels for vehicle power are concerned. The common ground that exists is that while isolated environmental pollution may only directly affect certain populations and require isolated changes, if we do not reverse our individual and collective ignorance and apathy ALL life on earth WILL eventually be affected. Over time the airs, waters, lands and life are and will continue to be infiltrated by mankind's pollutions. Information of the issue and common sense observation will likely turn the tide.

Kotel, Robert Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Moonbuggy 2

Youngstown State University (YSU) will be participating in The Great Moonbuggy Race April 13th and 14th 2007. This is the third straight year that YSU has sent a team to the competition that takes place in Huntsville, Alabama. The team from the 2006 competition made a dramatic design change in that the moonbuggy had a back-to-back seating arrangement. This was a big change from the entry from the first year which had side-to-side seating. The 2006 design performed better in the competition than did the 2005 design. This year's team has decided to keep the frame design from the 2006 competition while making some modifications to the steering system, suspension, and drive train.

The rules of the competition state that there must be two team members on the moonbuggy at all times. One of the riders must be a man and one must be a woman. There is no specific weight requirement for the moonbuggy. However, the moonbuggy must be carried 6.10 meters (20 feet) to the starting line by the two riders, so the weight of the moonbuggy can not be excessive. Another rule of the moonbuggy competition is the moonbuggy must fit into a 1.22 meter (4 foot) cube. Once it was determined that the moonbuggy fit into the cube, the vehicle was unfolded and prepared to navigate the course. In preparation to travel the course the moonbuggy was checked for safety by representatives from the competition. At this point the moonbuggy was ready to travel the course which was an imitation of the actual lunar surface. The course has rocks, craters, and lunar simulated soil. Teams were timed during the assembly stage and elapsed time it took to complete the course. Winning teams were those who had the shortest combined times.

Krautbauer, Wesley Dana School of Music PUGSLEY ROOM 10:30 - 12:00

Motivic and Formal Structures in Bartók's Sonata for Piano (1926)

In his Sonata for piano (1926) Bartók exhibited many characteristics of his mature compositional style. He combined a vast array of classical compositional techniques, formal structures, as well as procedures such as sonata form and counterpoint. He also incorporated idioms of folk music, establishing a new style that fulfilled the demand for new Hungarian music. While research has demonstrated that the first movement is based on an economy of harmonic means, this paper will demonstrate that the motivic structures are equally as relevant for our understanding of the large-scale formal organization. This new perspective will explore the complexities in which both small and large-scale elements interact in a modern sonata form, therefore guaranteeing its integrity.

Kreiger, Amy Art PUGSLEY RM 3:30 - 5:00

Painting

As an artist, I am most interested in the human figure. Body structures and facial expressions inspire me to portray a human landscape in various mediums. I use loose brushwork, accomplished quickly with a wide range of color. Scale is essential to my technique. The larger canvas allows me to explore the abstract forms of a face. On the other hand, I feel a smaller scale amplifies the person s mood through contrast and texture. Through the basic elements of line, color, and shape I explore the distinctive individuality of a person or emotional state. What I like most are the diverse forms in a face. Lately it has become difficult to engage in conversation with both friends and strangers because I become distracted by their facial structure. It s almost as if I go into a trance and begin making a mental sketch; soon after I may ask the person to pose for a painting. It is the imperfections and complexities of each figure or face that ignite my artistic passion. I am selective in my choice of models. I find a face that inspires me through form. I position the model in a pose that illustrates their unique facial structure. Deconstructing the form helps me to build the model s personality. Through brushwork and color, each portrait becomes an energetic landscape.Amy T. Kreiger

Krupko, Thomas Chemistry OHIO RM 10:30 - 12:00

Molecular Modeling and Ring Conformation in Honors Organic Chemistry

In Chemistry 3719 and 3720 we discuss molecular conformation and the use of Nuclear Magnetic Resonance Spectroscopy (NMR) in working out the structures of organic molecules. For the Honors component of these classes we have studied molecular modeling using the ChemDraw and Chem3D package to build and analyze more complex molecules. Consideration of both NMR and molecular modeling results allows the development of a deeper understanding of the uses and applications of both in Organic Chemistry.

Kudary, Jaime Accounting & Finance COFFELT ROOM 3:30 - 5:00

Financial Literacy

We will be discussing important financial literacy topics that have been neglected by the general public. These topics can be as basic as balancing your check book or learning the meaning of "APR" and other terms used by credit card companies. Mastering these topics will help an individual achieve their financial goals. As the President and Vice-President of Beta Alpha Psi we will be stressing these topics in the local community by going to area highschools, churches, and dorms on campus.

Kusnic, Rachel Chemistry OHIO RM 10:30 - 12:00

REEL PROJECT: Synthesis and Characterization of KCoxCu(1-x)F3 (x=0 to 10)

The REEL Project is funded by the National Science Foundation and centered at Ohio State University. Its major goals are to introduce laboratory based research into first and second year chemistry courses, to generate new knowledge in the chemical sciences, and to increase the retention and graduation rates in science fields. The research problem that this project focuses on is that most inorganic red and yellow pigments contain heavy toxic metals such as Cd, Hg, and Pb, and these must be replaced by more environmentally benign alternatives. The specific goal of the YSU REEL Project is to create new materials of the type KMF3 that have two different transition metals at the M site, and to see if they could eventually be used as pigments.

Various mixed metal fluoride samples of the type KCoxCu1-xF3, where x = 0 to 1.0, were prepared and characterized using X-ray powder diffraction by students enrolled in a General Chemistry II laboratory class at Youngstown State University. These samples were subsequently further analyzed via scanning electron microscopy, energy-dispersive X-ray spectroscopy, and X-ray diffraction spectroscopy to quantitatively determine the composition of the compounds, and to determine the percent composition of the samples.

Lamoncha, Brenten Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Analysis of Lifting Task at Humtown Products

The project goal is to develop a time standard for the unloading of molds out of a core machine at Humtown Products. During the course of the project we will be using various Industrial engineering techniques such as the standard stopwatch time study, MTM analysis and ergonomic planning.

Lariccia, Joelius Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

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Latronica, Brandon Physics & Astronomy JONES ROOM 8:30 - 10:00

PID Thermal Control

Construction of an economical linux-based PID controller for comparision to more expensive commmercial solutions.

Lease, Loren Sigma Xi OHIO RM 1:30 - 3:00

Comparing Correlations of Metric and Morphological Data from the Deciduous and Permanent Dentitions in a European American Sample

Tooth size and morphology are, in part, genetically determined. Recently, we compared normal morphological variation in deciduous and permanent dentitions from the same individual. This study found fewer than expected positive correlations between trait expressions in the deciduous and permanent dentitions. However, previous metric analyses have shown that mediodistal dimension in the deciduous and permanent dentitions of the same individual have consistent low to moderately positive correlations. To our knowledge, no study has compared the correlations of the morphological data to the dental size correlations within the same individual.

To address this issue, mesiodistal and buccolingual measurements were taken on 54 European American individuals whose teeth were cast as both children and adults. Data were collected from eight teeth, four maxillary and four mandibular. Antimeres were averaged and Spearman's ranked correlations were performed on the deciduous and permanent pairs.

As expected, the mesiodistal dimensions have low to moderate positive correlations. Six correlations, out of the eight pairs, were statistically significant at the 0.05 level. Correlations ranged from 0.3 to 0.5. It was not expected that any of the buccolingual correlations would be statistically significant. However, four of the eight comparisons were found to be significant. Correlations ranged from 0.4 to 0.5. Previously reported correlations for the morphological traits from this sample were found to be inconsistent, ranging from high negative to high positive correlations. Expressions of several characteristics were uncorrelated in the two dentitions. We interpret the difference between the metric and morphological correlations as reflecting different genetic or environmental influences acting upon the two forms of data, as well as, the two dentitions.

Lease, Loren Sigma Xi OHIO RM 1:30 - 3:00

Is There a Correlation Between Deciduous and Permanent Dental Metrics in a Sample of Female Americans of Hispanic Descent?

Because tooth size is under partial genetic control, dental metrics can be used to analyze the genetic relationships between populations. Studies of population relationships only reflect genetic relationships to the extent that dental metrics reflect genes. Previous research on European American samples has shown that deciduous and permanent dental metrics in the same individual are moderately correlated, and thus should reflect genetic relationships in a relatively similar manner. However, different populations are likely to have different ratios of genetic and environmental influence on tooth size. Therefore, it is useful to compare the relationship between deciduous and permanent tooth sizes in samples other than European American. The research presented here compares mesiodistal measurements of deciduous and permanent dentitions of the same individual from a sample of 30 Hispanic Americans from the Albuquerque, New Mexico area. Antimeres were averaged and Spearman's ranked correlations were performed on the deciduous and permanent tooth pairs. We expected low to moderate positive correlations, as has been shown for European Americans. Significant correlations were found for both mesiodistal and buccolingual measurements of the maxillary canine. However, neither measurement was significant for the mandibular canine. Some molar measurements were significantly correlated between the dentitions; others were not. Overall, there were fewer significant correlations than expected based on prior research in European Americans. These results may relate to recent admixture in the Hispanic American population. Environmental disparities between the two populations may play a role.

Lewis, Stacey Criminal Justice HUMPHREY ROOM 3:30 - 5:00

Behind the Scenes: An Exploratory Study of Student Grade Performance

The research is designed to look at the correlations of introduction to criminal justice students' attendance and grades. The research will view the relations of gender and the students major. Method utilized will be content analysis of the students' class attendance, quiz scores, and the class roster. Students who attend class regularly are likely to have higher quiz scores; therefore, having a higher grade overall. Students majoring in criminal justice are likely to receive a higher score/grade than non-criminal justice students. Results will determine if a students' major has an impact on the grade the student may receive as well as determine if gender and attendance play a role.

Lewis, Sarah — Political Science — JONES ROOM 10:30 - 12:00

A Preliminary Study of Entombed Beach Debris On San Salvador Island, The Bahamas

The problems associated with ocean-borne debris accumulating on world beaches are well documented. Materials carried ashore by wave action create an eyesore, incur cleanup costs, act as a threat to wildlife in the coastal setting and create health hazards for residents and visitors to coastal settings. Little work has been done on the long-term accumulation of beach debris in coastal environments. What ultimately happens to the material that washes up on the shores of coastal communities? Is this material washed back out into the ocean with changing tides or is it incorporated into the sand load of coastal sand dunes? Our study examined beach debris entombment on a beach on San Salvador Island in the Bahamas. We conducted excavations away from the low tide line and ended in the swale behind the primary dunes lining the beach. Our research revealed an absence of progressive beach litter accumulation in the sands of the wash zone between the high tide and low tide markers. Beach litter entombed in the sands beyond the high tide line indicate some degree of progressive beach debris accumulation as more buoyant materials are transported beyond the wash zone by wind and wave action. Concentrations of debris were found at distinct levels in the swale between the primary and secondary dunes indicating debris deposited as a result of high wind and wave activity. Future excavations are planned to examine the effect differences in beach topography have on the transport and entombment of surface debris along the beachfront.

Little, Jill — Sociology & Anthropology — OHIO RM 3:30 - 5:00

Determination of Sex and Ancestry Through Non-Traditional Bone Measurements

This study uses non-traditional bone measurements to determine the sex and ancestry of human skeletal remains. Measurements were taken on the skulls and humeri of 200 skeletons from the Hamann-Todd Osteological Collection at the Cleveland Museum of Natural History; 100 males and 100 females distributed equally by race (i.e., whites, blacks). Using standard measurement techniques, two measurements were taken on the skull (foramen magnum length, foramen magnum breadth) and six on the humerus (max length, epicondylar breadth, minimum and maximum diameter at midshaft, maximum head diameter, circumference at midshaft). Several statistical analyses were run and show that determination between sex (male, female) and ancestry (white, black) can be made.

Lockard, Nick — Electrical & Computer Engineering — JAMES GALLERY 3:30 - 5:00

High Temperature Superconductor Tests for Electrical Characteristics

The electrical characteristics of the American Superconductor 2G HTS wire are tested and analyzed at different frequencies and temperatures. The sample geometry of the superconductor wire that is considered is a coil of length 4cm, diameter of 3cm, and 6 turns. The LCR parameters and field measurements are recorded inside of a shielded RF tent through computer automation. The results explain that the net resistance of the superconductor wire is decreased significantly at 77°K. All data is analyzed using a statistical software package.

Long, Michael — Mechanical & Industrial Engineering — JAMES GALLERY 1:30 - 3:00

Trench Shoring System Pin Redesign

Trench shoring systems increase safety and productivity on the construction site. The only obstacle to increased productivity is removal of these systems from the trench, the high pressures generated by the soil surrounding these shields makes removal of the pins holding the spreaders (cross supports) an extremely difficult and time consuming task. The difficulty in removing these pins leads to lost productivity and can lead to high maintenance cost due to the spreaders being cut during removal of the system from the trench. Analysis of this problem led to the design of a quick-release pin system to be used on the spreaders in lieu of traditional pins. The quick release pin system was designed to be a simple mechanism minimizing modification of the existing product. The spreader sockets on the shields where lengthened 38.1mm (1.5in) to allow pressure release on the shields, which will allow easy removal of the system from the trench. In addition, low friction mineral-filled nylon bushings were added to the spreader sockets to facilitate less effort required to slide pins into the released position. The analysis of impact loading on the outer shell of the shield due to sudden support release resulted in acceptable safety factors within Occupational Safety and Health Administration standards. This system will increase productivity and be easily implemented into the manufacturing process.

Love, Kevin — Accounting & Finance — COFFELT ROOM 3:30 - 5:00

Financial Literacy

We will be discussing the importance of financial literacy topics that have been neglected by the general public. These topics can be as basic as balancing your check book or learning the meaning of *APR* and other terms used by credit card companies. Mastering these topics will help an individual achieve their long term financial goals.

As President and Vice President of Beta Alpha Psi we will be stressing these topics in the local community by going to area high schools, church, and dorms on campus.

Ludt, Sean — Physics & Astronomy — JONES ROOM 8:30 - 10:00

Search for Rare Decay Branches of 177mLu with the TRIUMF 8pi Detector

An excited state of the 177Lu nucleus is 970 keV above the ground state and lives for a halflife of 160 days. It has been suggested that this long-lived state (an isomer) might be used in some applications. First, basic research must be conducted on this nucleus to discover if there are ways to cause an artificial release of the stored energy. One step is to understand the natural decay process which might include previously undetected steps. This talk will discuss an experiment to look for rare decay steps using the 8pi detector system at Canada's TRIUMF laboratory.

Macali, Matthew — JAMES GALLERY 3:30 - 5:00

Autonomous Robot

An autonomous robot will be designed and built. This robot will operate as an independent entity using only onboard systems to navigate and find its way to specific points of interest. The robot is designed to be versatile and will require minimal control of the environment, which is not normally the case. This will allow the robot to be adapted to most environments by just changing the programming that controls how the robot operates. For example, it could be used to move bins in a factory that fill with a part throughout the day from the end of one assembly line to the beginning of another assembly line.

Mace, Coletta Psychology COFFELT ROOM 8:30 - 10:00

Personality and Social Attitudes

The effect of mortality salience on the attitudes toward a physically disabled person will be investigated. Forty participants, twenty males and twenty females, will be randomly assigned to two conditions: mortality salience and control. All participants will first complete a Psychological Hardiness Scale. Then, the mortality salience group will get two open-ended questions which serve to prime the thoughts of one's own death: "Please briefly describe the emotions that the thought of your own death arouses in you" and "What do you think happens to you as you physically die and once you are physically dead?" The control group will answer parallel questions in which all references to death will be replaced with "watching TV." All participants will then read a vignette of a physically disabled person and complete a modified version of the Disability Social Relationship Scale that measures the participants' attitudes toward the disabled target. All participants will complete a demographic sheet and then be debriefed. Data will be analyzed with ANOVA to examine mortality salience effects. ANCOVA will be used to examine whether hardiness significantly mediates attitudes toward the disabled target. The themes that emerge from the questions on death will be qualitatively analyzed, although the answers are not the central focus of this study.

Mains, Daryl Chemistry COFFELT ROOM 1:30 - 3:00

Bimolecular Reactions in the Gas Phase

A series of gas phase association reactions were investigated using high resolution mass spectrometry. The resulting mass spectra describe the nucleation pattern and relative stability of various metal-substituted acetylacetonate species. The functionality and degree of ligand substitution along with the central metal was found to play an important role in the formation and subsequent reactivity of new mixed-metal complexes. A systematic experimental and theoretical study will be presented to account for these variables.

Malich, Ashley Chemistry OHIO RM 10:30 - 12:00

C-H Insertion Chemistry on Furanose Platforms

The goal of this project is to synthesize structures that are commonly found in natural product chemistry using readily available carbohydrates as an inexpensive source of chiralty. These types of compounds are known to have important pharmaceutical properties and can potentially be created utilizing C-H insertion chemistry on gluco- and xylofuranose platforms. Azidodeoxy sugars with diazoesters attached will be constructed and then decomposed in the presence of a rhodium(II) catalyst. The stereoselectivity and regioselectivity of the reactions will be studied using NMR, Mass Spectrometry, and X-ray crystallography.

Malmsberry, Nate Technology BRESNAHAN I ROOM 10:30 - 12:00

Testing of Masonry Lintels

This presentation documents the design, fabrication, and testing of a full scale masonry lintel. The tests evaluate the application of the strut-and-tie analysis model for masonry walls. Evaluation of the problems encountered with a failed prototype testing frame serves as the starting point for the redesign and fabrication for future tests. The testing frame system, when successfully demonstrated, will be utilized for a series of full-scale tests to complete a parametric study of the application of this analysis technique.

Margaret, Beniston Health Professions BRESNAHAN II ROOM 1:30 - 3:00

Eta Sigma Gamma Community Projects

Members of the YSU chapter of Eta Sigma Gamma, the National Health Education Honorary, and planned, conducted and evaluated two projects designed to provide community service and for member's professional development. The first was a disease prevention education program conducted with We Care Day Car on the YSU campus with 3 and 4 year olds. The purpose of the project was to increase student's skill in disease prevention through hand washing. The second project was conducted to assist Second Harvest Food bank. Eta Sigma Gamma members raised over $600.00 in food and cash. The third major project was conducted in December and February with the purpose to increase awareness about and encourage prevention of HIV/AIDS. In addition, this year, the group is trying to raise $1,000 to pay for five children who are infected or affected by HIV/AIDS to attend Camp Sunrise during the summer of 2007. The Camp provides children with the opportunity to have fun in a therapeutic environment free from the social stigma commonly attached to HIV/AIDS. The Camp environment provides a unique and fulfilling experience not otherwise available for participating children.

From these projects, community and school health majors learned how to design interactive and fun learning activities, and how to document participant learning. We also refreshed our knowledge of local and national and local health statistics and prevention methods. The majors also increased our skill in effective teamwork, collaboration with other campus programs and community agencies. We also participated in public health advocacy and used multiple communication channels, and we provided service to various segments of the community.

Marino, Charles Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Collapsible Spreader Bar for Trenching (Project Orange)

In today's day of construction, trench shields are required for digging trench depths greater than five feet. Due to the length of the various trenches, this shield must be mobile so it can be moved from time to time throughout the construction period. Currently, the shield walls are held apart with a simple spreader locked into place with two forged steel pins. However, when removal of these shields is necessary, the current process is to cut the spreaders and then start again. The solution is a quick release design that would help in the mobility and cost efficiency of the shields. This consists of a spreader bar that is connected by three pin joints that allows the walls of the shields to be pulled away from the trench walls prior to removal. These pin joints are reinforced by a thick metal sleeve that is slid over the aforementioned three pins. For disassembly purposes, the sleeve is slid away from the pins, allowing the spreader bar to collapse. Collapsing the spreader bar can be accomplished by either a worker at the job site or assisted by the available equipment (such as a backhoe or bulldozer). This design increases the efficiency of the overall trench digging process due to several reasons. First and foremost, the spreader bars do not need to be destroyed like they currently do, eliminating an expensive and time consuming process. It also increases the mobility and speed with which the trench system can be assembled. When looked at in a proper magnitude of today's construction projects, this design can potentially save thousands of dollars annually.

Marsh, Maggie Psychology BRESNAHAN II ROOM 10:30 - 12:00

How Good is Your Memory?

The effect of perception for gender stereotypical and counter stereotypical differences on recall was examined in this study. Eighty participants (40 males and 40 females) were tested. The participants were from undergraduate psychology courses who volunteer in return for extra credit. Participants read one of four stories. The stories were similar except that the details were either gender stereotypical or gender counter stereotypical (male stereotypical, male counter stereotypical, female stereotypical or female counter stereotypical). Participants then completed a word search. Finally, participants were instructed to recall specific details from the story.

Marsh, Lannie Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Smart House

Due to high costs of electricity, we are going to design a Smart House. This house will be able to switch power sources from solar power, to supplied power, to generated power and vise versa. We will create a generator that is made to be powered by both solar energy and a gas powered engine. The project will include designing a system that is capable of supplying an entire house with power on a continual basis using solar energy, while still being able to rely on a backup line power and using a gas powered engine as an emergency backup when the solar cells are not able to gather enough energy and the line power is not able to supply power. This house will also be able to perform tasks of a normal house with a more high tech approach.

Mathes, Greg Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Axial Jack for Shield System

The project was to design a quick release mechanism for a shield system that supports trenches. The problem continually encountered in practice was with the amount of pressure due to the surrounding soil on the shield walls, making it immensely difficult for the workers to remove the shield system quickly from the trench. Removal beforehand often took two to three hours and at many times involved damaging the actual system itself. The main objective was to relieve the bowing caused by the force of the soil on the walls in a timely manner, anywhere from five to ten minutes. A solution to this problem was to develop an axial jack that would relieve the bowing of the system walls. It can be placed at the top of the shield system walls. The jack was designed so that one end affixes to either interior wall via the pre-existing slots in the wall. The jack has been designed to extend the trench's width. Due to varying environmental conditions, the jack was design to adequately resist corrosion resulting from temperature and weather. It must also have the ability to withstand regular wear and tear from expected use. Considered in the design process is safety of the workers who are expected to operate the jack in their work environment.

Mazzi, Mark Teacher Education JONES ROOM 10:30 - 12:00

Annual Changes of the Pigeon Creek Delta Bathymetry, San Salvador, Bahamas

The Pigeon Creek Tidal Estuary is a major feature on the Island of San Salvador, the Bahamas. The estuary covers an area of approximately seven square miles and fills during high tides and subsequently drains during the intervening low tides. Discharging water at low tide transports a tremendous amount of sediment that is deposited as a large submerged delta inside Snow Bay at the mouth of the estuary. The delta bathymetry has been mapped annually since 2005. The bathymetry of the delta changes with time as a result of daily tidal influences and tropical storms and hurricanes. The purpose of the research is to characterize bathymetric changes that have occurred over the past two years and to investigate potential sedimentation patterns. Using GPS receivers for location coordinates and jacobs staffs for measuring water depth, approximately five hundred individual batymetric values were measured. The bathymetry data were mapped using the RockWorks computer assisted mapping program. The resulting map was georeferenced and imported into ArcGIS. The 2007 bathymetry was compared to the 2005 and 2006 bathymetries using ArcGIS spatial analyses tools.

McCann, Stephanie JONES ROOM 8:30 - 10:00

Search for Rare Decay Branches of 177mLu with the TRIUMF 8pi Detector

An excited state of the 177Lu nucleus is 970 keV above the ground state and lives for a halflife of 160 days. It has been suggested that this long-lived state (an isomer) might be used in some applications. First, basic research must be conducted on this nucleus to discover if there are ways to cause an artificial release of the stored energy. One step is to understand the natural decay process which might include previously undetected steps. This talk will discuss an experiment to look for rare decay steps using the 8pi detector system at Canada's TRIUMF laboratory.

McCutcheon, Dave Chemistry OHIO RM 10:30 - 12:00

Towards Mimics of UDP-N-acetyl-L-fucosamine

The bacteria Staphylococcus aureus is developing an ever-increasing resistance to antimicrobial agents such as methicillin and vancomycin. This reality poses a challenging problem in pharmaceutical development due to the fact that these are drugs of last resort. S. aureus is protected by a capsule consisting of three monosaccharide repeating units: D-FucNAc, D-ManNAcA, and L-FucNAc. The last of the three, N-acetyl-L-fucosamine, is found only incorporated into bacterial polysaccharides resultantly making the molecule of paramount importance as a therapeutic target. Deactivation of the bacterial capsule may conceivably be achieved by supplying the bacterium with L-FucNAc derivatives. These derivatives will be synthesized by altering the acetyl portion of the N-acetyl group followed by their subsequent UDP activation.

Meek, Brian Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Shield Quick Release Mechanism

A trench shield manufacturer needed a quick release design to release the pressure from the dirt on the pipes, in order to pull out the trench shield. The load on the shields can be quite large, as they are designed to be used down to a depth of 15.24 meters (50 feet). The distribution of the load on the shield was given as 9.426 kpa/m depth (60 psf/ft depth). Under full compression the support pipes must be cut or burned out in order to release the vacuum created by attempting to pull out the shield from the earth. In the current design there is no provision for the pipes to be removed from the shield while in ground.

To solve this problem, a three-sectioned pipe was created in order to allow the pipes to be released and removed from the shield. The quick release mechanism was to be designed in such a manor to allow simple removal with the use of specialized equipment, such as hydraulics, pneumatics, etc. while insuring the safety of the workers involved. Our design allows a worker to attach one or more support pins in the pipe to the crane, thus pulling out the pins and releasing the pressure from the dirt. The design allows the workers to be out of the trench, avoiding any injury or accidents from possible trench collapses. An intermediate section of pipe is used between the main support pipe and the shield allowing the shield to move in when the pin is released. Slide stops could be used in order to prevent the shields from moving in more than is necessary to release the vacuum created. Manufacturing the mechanism along with the shields will create very little additional cost while meeting the Occupational Safety and Health Administration standards.

Meikle, Thomas Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Quick Release System for Trench Box

The purpose of the design was to develop a quick release device for the trench box system. The problem with the original design was the inability to remove the box from the trench due to the vacuum created from the trench and shield walls. The current design does not allow for the spreader piping to be dismantled while in the trench. The current solution entails torching/cutting the spreader piping and then reattaching the spreader piping mounts on the shields. This process is costly and time consuming.

The solution that was developed incorporated a telescoping spreader pipe which allowed the walls of the trench box to retract from the soil wall which released the vacuum from behind the wall. The telescoping pipe is held extended in place by three pins in a two piece section.

The mounts on the spreader walls on each side were a male and a female end. The pipe spreader was placed over the male mount on one side and pinned, while the other end of the spreader pipe was placed inside of the female mount and pinned. The center pin was used to connect the two pipe sections at midspan. By adding another pin, the load that was originally bared by two pins was now bared by three pins. Therefore; the new design reduced the shear stress on each pin.

The design is easily manufactured with minimal geometry change. This allowed for minimal machining thus keeping the cost of the spreader pipes down. This design increased safety by keeping workers out of the trench while removal of the trench box occurred. It also reduced the time of removal of the system and therefore the labor cost associated with torching/cutting and re-welding the pipe in the field.

Mercer, Justin Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Design and Installation of a Dumbwaiter Into a Two-Story Restaurant

The movement of food, drinks, and dishes from the first floor kitchen to the second floor dining area poses a problem for the current waiting staff. It would be advantageous for the waiting staff to move the loaded trays and bus equipment up and down this story via a dumbwaiter rather than to carry it up two flights of steps. The current process can both be hazardous for the waiting staff and could cause a loss of profit for the restaurant owner should a tray be dropped. Several steps were completed in this project: 1)design of a dumbwaiter system, 2)construction of the dumbwaiter box and shaft, and 3)installation the dumbwaiter system into the restaurant.

The design process was completed using mechanical drawings and Algor and Solid Works software. The remodeling of the restaurant included a removal of an upstairs window for the placement of one of the entrances to the exterior shaft and the removal of a countertop in downstairs service area to make room for the placement of a hole in the wall for the downstairs entrance to the shaft. The construction took place on site at the restaurant. The installation of the shaft was the last item to be completed.

The design challenge for the dumbwaiter was to apply current knowledge and new ideas to the construction and installation of the equipment. The goal of the project was to improve daily operations of the restaurant and provide a safer, more worker-friendly environment. The primary task when completing the project was to install the dumbwaiter without interrupting the current operations of the business. This meant that the majority of the work had to be done on Sunday and Monday, the days in which the restaurant was closed. Ultimately, the project was completed successfully using teamwork, determination and engineering acumen.

Milo, John Chemistry COFFELT ROOM 1:30 - 3:00

Are Natural Corked Wines Better?

The wine industry loses millions upon millions of dollars annually due to the contamination of wine from natural corks. The contamination occurs because of 2,4,6 tri-chloroanisole penetrating the wine, causing an altered taste and a musty, moldy, wet cardboard like aroma. This compound forms following subsequent reactions of naturally occurring components present in the oak cork wood by chlorination and methylation. An experimental procedure describing the analysis of model wine will be presented.

Minadeo, Scott Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Gia Russa (Zidian Manufacturing)

The presentation will be a production analysis of the Gia Russa (John Zidian) manufacturing. The presentation will include results on a time study and other work sampling techniques. A summary of field observation, video recording, stopwatch data collection, pre-determined time systems,including most and MTM will also be included.

Minor, Jeremy Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Axial Jack for Shield System

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Miranda, Alberto Technology BRESNAHAN I ROOM 10:30 - 12:00

Materials Engineering Projects: 3D Printing and Chemical Etching

The first part of this presentation is on the design and construction of an architectural model of Moser Hall using three-dimensional (3D) printing. This involved first obtaining accurate dimensions of the building and then designing a 3D model using the SolidWorks CAD program. Then the model was prepared to be printed on a ZCorporation 3D printer using a ceramic-based powder. After being printed, the model was cleaned and prepared with an infiltrating resin for increased strength. 3D printing is one of the fastest and most inexpensive methods for rapid prototyping, and this project demonstrated its usefulness for creating models for education and demonstration. The second part of this presentation is on chemical etching, which is the process of using one or more chemicals in a controlled corrosion process. Etching is very commonly used in metallography and materialography to reveal certain microstructures of a specimen after polishing the surface. Solutions of acids, bases, or other chemicals can be used to preferentially etch a sample. Etching can also be used in forensic science applications. As a demonstration, the numbers that were stamped onto a metal wrench were filed off completely. Since the process of stamping compresses the underlying metal, chemical etching can be used to reveal the stamped characters that were thought to be destroyed.

Mooney, Charles Teacher Education JONES ROOM 10:30 - 12:00

Paleowind Direction on San Salvador, Bahamas

Paleowind direction was investigated in Upper Pleistocene eolian calcarenites on San Salvador, Bahamas as part of the Field Investigations in Geology (GEOL 3720) course at Youngstown State University. The investigation was completed by measuring the strike and dip of cross-bed sets in exposures of the calcarenites at four locations on the island. Paleowind direction was then calculated using the strike and dip measurements of the cross-bed sets. The Upper Pleistocene paleowind directions calculated in this study are consistent with previous published paleowind studies and the modern prevailing wind directions for San Salvador.

Moore, Katie Health Professions BRESNAHAN II ROOM 1:30 - 3:00

Eta Sigma Gamma Community Projects

Members of the YSU chapter of Eta Sigma Gamma, the National Health Education Honorary, and planned, conducted and evaluated two projects designed to provide community service and for member's professional development. The first was a disease prevention education program conducted with We Care Day Car on the YSU campus with 3 and 4 year olds. The purpose of the project was to increase student's skill in disease prevention through hand washing. The second project was conducted to assist Second Harvest Food bank. Eta Sigma Gamma members raised over $600.00 in food and cash. The third major project was conducted in December and February with the purpose to increase awareness about and encourage prevention of HIV/AIDS. In addition, this year, the group is trying to raise $1,000 to pay for five children who are infected or affected by HIV/AIDS to attend Camp Sunrise during the summer of 2007. The Camp provides children with the opportunity to have fun in a therapeutic environment free from the social stigma commonly attached to HIV/AIDS. The Camp environment provides a unique and fulfilling experience not otherwise available for participating children.

From these projects, community and school health majors learned how to design interactive and fun learning activities, and how to document participant learning. We also refreshed our knowledge of local and national and local health statistics and prevention methods. The majors also increased our skill in effective teamwork, collaboration with other campus programs and community agencies. We also participated in public health advocacy and used multiple communication channels, and we provided service to various segments of the community.

Morar II, Albert Political Science HUMPHREY ROOM 10:30 - 12:00

Gay Marriage: Why the Right Gets it Wrong and the Left Doesn't Get it

One of the most debated domestic issues in the 21st century has been the issue of the rights of homosexuals. But just what are the rights at the center of the issue? Particularly the research will address the rights of a gay couple to get married, because this point is at the center of debate. However, this central issue often branches to the ability of gay couples to share employment benefits, and adopt and raise children. The research will focus on the secular legality of such rights, ignoring the ideological and religious perspectives that often cloud the debate.

Morlan, Bob JAMES GALLERY 3:30 - 5:00

Smart House

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Morris, Jacyln Biological Sciences OHIO RM 8:30 - 10:00

Identification of a Cell Size Regulator in the Proteome of Penicillium marneffei

Penicillium marneffei is a dimorphic fungus. The species grows as a multinucleated, hyphal mold phase at 25oC or as a single celled pathogenic yeast form at 37oC. This dimorphic switch results in the formation of the infectious yeast form. The mechanism of dimorphism is unknown, but potentially involves changes in cellular size. Target of rapamyacin (TOR) is a protein kinase that plays a central role in the control of cell mass by the phosphorlyation of certain cell mass determining proteins, such as the ribosomal subunit S6. Fungal proteins were prepared from both mold and yeast cells and the protein composition was analyzed and compared by 1D SDS-PAGE and 2DGE techniques. Proteomic profiles at fixed pH ranges of 3-10 and 5-8 were determined by 2DGE, showing visible changes in protein regulation Using immunoblot analysis, anti-mTOR was employed as a probe to identify TOR in the proteome of Penicillium marneffei. Phosphoprotein staining techniques were used to label phosphorylated proteins, identifying candidates capable of cellular regulation within the phosphoproteome.

Mosko, Matthew Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Increasing the Torque and Efficiency of a Permanent Magnet Motor

The permanent magnet motor design on which this study focuses is the Stephen Kundel Motor. However, the motor under investigation was the second prototype of the original Stephen Kundel design and was originally constructed by the 2006 Undergraduate Senior Design Team of Youngstown State University Mechanical Engineers.Increasing the overall torque and efficiency of the motor was achieved by developing a design which employs more efficient components, reduces the inertial forces acting on the linear strokes of the motor, and implements optical sensors. Some of the components that were improved were the bearings, the magnets, and the shafts of the motor. Optical sensors were also employed in the design to replace the mechanical brush switches in the former design. Having done so, the friction between the rotating shaft and the brushes was eliminated. Thus, more energy input was conserved and converted into usable mechanical energy.The overall design of the motor was achieved by comparing manual calculations to experimental data gathered from the prototype of the design. The goal was to use a theoretical model of the motor to improve the overall design of the actual motor. These improvements are both mechanical and electrical in nature. Experimental data can then be collected from the improved motor to determine how much of an improvement was made and how close the results match the theoretical model.

Mount, Jeremiah Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

YSU Channel Guard

The goal of the design was to implement a quick removal system for a mass-produced trench shield. Many designs were suggested and in the end, a design utilizing a T-fitted section of tubing to support the shield walls was deemed to be the most effective. The proper sizes of tubing were chosen after adequate analysis was performed. The design utilizes an easily usable channel to install and remove the pipe supports. This design is more time efficient than the previously used pin design. With the T-channels in the walls, the pipes are secured effectively, can be reused, and easily assembled. Removal is simplified with the use of common construction machinery such as a crane, trencher, backhoe, etc. Multiple channels are to be machined into the walls for adaptability to multiple load situations and lengths of pipes. The unif

Musolina, Anthony Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

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Nagle, Ashley Psychology OHIO RM 3:30 - 5:00

Effect of Socioeconomic Status and Gender on Children's Career Aspirations

Children’s career aspirations and how gender and socioeconomic status influences those aspirations will be examined. Forty elementary school age children will look at pictures of 2 very different houses. One house will be well maintained and the other house will be rundown. The children will be asked questions about the house and the child who lives there and about their career aspirations. I hypothesize that females and males who come from a lower socioeconomic status will choose more sex-typed occupations than their higher socioeconomic peers. I also hypothesize that regardless of socioeconomic status, females will choose careers that follow the sex role stereotypes more than males will.

Nakley, Leah Civil/Environmental & Chemical Engineering BRESNAHAN I ROOM 10:30 - 12:00

Materials Engineering Projects: 3D Printing and Chemical Etching

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Neiheisel, Joseph Teacher Education HUMPHREY ROOM 1:30 - 3:00

Electronic Flashes, Strobes, & High-Speed Photography

The electronic flash circuits inside disposable single-use cameras can be modified for applications in high-speed photography and special lighting effects. These applications include the photographing of high-speed events, such as splashing water droplets and projectiles in flight, and strobographic lighting effects. These applications are useful in the science and art classrooms for teaching principles of motion, light, electronics, and photography. This presentation will explain how to modify single-use cameras for use in these special applications and how to implement the cameras in classroom activities at the secondary level.

Newman, Russell Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Spreader Bar Quick-Release Upgrade

In order to design a device that allows easy removal of a spreader bar for a trench wall shield system, a slider device with a linkage mechanism was designed. This mechanism enables a singular worker to remove the spreader pipe with only a wrench and a hammer. The device employs the use of a lever mechanism that moves the sleeve from covering a cut section of the spreader pipe. This sleeve, once removed from covering the assembly allows easy removal of the spreader pipe in three sections. The cut section may be removed by the force of a hammer or by possible human capability depending on how deep the assembly is placed within the ground. A pin was employed in the sleeve in order to keep the assembly in one piece during installation and use. The device was constructed out of standard materials available for purchase at any steel supplier. The cost of the total construction was designed to be as minimal as possible. Manufacture of the device was determined in such a way as to allow mass production on quantities to allow for the current sale of the shield systems, or as an upgrade accessory for current systems already in use in the field. To comply with the current use of the current standard shield systems, the device was designed to match with currently used shield designs. This was done in order to allow for easy upgrade capability, as well as continuing manufacture. Following Occupational Safety and Health Administration standards was one of the parameters for this design, so during the design process, this was a main consideration, and all regulations were followed. Safety of the design was determined at the deepest depth in earth given, as fifty feet. This safety factor was also used to account for unintended use while in the field in an uncontrolled environment. The above design was created to be most efficient for use, and yet still maintain low cost and follow all regulations.

Newman, April Biological Sciences OHIO RM 8:30 - 10:00

Ecological Influences on Stream Community Composition in Zoar Valley, NY.

Biotic communities in low order streams are influenced by multiple factors that may reflect both ecological conditions within individual watersheds, and also biogeographic considerations such as spatial proximity among streams and organism dispersal abilities. Our aim was to assess benthic invertebrate community composition in 23 first – third order streams in Zoar Valley, NY, across a gradient in habitat quality, and to further explore the role of local biogeography. Replicate Surber samples were collected from each stream on three dates during April – September 2006. Ninety-three taxa were collected, representing 58 families, dominated by juvenile insects. Additionally we quantified ecological variables such as stream order, watershed area, habitat quality indices, and land cover, and we generated a spatial distance matrix to quantify geographic separation among streams. Preliminary results suggest some taxa were highly variable in distribution, and thus may reveal factors contributing to community composition. We suspect the 23 encountered genera/species of Chironomidae may be particularly informative. Similarity/dissimilarity among stream communities will next be quantified by multivariate ordination of genus/species distributions, after which we will compare among stream distances in ordination space to geographic distances. Ultimately the completion of these analyses should enhance our understanding of the complex and dynamic ecology of small woodland streams, especially in a biogeographic context that has previously been under appreciated.

Norris, Peter Chemistry OHIO RM 10:30 - 12:00

Visualizing Stereochemical Inversion in the SN2 Reaction

The inversion of configuration that occurs as a consequence of a bimolecular nucleophilic substitution (SN2) reaction at sp3 carbon is difficult to prove in the classroom. Textbooks typically give simple examples to highlight the idea but offer very little in terms of empirical evidence that proves to students that an inversion has actually occurred. Using an example from synthetic monosaccharide chemistry that features ideas encountered in the sophomore organic chemistry sequence, it is possible to prove that an inversion has occurred by analyzing the well-defined vicinal coupling constants from the proton NMR spectra of the starting material and the product.

Norton, Christopher Geological and Environmental Sciences JONES ROOM 10:30 - 12:00

Paleowind Direction on San Salvador, Bahamas

Paleowind direction was investigated in Upper Pleistocene eolian calcarenites on San Salvador, Bahamas as part of the Field Investigations in Geology (GEOL 3720) course at Youngstown State University. The investigation was completed by measuring the strike and dip of cross-bed sets in exposures of the calcarenites at four locations on the island. Paleowind direction was then calculated using the strike and dip measurements of the cross-bed sets. The Upper Pleistocene paleowind directions calculated in this study are consistent with previous published paleowind studies and the modern prevailing wind directions for San Salvador.

Oder, Tom Sigma Xi OHIO RM 1:30 - 3:00

Thermally Stable Silicon Carbide Schottky Diodes using ZrB2

The materials properties of silicon carbide (SiC) such as its wide band gap, high thermal conductivity, high electron saturation velocity, and high breakdown field, have made it one of the most promising materials for many high power and high temperature electronic device applications. Application areas include wireless technologies for commercial and military needs, high efficiency switches for power distribution, harsh environment sensors and the automobile industry. One of the major limitations to the full performance of SiC-based devices is the Schottky metal contact. We have investigated ways of improving the electrical and thermal stability of these contacts by fabricating SiC Schottky diodes with zirconium boride (ZrB2) as the metal contacts deposited using magnetron sputtering at temperatures between 20 oC and 800 oC. The electrical properties of the Schottky diodes were evaluated by current-voltage and capacitance-voltage measurements, while the physical properties were investigated using Rutherford backscattering spectroscopy (RBS) measurements. The results from these measurements indicate a systematic increase in the energy barriers with the deposition temperature from 0.87 eV for contacts deposited at 20 oC to about 1.07 eV for those deposited at 600 oC. The RBS spectra of these contacts revealed a dramatic decrease in oxygen peak with increase in the deposition temperature and showed no reaction at the ZrB2/SiC interface. The thermal stability of the contacts was studied by annealing the contacts in nitrogen for 20 mins at 200 oC to 500 oC using a rapid thermal processor. The energy barriers, determined after successive annealing, showed only minimal change, indicating good thermal stability. These results provide a new method of improving the electrical properties and thermal stability of SiC Schottky diodes when the contacts are deposited at elevated temperatures.

Oder, Molly Human Ecology OHIO RM 3:30 - 5:00

The Super Bowl Food Phenomenon

On Super Bowl Sunday an estimated 125 million Americans gather to watch the game, and the foods served at these gatherings have become as much a part of the culture as the event itself. This study will explore the foods associated with the Super Bowl, the food related advertising, and the post game quarterly earnings of the food companies who bought advertising time during the televised game. A random sample (N=100) of residents of the Mahoning Valley will be surveyed about their food associations with the Super Bowl and published records of company earnings will be analyzed for financial data. It is anticipated that there will be a greater increase in the quarterly earnings for the period immediately following the Super Bowl. It is also anticipated that the foods and beverages associated with the Super Bowl will be calorie dense and that subjects' age and gender will not significantly influence food associations.

Olive, Anthony Geological and Environmental Sciences JONES ROOM 10:30 - 12:00

Depositional Patterns and Coastal Change at Sandy Point, San Salvador, Bahamas

Sandy Point is a prominent landform located at the southwestern corner of San Salvador. It has formed as a result of the combination of long shore drift along the southern and western shores of the island and intense wave refraction. Investigations performed in March 2003 through March 2006 indicate that sediment accumulates rapidly at the point and dramatically shifts position in response to major storm events. The initial investigation in 2003 concluded an average calculated progradation rate of approximately 10 feet per year over a 32 year period. Subsequent investigations in 2004 through 2006 showed significant annual changes in shoreline position.

A GPS survey of the low tide shoreline and bounding sand dune line was performed in order to further define the rate of sediment accumulation and annual movement of the deposits. In addition, eight beach profiles were constructed from the tide line to the sand dunes bounding the beach on the landward side. The resulting shoreline position was plotted on the topographic map of the island (1971) using ArcGIS. The results show major changes in the shoreline configuration over the past year. The combination of beach profiles and shoreline position enable an estimation of the volume of sand displaced since March 2006.

Papa, Brandon Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Spreader Bar Quick-Release Upgrade

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Parker, Shannon Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Hinged Release System

A problem was presented concerning the disassembling of a trench protection shield. The previous design did not include the vacuum force created by the earth, and therefore made removal of the shield systems a problem. Because of this issue, support beams were burned or cut out in order to release the system from the ground pressure. This in turn minimized cost efficiency and resulted in a limited unit lifetime. A new design had to be created that would deal with all of these issues as well as incorporate diverse weather conditions and government and industry safety standards.

The design that was created utilized simple components due to the desire of cost efficiency and simple assembly and disassembly. The boss supports on the shield walls were used as well, allowing only the need for change in the support shaft. The shaft design had four members connected by three pivot points. The central pivot point was reinforced by a steel bar running parallel with the shaft which was easily removable and replaceable by operators. This reinforcing bar was included for safety reasons only, with the expectation that it would never undergo significant pressure. The shaft members that were used included link tabs on the ends, with the exception of the outer two members which were not given linkable tabs on the ends so as to fit on the existing boss supports. All members were made out of standard galvanized steel in standard sizes.

This design met all of the requirements lain out by the manufacturer. It allowed the quick disassembly of the system using tools as basic as a five pound (22.24 Newton) hammer. It also improved cost efficiency and unit lifetime. This new design also stood up to the harshest of weather conditions and met all Occupational Health and Safety Administration safety requirements.

Parker, David Sociology & Anthropology JONES ROOM 10:30 - 12:00

An Archaeological Report on the Storr's Lake Site

A discussion about the fieldwork conducted at the Storr's Lake Site on San Salvador, The Bahamas by Youngstown State University's Anthropology department from 1996 to present. Included is a brief culture history on the Lucayan-Taino Indian group that inhabited the island from the 9th century to the beginning of the 16th A.D. Analysis of ceramics found at the Storr's Lake Site revealed both Bremen's "A" Pattern and Wickerware impressions. Also, analysis of faunal remains found revealed a diet involving various specie of fish. Additional commentary revolves around the four beads discovered in the 2006 dig season.

Patton, Jennie Chemistry OHIO RM 10:30 - 12:00

C-H Insertion Chemistry on Furanose Platforms

The goal of this project is to synthesize structures that are commonly found in natural product chemistry using readily available carbohydrates as an inexpensive source of chiralty. These types of compounds are known to have important pharmaceutical properties and can potentially be created utilizing C-H insertion chemistry on gluco- and xylofuranose platforms. Azidodeoxy sugars with diazoesters attached will be constructed and then decomposed in the presence of a rhodium(II) catalyst. The stereoselectivity and regioselectivity of the reactions will be studied using NMR, Mass Spectrometry, and X-ray crystallography.

Paul, Ryan Mechanical Engineering JAMES GALLERY 8:30 - 10:00

Characterization of Ceramic-Metal Interpenetrating Phase Composites

Although convectional refractory materials have improved in quality, durability and reliability over time, emerging advanced composite materials offer enhanced strength and wear resistance properties for aggressive applications. However, due to the increased complexity of the microstructure in advanced composites, these materials are more difficult to characterize than traditional materials. A refractory production technique developed and commercialized by Fireline TCON, Inc., involving the use of controlled chemical transformation reactions, offers the potential to produce novel refractory materials with greater service lives in harsh industrial production environments, such as molten metal processing. The transformed material is an interpenetrating phase composite (IPC) composed of interlocking phases of aluminum oxide and aluminum. Current materials produced by this process demonstrate better erosion and corrosion resistance in certain industrial processing environments, when compared to conventional refractories. The objective of this project was to characterize the unique microstructure and composition of chemically transformed IPC samples. The results will be presented, which include analyses using: scanning-electron microscopy (SEM), energy dispersive x-ray spectrometry (EDS) and x-ray diffractometry (XRD).

Pavlicko, Mandy Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Axial Jack for Shield System

The project was to design a quick release mechanism for a shield system that supports trenches. The problem continually encountered in practice was with the amount of pressure due to the surrounding soil on the shield walls, making it immensely difficult for the workers to remove the shield system quickly from the trench. Removal beforehand often took two to three hours and at many times involved damaging the actual system itself. The main objective was to relieve the bowing caused by the force of the soil on the walls in a timely manner, anywhere from five to ten minutes. A solution to this problem was to develop an axial jack that would relieve the bowing of the system walls. It can be placed at the top of the shield system walls. The jack was designed so that one end affixes to either interior wall via the pre-existing slots in the wall. The jack has been designed to extend the trench's width. Due to varying environmental conditions, the jack was design to adequately resist corrosion resulting from temperature and weather. It must also have the ability to withstand regular wear and tear from expected use. Considered in the design process is safety of the workers who are expected to operate the jack in their work environment.

Pavlidakey, Katherine Chemistry OHIO RM 10:30 - 12:00

Towards Mimics of UDP-N-acetyl-L-fucosamine

The bacteria Staphylococcus aureus is developing an ever-increasing resistance to antimicrobial agents such as methicillin and vancomycin. This reality poses a challenging problem in pharmaceutical development due to the fact that these are drugs of last resort. S. aureus is protected by a capsule consisting of three monosaccharide repeating units: D-FucNAc, D-ManNAcA, and L-FucNAc. The last of the three, N-acetyl-L-fucosamine, is found only incorporated into bacterial polysaccharides resultantly making the molecule of paramount importance as a therapeutic target. Deactivation of the bacterial capsule may conceivably be achieved by supplying the bacterium with L-FucNAc derivatives. These derivatives will be synthesized by altering the acetyl portion of the N-acetyl group followed by their subsequent UDP activation.

Payne, Jeremy Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Moonbuggy 2

Youngstown State University (YSU) will be participating in The Great Moonbuggy Race April 13th and 14th 2007. This is the third straight year that YSU has sent a team to the competition that takes place in Huntsville, Alabama. The team from the 2006 competition made a dramatic design change in that the moonbuggy had a back-to-back seating arrangement. This was a big change from the entry from the first year which had side-to-side seating. The 2006 design performed better in the competition than did the 2005 design. This year's team has decided to keep the frame design from the 2006 competition while making some modifications to the steering system, suspension, and drive train.

The rules of the competition state that there must be two team members on the moonbuggy at all times. One of the riders must be a man and one must be a woman. There is no specific weight requirement for the moonbuggy. However, the moonbuggy must be carried 6.10 meters (20 feet) to the starting line by the two riders, so the weight of the moonbuggy can not be excessive. Another rule of the moonbuggy competition is the moonbuggy must fit into a 1.22 meter (4 foot) cube. Once it was determined that the moonbuggy fit into the cube, the vehicle was unfolded and prepared to navigate the course. In preparation to travel the course the moonbuggy was checked for safety by representatives from the competition. At this point the moonbuggy was ready to travel the course which was an imitation of the actual lunar surface. The course has rocks, craters, and lunar simulated soil. Teams were timed during the assembly stage and elapsed time it took to complete the course. Winning teams were those who had the shortest combined times.

Perry, Michael Business Administration COFFELT ROOM 3:30 - 5:00

The Global position of Indian Automotive Companies

Since the 1990's India's automotive industry has increased competitiveness drastically, both domestic and internationally. The industry today is seeing such strength that regular exports to Europe are now commonplace and soon many Indian car companies plan on exporting to the United States. Although these plans to globally expand are not new to the automotive industry, exporting into the US against heavy competition and with the quality needed for this unique market may prove challenging to the India companies. The three players in this effort for expansion are Mahindra & Mahindra, Maruti, and Tata. It will be this studies objective to research the India automotive industry as a whole, to present the three companies in as much detail as possible, and to discuss any recent developments relating to the expansion of these companies in the United States.

Pietromonaco, Joseph Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Shield Quick Release Mechanism

A trench shield manufacturer needed a quick release design to release the pressure from the dirt on the pipes, in order to pull out the trench shield. The load on the shields can be quite large, as they are designed to be used down to a depth of 15.24 meters (50 feet). The distribution of the load on the shield was given as 9.426 kpa/m depth (60 psf/ft depth). Under full compression the support pipes must be cut or burned out in order to release the vacuum created by attempting to pull out the shield from the earth. In the current design there is no provision for the pipes to be removed from the shield while in ground.

To solve this problem, a three-sectioned pipe was created in order to allow the pipes to be released and removed from the shield. The quick release mechanism was to be designed in such a manor to allow simple removal with the use of specialized equipment, such as hydraulics, pneumatics, etc. while insuring the safety of the workers involved. Our design allows a worker to attach one or more support pins in the pipe to the crane, thus pulling out the pins and releasing the pressure from the dirt. The design allows the workers to be out of the trench, avoiding any injury or accidents from possible trench collapses. An intermediate section of pipe is used between the main support pipe and the shield allowing the shield to move in when the pin is released. Slide stops could be used in order to prevent the shields from moving in more than is necessary to release the vacuum created. Manufacturing the mechanism along with the shields will create very little additional cost while meeting the Occupational Safety and Health Administration standards.

Piotrowski, Zbigniew Sigma Xi OHIO RM 1:30 - 3:00

Continuity on Product Spaces

Given a function f : X x Y -> Z. We say that the function f is separately continuous if all of its x-sections f_x and all of its y-sections f^y are continuous. Studies of the structure of the set C(f) of
continuity points of a separately continuous function is one of the most studied areas of
Abstract Analysis. It has natural applications in distant topics ranging from topological groups to various models of the topology for the space-time continuum. We present our original Research findings in this area.

Platek, Jennifer Psychology OHIO RM 3:30 - 5:00

Effect of Auditory and Visual Cues on Retrieval

The occurrence of tip-of-the-tongue (TOT) states will be observed by replicating an experiment conducted by Riefer (2002). Sixty participants (30 men and 30 women) will be observed. Participants will be presented with either an auditory stimulus, a visual stimulus, or both auditory and visual stimuli for well-known songs. Participants will be instructed to report if a TOT state occurs when presented with any stimuli. The expected results are that more TOT states will occur when stimuli is presented visually.

Popio, Louise Computer Science & Information Systems OHIO RM 1:30 - 3:00

"We are IT" – A Quest to Increase the Interest in Computing among Young Girls

"We are IT" is a state-funded event, targeted towards middle and high-school aged girls. The overall idea is to pique their interest in careers where women are usually the minority: technology and computers. Youngstown State University hosted one of the locations of the conference that occurred across the state of Ohio.

This poster presents an overall assessment regarding the impact of this event, based on the distributed pre- and post-surveys. Those surveys, completed by every girl who participated, included both technology related multiple-choice and open-response questions but also demographic related questions. After aggregating, interpreting and analyzing the results we concluded that girls from all school districts use technology in their every day lives, however not all of them realize that computers are useful tools for professionals in any field. Overall, the first conference was a success and the girls had a good time.

Ptichkin, Andriy Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

High Temperature Superconductor Tests for Electrical Characteristics

The electrical characteristics of the American Superconductor 2G HTS wire are tested and analyzed at different frequencies and temperatures. The sample geometry of the superconductor wire that is considered is a coil of length 4cm, diameter of 3cm, and 6 turns. The LCR parameters and field measurements are recorded inside of a shielded RF tent through computer automation. The results explain that the net resistance of the superconductor wire is decreased significantly at 77°K. All data is analyzed using a statistical software package.

Pylypiak, Katie JONES ROOM 10:30 - 12:00

A Preliminary Study of Entombed Beach Debris On San Salvador Island, The Bahamas

The problems associated with ocean-borne debris accumulating on world beaches are well documented. Materials carried ashore by wave action create an eyesore, incur cleanup costs, act as a threat to wildlife in the coastal setting and create health hazards for residents and visitors to coastal settings. Little work has been done on the long-term accumulation of beach debris in coastal environments. What ultimately happens to the material that washes up on the shores of coastal communities? Is this material washed back out into the ocean with changing tides or is it incorporated into the sand load of coastal sand dunes? Our study examined beach debris entombment on a beach on San Salvador Island in the Bahamas. We conducted excavations away from the low tide line and ended in the swale behind the primary dunes lining the beach. Our research revealed an absence of progressive beach litter accumulation in the sands of the wash zone between the high tide and low tide markers. Beach litter entombed in the sands beyond the high tide line indicate some degree of progressive beach debris accumulation as more buoyant materials are transported beyond the wash zone by wind and wave action. Concentrations of debris were found at distinct levels in the swale between the primary and secondary dunes indicating debris deposited as a result of high wind and wave activity. Future excavations are planned to examine the effect differences in beach topography have on the transport and entombment of surface debris along the beachfront.

Rea, Brian Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

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Reed, Andrew Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Moonbuggy 1

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Rice, Andrew Biological Sciences OHIO RM 8:30 - 10:00

Androgenic Regulation of Cavernosal Smooth Muscle Relaxation in the Rat

Relaxation of corpus cavernosum smooth muscle is an integral step in the process of penile tumescence. Androgens play a role in modulating the contraction/relaxation of corpus cavernosum smooth muscle, however the precise mechanisms remain unknown. These experiments were designed to further investigate the role of androgens in regulating contraction/relaxation of corpus cavernosum smooth muscle in vitro. Strips of corpus cavernosum were isolated from rats that were either sham castrated (control) or castrated. The tissues were placed in smooth muscle chambers containing buffer and kept at 37oC. The tissue strips were then attached to isometric force transducers and force was recorded with PolyView data acquisition and analysis software. After a one hour equilibration period, tissues were contracted with norepinephrine (10-4 M), then relaxed with sodium nitroprusside (10-3 M). Results demonstrated that tissue isolated from castrated rats developed significantly greater tension during contraction than controls (141.05 ± 18.51 mg tension for controls; 299.31 ± 42.04 mg tension for castrates; $p = 0.0257$). Results further demonstrated that tissue from castrated rats relaxed significantly less than tissue from controls (72.2 % relaxation for controls; 52.7 % relaxation for castrates; $p = 0.00299$). Taken together these results demonstrate that androgens play an important role in regulating both the contraction and relaxation of corpus cavernosum smooth muscle. Further experiments will explore the role of androgens in regulating specific cellular mechanisms that regulate contractile activity in this tissue.

Rivello, Rob Counseling & Special Education OHIO RM 3:30 - 5:00

Peer Virtual Networks: What School Counselors Should Know About 21st Century Student Communication

Approximately 45,000,000 American children ages 10-17 are currently estimated to be online, spending hours everyday at their computers (websafety4kids.org). Given the prevalence of internet communication it may become necessary for school counselors stay up to date with technological advances to take a proactive approach to communicating with their students. This session will provide attendees with a brief introduction to peer virtual networks, statistics on internet usage, benefits and negative effects of social networks, and how to successfully register and navigate through a peer virtual network in order to increase counselor awareness. Attendees will also be provided with recommendations and outlined instructions on how to obtain the i-SAFE curriculum. Educators, parents, community members, law enforcement, and students use the i-SAFE curriculum. Just in Ohio, 258 school districts have implemented the i-SAFE curriculum. The curriculum is free and provides video tutorials on safely navigating the Internet and PVN.

Rodabaugh, Julia Sociology & Anthropology HUMPHREY ROOM 10:30 - 12:00

Complexities and Inequalities of Post-9/11 Politics

A thorough perusal of scholarly publications reveals detrimental patterns of pronounced inequality concerning race and gender in post- 9/11 politics. Although extensively discussed, the issue of political inequality as a result of 9/11 still lacks statistical analysis. Utilizing a hybrid of Marx's Conflict Paradigm and Ernest Becker's concept of the "alter-organism," we will examine the three most prominent facets of this issue. These include a hyper-masculine patriarchal stereotype which portrays female candidates as less capable of holding a high-level political position in times of war, a resulting lack of public support for female candidates, and an acute social prejudice that will prevent Middle Eastern candidates from winning their elections. The data collected through a series of surveys and interviews, will then be subjected to rigorous testing and analysis.

Rodriguez, Margarita Geological and Environmental Sciences JONES ROOM 10:30 - 12:00

Paleowind Direction on San Salvador, Bahamas

Paleowind direction was investigated in Upper Pleistocene eolian calcarenites on San Salvador, Bahamas as part of the Field Investigations in Geology (GEOL 3720) course at Youngstown State University. The investigation was completed by measuring the strike and dip of cross-bed sets in exposures of the calcarenites at four locations on the island. Paleowind direction was then calculated using the strike and dip measurements of the cross-bed sets. The Upper Pleistocene paleowind directions calculated in this study are consistent with previous published paleowind studies and the modern prevailing wind directions for San Salvador.

Rose, Daniel Teacher Education HUMPHREY ROOM 1:30 - 3:00

Great Chicago Fire

Covering the events leading up to and after the great Chicago fire. Including details of the city, and personal stories. Several theories will be discussed on the start of the fire. A brief summary of early fire fighting methods will also be discussed.

Rossler, Carl — Electrical & Computer Engineering — JAMES GALLERY 3:30 - 5:00

Autonomous Robot

An autonomous robot will be designed and built. This robot will operate as an independent entity using only onboard systems to navigate and find its way to specific points of interest. The robot is designed to be versatile and will require minimal control of the environment, which is not normally the case. This will allow the robot to be adapted to most environments by just changing the programming that controls how the robot operates. For example, it could be used to move bins in a factory that fill with a part throughout the day from the end of one assembly line to the beginning of another assembly line.

Royal, Maurice — Biological Sciences — OHIO RM 8:30 - 10:00

Alternative Treatment for Staphylococcus aureus

The bacteria Staphylococcus aureus causes many clinical problems along with rising cost in health care. It's resistance to antibiotics is steadily increasing. S. aureus possesses a capsule which deters the body's immune system by preventing phagocytosis. S. aureus resilience towards antibiotics and the body's immune system brings forth the need for new forms of treatment. One such new form currently being developed involves mimetics, a drug that prevents the synthesis of the capsule. In order to test the effectiveness of the newly synthesized they are administered in different concentrations and incubated with S. aureus overnight. After incubation, an ELISA testing for binding of monoclonal antibody will be used to check for capsule production.

Russo, Patricia — Health & Human Services — BRESNAHAN II ROOM 1:30 - 3:00

A Comparison of Teaching Methods Used to Improve house Staff Use of Metered Dose

This is a quasi-experimental design study to compare the efficacy of teaching residents in a group setting to that of teaching them as individuals. The investigator hypothesized that individual training would be demonstrated to be more effective than group training. The study design was quasi-experimental, employing random sampling and pre- and post-test measurements. In designing the study, every effort was made to eliminate any potential bias due to any differences in instruction other than the one under review. The scoring system was also designed with this is mind, as well as to secure subjects' confidentiality. Subjects were randomly assigned to one of two groups (one group taught as a class, the other as individuals) and pre-tested, and the groups were then trained. Two weeks later, subjects were given post-tests identical to the pre-tests. Instructors and scorers were the same regardless of group. Statistical analysis (chi-square test, et al.) of the test results indicated that there were no significant differences between teaching methods in this study. However, in some cases the difference in results was just below the threshold of statistical significance. The investigator has concluded that similar studies should be conducted with larger sample sizes. It is speculated that larger sample sizes may yield different results; however, if the results are replicated, such studies could result in cost savings to institutions which would thereby be justified in moving from individual-based to group-based teaching methods.

Sadlak, Lauren — Counseling & Special Education — OHIO RM 3:30 - 5:00

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Sadlak, Lauren — Counseling & Special Education — OHIO RM 3:30 - 5:00

School Based Conflict Resolution: A Review of the Four Most Common Approaches

Every day in America 4,356 children are arrested, 181 children are arrested for violent crimes, 1,900 public school students are corporally punished, and 16,964 public school students are suspended (Children's Defense Fund, 2005). Given the rise of violence in schools, school counselors need to be aware of the effective programs available to deal with conflict resolution (Bell, Coleman, Anderson, & Whelan, 2000). Delinquency and violence are symptoms related to a juvenile's inability to constructively handle conflict (LeBouef & Delany-Shabazz, 1997). The ineffectiveness of punitive approaches such as zero tolerance policies has been confirmed (Asherman, 2002).

This session will provide evidence for the need of conflict resolution programs and a review of available and effective programs for schools. There is preliminary evidence that conflict resolution programs have be shown to reduce aggression and violence, build social skills, and develop moral reasoning (Hydenberk, Hydenberk, & Perkins-Bailey, 2003; Munoz, 2002). Schools should be places were students have the opportunity to resolve their problems independently using the skills they learned through a conflict resolution program (Johnson & Johnson, 1996).

Programs to be discussed will include peer mediation, process curriculum, social skills builders, peaceable classrooms and peaceable schools. The increase in conflict has taken away time for instruction in the classroom therefore giving students the responsibility to handle conflicts on their own will not only improve the lives of students but school environments as well.

Sait, Elizabeth — Art — PUGSLEY RM 3:30 - 5:00

Pending

I will be showcasing various pieces of my artwork. I plan on showing a variety of different media with the common theme being the human figure.

Samsa, Brad — Mechanical & Industrial Engineering — OHIO RM 3:30 - 5:00

Time Study at Patriot Seating

Abstract not available at time of printing

Sands, Kyle Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Quick Release System for Trench Box

The purpose of the design was to develop a quick release device for the trench box system. The problem with the original design was the inability to remove the box from the trench due to the vacuum created from the trench and shield walls. The current design does not allow for the spreader piping to be dismantled while in the trench. The current solution entails torching/cutting the spreader piping and then reattaching the spreader piping mounts on the shields. This process is costly and time consuming.

The solution that was developed incorporated a telescoping spreader pipe which allowed the walls of the trench box to retract from the soil wall which released the vacuum from behind the wall. The telescoping pipe is held extended in place by three pins in a two piece section.

The mounts on the spreader walls on each side were a male and a female end. The pipe spreader was placed over the male mount on one side and pinned, while the other end of the spreader pipe was placed inside of the female mount and pinned. The center pin was used to connect the two pipe sections at midspan. By adding another pin, the load that was originally bared by two pins was now bared by three pins. Therefore; the new design reduced the shear stress on each pin.

The design is easily manufactured with minimal geometry change. This allowed for minimal machining thus keeping the cost of the spreader pipes down. This design increased safety by keeping workers out of the trench while removal of the trench box occurred. It also reduced the time of removal of the system and therefore the labor cost associated with torching/cutting and re-welding the pipe in the field.

Sarrach, Stephanie Psychology COFFELT ROOM 8:30 - 10:00

Body Art Becoming Habitual Stimuli

This experiment will investigate if people notice minor body art such as facial piercings and small tattoos. The participants will be currently enrolled Youngstown State University Students between the ages of 18 and 45. The data collection will occur at Youngstown State University in DeBartolo. After signing consent forms, the participants will be given two photographs of two groups of individuals. All of the photographed individuals that are being evaluated will have signed a permission form and will have been completely debriefed and informed of the details of the experiment. One photograph will depict a group of individuals with visible facial piercings and small tattoos ans the second photograph will be a group of individuals with no facial piercings or visible tattoos. The participants will fill out a demographic sheet and then the instructions will be read. The picture questionnaire will be filled out as they evaluate the two pictures separately. The participants will also fill out a short piercing and tattoo questionnaire after they have answered the picture questionnaire. After all of the sheets they fill out have been collected, the participants will be read a debriefing statement. All participants judging the photographs will remain anonymous. The data can be accessed only by Dr. Gray and myself.

Sassya, Leby OHIO RM 1:30 - 3:00

Heater Design for RF Sputter Deposition

RF Sputter-Deposition is used in the fabrication of solid state semiconductors. The quality of the semiconductors depends on many factors. A key factor to producing good semiconductor properties is the temperature of the substrate during deposition. These substrates can vary from 0C to over 1000C using a electric heater. Our heater design uses a high efficiency Silicon Controlled Rectifier circuit that is adjusted using a microprocessor. The microprocessor is a Freescale 68hc11 8-bit microprocessor. The microprocessor continually monitors a thermocouple and adjusts the SCRs to provide more power to the heater. The microprocessor has an LCD display that shows the user temperature and time settings and allows for temperature and time settings to be adjusted by a keypad. The design is user friendly and cost effective.

Schneider, Kathleen Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

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Schott, Aaron Electrical & Computer Engineering OHIO RM 1:30 - 3:00

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Schott, Aaron Physics & Astronomy OHIO RM 10:30 - 12:00

Analysis of Sputter-Deposited ZnO Epitaxial Semiconductor

Silicon is the traditional semiconductor that is extensively used in the electronics industry. It is well-developed and cheap to produce. However, silicon is not the most efficient semiconductor to use in optical devices such as LEDs and and LASER diodes. In addition, silicon semiconductors can not stand up to high temperatures and high voltages. Wide band gap semiconductors are better adapted to these high temperature or high voltage applications. Zinc Oxide (ZnO) is one of such Wide band gap semiconductor. ZnO semiconductors would create better efficiency in optical devices (e.g. LEDs), electronic devices (e.g. transistors), and spintronic devices (for data storage). One of our current research efforts in the YSU Wide Band gap Semiconductor Laboratory is focused on developing high quality ZnO films deposited using radio frequency sputtering. The quality of the deposited films of this semiconductor is of the utmost importance. We deposited the ZnO films on various substrates (GaN, SiC, and Sapphire), different ambient gas mixtures, and different substrate temperatures (200 oC, 400 oC, 600 oC) in search of high quality epitaxial films. In addition, the films were annealed using rapid thermal processing at 800 oC for 3 min in ultra pure nitrogen gas. The quality of the semiconductor was evaluated by X-ray detraction, and UV laser photoluminescence measurements. The results from these measurements, along with their scientific and technological implications will be presented.

Scott, Kelly Human Ecology OHIO RM 3:30 - 5:00

The Super Bowl Food Phenomenon

On Super Bowl Sunday an estimated 125 million Americans gather to watch the game, and the foods served at these gatherings have become as much a part of the culture as the event itself. This study will explore the foods associated with the Super Bowl, the food related advertising, and the post game quarterly earnings of the food companies who bought advertising time during the televised game. A random sample (N=100) of residents of the Mahoning Valley will be surveyed about their food associations with the Super Bowl, and published records of company earnings will be analyzed for financial data. It is anticipated that there will be a greater increase in the quarterly earnings for the period immediately following the Super Bowl. It is also anticipated that the foods and beverages associated with the Super Bowl will be calorie dense and that subjects' age and gender will not significantly influence food associations.

Sebastian, Guy Political Science HUMPHREY ROOM 10:30 - 12:00

Model NATO

The Model NATO organization conferred at Howard University from February the 20th to February the 24th. This conference was established in order to allow university and college students to experience the privilege of how NATO organizes their meetings, develop draft language in order to establish communiqués, and execute international decisions. On February the 20th we attended an opening ceremony in which we listened to the lecture of Mr. Chalmers and Professor Nwanza. These gentlemen were able to inform myself and the students about all the opportunities that would be available in the conference. Opportunities such as the freedom to be creative, exercising maturity within the decision making process, and developing skills in relation to selecting draft language which would be appropriate in creating a well written and effective communiqué. These gentlemen also discussed the importance of maintaining patience throughout the entire conference as well as keeping in mind the common goal in relation to all countries which are members of NATO. In order for a delegate to reach his goal in relation to his nation and NATO, they must maintain balance. It is important that a delegate remain flexible but never compromise the national sovereignty of their state. Meeting the needs of each country, strengthening each countries national defense, and the preservation of human rights remains foremost when setting the agenda at NATO conferences.

Sebulsky, Cindy Human Ecology OHIO RM 3:30 - 5:00

The Super Bowl Food Phenomenon

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Seginak, Dale Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Wind Turbine

We will design an alternator which can easily be changed for many applications. The alternator will be the generator for a wind turbine. The design has many factors playing into the output. The main tool used for design is Faraday's law. We use faradays law to relate the output voltage, the number of turns in a coil, the coil area and the field subjected to each coil. Once we decide which voltage output we want we can use Ohm's law to determine the current being supplied to the battery bank or device. With a known length of wire we can calculate the resistance and figure out the current. We need to design a rotor size and choose a number of magnets to figure out how many coils are needed. There must be an even number of magnets to have alternating poles. There will be 3 coils for every 4 magnets. The rotor size and number of magnets dictates how large our coils can be. With the coil size determined we can build test coils and determine resistance and area. A weather station controlled by a Freescale 68hc12 will be used to monitor wind speed and direction as well as the alternator's performance. The microcontroller will send this data to a pc where a C# application will graph the different values. This will allow us analyze our data and improve performance and efficiency. It will also allow us to determine what setup is best suited for a particular environment.

Sharrow, Julie Counseling & Special Education OHIO RM 3:30 - 5:00

Peer Virtual Networks: What School Counselors Should Know About 21st Century Student Communication

Approximately 45,000,000 American children ages 10-17 are currently estimated to be online, spending hours everyday at their computers (websafety4kids.org). Given the prevalence of internet communication it may become necessary for school counselors stay up to date with technological advances to take a proactive approach to communicating with their students. This session will provide attendees with a brief introduction to peer virtual networks, statistics on internet usage, benefits and negative effects of social networks, and how to successfully register and navigate through a peer virtual network in order to increase counselor awareness. Attendees will also be provided with recommendations and outlined instructions on how to obtain the i-SAFE curriculum. Educators, parents, community members, law enforcement, and students use the i-SAFE curriculum. Just in Ohio, 258 school districts have implemented the i-SAFE curriculum. The curriculum is free and provides video tutorials on safely navigating the Internet and PVN.

Sherrod, Scott Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Spreader Bar Quick-Release Upgrade

In order to design a device that allows easy removal of a spreader bar for a trench wall shield system, a slider device with a linkage mechanism was designed. This mechanism enables a singular worker to remove the spreader pipe with only a wrench and a hammer. The device employs the use of a lever mechanism that moves the sleeve from covering a cut section of the spreader pipe. This sleeve, once removed from covering the assembly allows easy removal of the spreader pipe in three sections. The cut section may be removed by the force of a hammer or by possible human capability depending on how deep the assembly is placed within the ground. A pin was employed in the sleeve in order to keep the assembly in one piece during installation and use. The device was constructed out of standard materials available for purchase at any steel supplier. The cost of the total construction was designed to be as minimal as possible. Manufacture of the device was determined in such a way as to allow mass production on quantities to allow for the current sale of the shield systems, or as an upgrade accessory for current systems already in use in the field. To comply with the current use of the current standard shield systems, the device was designed to match with currently used shield designs. This was done in order to allow for easy upgrade capability, as well as continuing manufacture. Following Occupational Safety and Health Administration standards was one of the parameters for this design, so during the design process, this was a main consideration, and all regulations were followed. Safety of the design was determined at the deepest depth in earth given, as fifty feet. This safety factor was also used to account for unintended use while in the field in an uncontrolled environment. The above design was created to be most efficient for use, and yet still maintain low cost and follow all regulations.

Shipman, Jessica Physics & Astronomy JONES ROOM 8:30 - 10:00

A Linux-Based Time Interval Counter for Precision Frequency Comparisons

Time is an entity easily taken for granted. What most do not realize is that it is not easy to measure it precisely. Atomic clocks have come close and are able to measure time on a scale most commonly used in everyday life. However, many experiments require a reading exceeding the precision of an atomic clock. In order to perfect these readings, we must first know the accuracy of the clock itself. An apparatus, namely a time interval counter, can measure the difference in variations of two clocks. We, at Youngstown State University, do not have access to such a device and have devised an alternative. I have built a circuit that should record the time intervals in which two clocks are perfectly synchronized, in order to measure the difference in deviations of the two. This circuit will enable us to construct experiments we were not able to thoroughly conduct previously.

Shreve, Matthew Mathematics & Statistics COFFELT ROOM 10:30 - 12:00

Imaging and Characterization of Facial String in Long Video Sequences

This paper presents a method for computing strain images of a deformable object in a video sequence. The method includes two steps: in the first step, the motion data between a pair of video frames is generated using a robust optical flow algorithm. In the second step, a strain image is computed by applying a gradient filter to the motion data. The efficacy of the method was demonstrated using 30 video sequences that captured human facial expressions under different lighting conditions. Several key factors and their impact on the quality of the strain images were also discussed.

Shuster, James Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Increasing the Torque and Efficiency of a Permanent Magnet Motor

The permanent magnet motor design on which this study focuses is the Stephen Kundel Motor. However, the motor under investigation was the second prototype of the original Stephen Kundel design and was originally constructed by the 2006 Undergraduate Senior Design Team of Youngstown State University Mechanical Engineers.Increasing the overall torque and efficiency of the motor was achieved by developing a design which employs more efficient components, reduces the inertial forces acting on the linear strokes of the motor, and implements optical sensors. Some of the components that were improved were the bearings, the magnets, and the shafts of the motor. Optical sensors were also employed in the design to replace the mechanical brush switches in the former design. Having done so, the friction between the rotating shaft and the brushes was eliminated. Thus, more energy input was conserved and converted into usable mechanical energy.The overall design of the motor was achieved by comparing manual calculations to experimental data gathered from the prototype of the design. The goal was to use a theoretical model of the motor to improve the overall design of the actual motor. These improvements are both mechanical and electrical in nature. Experimental data can then be collected from the improved motor to determine how much of an improvement was made and how close the results match the theoretical model.

Sinn, Brandon Biological Sciences OHIO RM 8:30 - 10:00

Pteridophyte Assemblage Composition and Richness as a Reflection of Woodland Mat

Zoar Valley Gorge in western New York State contains an ecologically significant remnant of old growth riparian forest totaling as much as 300 ha. Forested riverside terraces also harbor a diverse herbaceous flora including numerous species of ferns and fern allies. Due to the geographic isolation, the terraces within have experienced very little human and natural interference. During the years of 2003 through 2005, the Pteridophyte flora was systematically surveyed on nine of the riverside terraces. This study focuses on pteridophyte richness, and a number of taxa including Diplazium pycnocarpon and Dryopteris goldiana, which may indicate high ecological integrity, were found to be conspicuously abundant. The least diverse is Hidden terrace with three species while the most diverse is Skinny Dip terrace with thirteen species. This ongoing study will explore the possibility that species richness and assemblage composition can be used as an indication of disturbance history and woodland maturity. In the spring and summer of 2007, the terraces will be quantified through alpha, beta, and gamma species diversity comparisons.

Skalsky, Ashley Physics & Astronomy OHIO RM 10:30 - 12:00

Searching for Extragalactic Planetary Nebulae in the Leo Triplet

We report the results of a survey for extragalactic planetary nebulae (PNe) in a single galaxy in the Leo Triplet, about 30 million light years away from Earth. PNe can be used to determine the precise distance to this galaxy, and probe its kinematic properties and stellar populations. Using a combination of manual and automated detection methods, we have detected 32 PNe candidates, and we will present their luminosity function.

Smith, Debbie Chemistry OHIO RM 10:30 - 12:00

REEL Project (Research Experience to Enhance Learning)

The REEL project is supported with an NSF grant through Ohio State University. There are 15 other colleges and universities in Ohio participating in the REEL project. This program is designed to give first and second year chemistry students in the general chemistry 2 labs an opportunity to participate in hands on research. The students' overall objective was to synthesize and characterize new perovskite compounds not previously reported in the scientific literature. The goal was to create compounds of different colors; especially red, yellow and orange because the pigments currently used to make these colors are toxic. There is a possibility that the compounds the students synthesized can be used in future applications. The students synthesized compounds with the general formula KMF3 (M=Ni, Mn, Zn, Cu, Fe, Co) and NH4MF3 (M=Co, Cu). After making a known compound, the students had the freedom to make a new compound using the general formula along with M in any combination according to the color they wanted to create. the students were required to predict the color of their target compound and explain the chemistry behind their prediction. Powder X-ray diffraction was performed on all samples and the students indexed their results from the spectrum they obtained. Indexing required the students to calculate the unit cell parameter as well as the Miller Indices assigned to each peak in the spectrum using Bragg's law. The samples were also sent to Ohio State University for UV-VIS absorption data. The REEL project will continue through this semester and has been very well received by the students considering the challenging nature of the project.

Smith, Debbie Chemistry OHIO RM 8:30 - 10:00

Protein Variations in Castor Seeds

Five different species of the castor bean plant were used to obtain the variations in the protein sequence of each one using 2-dimensional electrophoresis. The castor bean plant is native to Asia and Africa and grows throughout the temperate areas of the world. The seed of the castor bean plant is not a bean at all or even related to the legume family. The seed contains 40-60% oil and is used in the production of protective coatings, lubricants, insulation, plastics, fibers, dyes, soaps, cosmetics and inks to name a few. The whole castor bean plant is poisonous but the pulp of the seed contains the highest levels of the toxin called ricin. Ricin is a heterodimeric cytotoxic glycoprotein composed of a ribosome inactivating A chain (RTA) and a galactose binding B chain (RTB) covalently linked by a disulfide bond. Once inside a human the RTB portion of ricin binds to the galactose sites on the cell membrane. The RTA portion enters the cell and catalyzes the depurination of ribosomes. The ribosomes will no longer be able to function and protein synthesis shuts down. This results in cell death and tissue damage. Symptoms of ricin poisoning include vomiting, severe diarrhea and convulsions. As little as 0.035 milligrams of ricin can kill an adult. Ricin poisoning is not contagious and there is no known antidote. There is also no known reliable test for ricin poisoning. Ricin has been used in assassinations and small scale attacks. A protocol was developed to extract the protein from the seed in order to perform 2-d electrophoresis. Obtaining a protein sequence of each plant assigns a fingerprint to it. Future work includes performing a western blot to identify specific proteins present in each seed.

Smyczynski, Steve JONES ROOM 8:30 - 10:00

Search for Rare Decay Branches of 177mLu with the TRIUMF 8pi Detector

An excited state of the 177Lu nucleus is 970 keV above the ground state and lives for a halflife of 160 days. It has been suggested that this long-lived state (an isomer) might be used in some applications. First, basic research must be conducted on this nucleus to discover if there are ways to cause an artificial release of the stored energy. One step is to understand the natural decay process which might include previously undetected steps. This talk will discuss an experiment to look for rare decay steps using the 8pi detector system at Canada's TRIUMF laboratory.

Stangl, Karen Biological Sciences COFFELT ROOM 1:30 - 3:00

Proteomic Analysis of Phase-Switch Studies on Dimorphic Fungus P. marneffei

Penicillium marneffei is the third leading opportunistic infection among AIDS patients in Thailand. It is also the only dimorphic species of Penicillium growing as a mold at 25°C, but forming a yeast phase upon infecting tissue or in laboratory culture at 37°C. This study explored the use of proteomic methods to elucidate proteins integral to the dimorphic mechanism in P. marneffei. Specifically, proteins from both the mold and yeast phases of this fungus were mapped using two-dimensional gel electrophoresis. Preliminary results suggest several unique, up or down-regulated proteins play roles in cultures grown for 24 hours at 25°C or 37°C, or in cultures grown for 12 hours at each temperature. Mass spectrometry analysis of the protein spots of interest provided sequence information that is currently being evaluated for clues regarding protein function at each phase. Potentially, the results from this study may aid our understanding of protein involvement in the dimorphic switch, and may offer therapeutically relevant targets important in combating infections of this type.

Steffy, Robert Biological Sciences OHIO RM 8:30 - 10:00

Following Alcohol to Azide Conversions by IR Spectroscopy

We have developed a new conversion of primary alcohols to primary azides that uses a safe and affordable azide source, namely p-acetamidobenzesulfonyl azide. Since the OH and N3 functional groups have such distinct absorbances in the Infra Red spectrum we have used this technique to study the alcohol to azide conversion on several alcohols using different bases to promote the reaction.

Stitt, Brett JAMES GALLERY 3:30 - 5:00

Single to Three Phase Conversion Using a Rotary Style Design

The group of senior electrical engineering students proposes to design and build a working single to three phase power converter. The converter will be designed to receive an input of 220 VAC single phase, and output 220 VAC three phase. The design of the converter will be of a rotary design type and also the converter will incorporate a power factor correction control loop, and an automatic motor starter to improve energy loss and usage. The efficiency of the converter will be monitored with the micro-controller in the control loop and displayed via an LCD display. The group also proposes the estimated cost and time line that will be adhered to as close as possible during the stages for the development. The rotary design will be used because it is a good deal more efficient than a static converter system that is easier to build.

Strahler, Craig Computer Science & Information Systems COFFELT ROOM 10:30 - 12:00

C.STRAHLER STEREO DETECTION©2006: Real Estate, Planning, Analysis of Patterns

I examined the use of high resolution satellite imagery for change detection purposes. The formal process of data analysis and common techniques of image analysis for recognition was examined. Further, a process that I have created will be shown as an alternative aid for the forthcoming topic: C.STRAHLER STEREO DETECTION©2006: Real Estate, Planning, and Analysis of Spatial Patterns. I will use a series of images dated 2003 and 2004 of Las Vegas, Nevada to illustrate comments for purpose. Commonly it is noted that high resolution imagery is not applicable for change detection because of pixel degradation and obscurity. However, when matching several techniques together for the same purpose it was shown to be an extremely reliable tool.

Stratton, Ronald Teacher Education JONES ROOM 10:30 - 12:00

Paleosols on San Salvador, Bahamas

Upper Pleistocene paleosols were investigated on San Salvador, Bahamas as part of the Field Investigations in Geology (GEOL 3720) course at Youngstown State University. Exposures of paleosols were studied by examining bedding, sediment grainsize, sediment type, and rhizomorph network geometries. Detailed examination of rhizomorph networks suggest root growth was influenced by water availability with in the paleosols. Detailed investigation of bedding, grainsize, sediment type, and rhizomorphs indicate that there was very little soil development in the paleosols prior to lithification. The low degree of soil development is most likely the result of the sediment composition (primarily calcium carbonate) and rapid cementation that inhibited soil development.

Sudol, Shaun JAMES GALLERY 3:30 - 5:00

Smart House

Due to high costs of electricity, we are going to design a Smart House. This house will be able to switch power sources from solar power, to supplied power, to generated power and vise versa. We will create a generator that is made to be powered by both solar energy and a gas powered engine. The project will include designing a system that is capable of supplying an entire house with power on a continual basis using solar energy, while still being able to rely on a backup line power and using a gas powered engine as an emergency backup when the solar cells are not able to gather enough energy and the line power is not able to supply power. This house will also be able to perform tasks of a normal house with a more high tech approach.

Sullivan, Adam Art PUGSLEY RM 3:30 - 5:00

Art and Text

My interest is the relationship between art history and the art object, or the observer and the art object.

Sutphin, Edward Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Single to Three Phase Conversion Using a Rotary Style Design

The group of senior electrical engineering students proposes to design and build a working single to three phase power converter. The converter will be designed to receive an input of 220 VAC single phase, and output 220 VAC three phase. The design of the converter will be of a rotary design type and also the converter will incorporate a power factor correction control loop, and an automatic motor starter to improve energy loss and usage. The efficiency of the converter will be monitored with the micro-controller in the control loop and displayed via an LCD display. The group also proposes the estimated cost and time line that will be adhered to as close as possible during the stages for the development. The rotary design will be used because it is a good deal more efficient than a static converter system that is easier to build.

Tanaka, Shingo Physical Therapy OHIO RM 3:30 - 5:00

Use of Low Grade Joint Mobilization to Treat Chronic Joint pain Caused by System

The purpose of this study is to determine whether the grade 1 and 2 joint mobilization will decrease pain for a person with chronic joint pain from systemic disease. People with chronic joint pain are limited in physical performance and experience decreased endurance and muscle strength. As a result, they become fatigue in the minimum activity and their functional level is also decreased. This problematic sequence is caused by the joint pain. Research indicated that grade 1 and 2 joint mobilization performed 3 times per week for 3 weeks decreased acute joint pain. The problem with this research is that grade 1 and 2 joint mobilizations were not used to chronic and systemic type joint pain. Those grade 1 and 2 joint mobilization might be an useful treatment for systemic joint pain because those mobilizations are used to treat pain.To establish the baseline of this subject, the subject's amount of pain, hand function, and strength of involved joints were measured three separated days. For pain evaluation, the verbal rating scale was used and the patient reported the specific activities of daily living, which makes the pain worse. The pain level was checked before and after of every treatment session. Strength of every problematic joint was measured by using manual muscle test. Strength of hands and fingers was measured by using hand dynamometer. The treatment sessions were scheduled three times/week for three weeks. In each session, the subject underwent grade 1 and 2 joint mobilization to every painful joint assessed by the licensed physical therapist who took the baseline measurements. The direction of joint mobilization was decided by the physical therapist, according to patient's directional preference. Each mobilization was performed for 30 seconds. The subject lay on a table in a supine position during each treatment. At the end of the three weeks treatment period, every measurement was reevaluated and compared to the baseline. At a one week follow-up session, the patient's pain was re-assessed verbally. We found that grade 1 and 2 joint mobilizations were effective to decrease chronic joint pain temporarily for this subject. As a result of the joint mobilization, pain in those joints decreased gradually and maintained the pain at low level. The effect of joint mobilization showed in a one week follow-up (without treatment), which the subject's pain level increased substantially. After 3 weeks treatment, the subject's ranges of motion and shoulder strength were improved. However, the strength of finger was decreased in the post-test.

Thompson, Ian JAMES GALLERY 3:30 - 5:00

Design and Implementation of a Industrial Machine Monitoring System

The principal of this presentation is to explain the process that is implemented in the design of a company wide system used for management purposes when all one has is an idea. Areas discussed will be: Coming up with the intented function of the system, Locating the resources needed to implement the system, Purchasing, designing, and testing the system, and Future plans for system adaptation and expansion. David Garthwaite will discuss the design and construction of the monitoring system, while my collegue and Supervisor, Ian Thompson, will discuss the Management aspects of the design and purpose of the system.

Thompson III, William Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Spreader Bar Quick-Release Upgrade

In order to design a device that allows easy removal of a spreader bar for a trench wall shield system, a slider device with a linkage mechanism was designed. This mechanism enables a singular worker to remove the spreader pipe with only a wrench and a hammer. The device employs the use of a lever mechanism that moves the sleeve from covering a cut section of the spreader pipe. This sleeve, once removed from covering the assembly allows easy removal of the spreader pipe in three sections. The cut section may be removed by the force of a hammer or by possible human capability depending on how deep the assembly is placed within the ground. A pin was employed in the sleeve in order to keep the assembly in one piece during installation and use. The device was constructed out of standard materials available for purchase at any steel supplier. The cost of the total construction was designed to be as minimal as possible. Manufacture of the device was determined in such a way as to allow mass production on quantities to allow for the current sale of the shield systems, or as an upgrade accessory for current systems already in use in the field. To comply with the current use of the current standard shield systems, the device was designed to match with currently used shield designs. This was done in order to allow for easy upgrade capability, as well as continuing manufacture. Following Occupational Safety and Health Administration standards was one of the parameters for this design, so during the design process, this was a main consideration, and all regulations were followed. Safety of the design was determined at the deepest depth in earth given, as fifty feet. This safety factor was also used to account for unintended use while in the field in an uncontrolled environment. The above design was created to be most efficient for use, and yet still maintain low cost and follow all regulations.

Townsend, Jennifer Art PUGSLEY ROOM 3:30 – 5:00

Abstract Painting

Abstract not available at time of printing

Troup, Tammy History JONES ROOM 1:30 - 3:00

Open for All Men for All Time, the Significance of Goodyear Hall

The early success of the Goodyear Tire & Rubber Company created a policy that resulted in the securing of base materials and expansion in critical market areas nationally and internationally. In accordance with trends of the Progressive period, Goodyear's management also concentrated on what they considered their primary asset—their workforce—and encouraged the recreation, education, and edification of their employees. This culminated in 1917 with the construction of Goodyear Hall, an imposing building designed by the regionally renowned firm of Walker and Weeks. The Hall was constructed in the beaux-arts style with the influence of the yet to be named Art Deco style evident as well. The seven-story structure fronted with a flat-iron bank housed a theater, gymnasium, conference rooms, and library all for the benefit of the Goodyearites. The architectural design and historic construction of the building are explored within the context of Goodyear corporate history and the history of Akron, and a legacy of corporate commitment to labor relations is revealed.

Tuladar, Looja JAMES GALLERY 3:30 - 5:00

High Temperature Superconductor Tests for Electrical Characteristics

The electrical characteristics of the American Superconductor 2G HTS wire are tested and analyzed at different frequencies and temperatures. The sample geometry of the superconductor wire that is considered is a coil of length 4cm, diameter of 3cm, and 6 turns. The LCR parameters and field measurements are recorded inside of a shielded RF tent through computer automation. The results explain that the net resistance of the superconductor wire is decreased significantly at 77°K. All data is analyzed using a statistical software package.

Turner, Kevin Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Trench Shoring System Pin Redesign

Trench shoring systems increase safety and productivity on the construction site. The only obstacle to increased productivity is removal of these systems from the trench, the high pressures generated by the soil surrounding these shields makes removal of the pins holding the spreaders (cross supports) an extremely difficult and time consuming task. The difficulty in removing these pins leads to lost productivity and can lead to high maintenance cost due to the spreaders being cut during removal of the system from the trench. Analysis of this problem led to the design of a quick-release pin system to be used on the spreaders in lieu of traditional pins. The quick release pin system was designed to be a simple mechanism minimizing modification of the existing product. The spreader sockets on the shields where lengthened 38.1mm (1.5in) to allow pressure release on the shields, which will allow easy removal of the system from the trench. In addition, low friction mineral-filled nylon bushings were added to the spreader sockets to facilitate less effort required to slide pins into the released position. The analysis of impact loading on the outer shell of the shield due to sudden support release resulted in acceptable safety factors within Occupational Safety and Health Administration standards. This system will increase productivity and be easily implemented into the manufacturing process.

Tutor, William Mechanical & Industrial Engineering JAMES GALLERY 10:30 - 12:00

Human Powered Vehicle

A Human Powered Vehicle (HPV) is a means of transportation for one or more people, powered by human muscle. Although motorization has reduced the effort in transport, many human-powered machines remain popular for leisure or exercise and for short distance travel. In today's world, with rising fuel and energy costs, HPV's offer an affordable option to consumers on a tight budget, especially those living in heavily populated areas. HPV's also have engineering and design elements that are of great importance for engineers. This paper presents the design and testing of a three wheeled, single rider HPV that is similar to a recumbent bike. The desired outcome of this project is to successfully engineer an HPV with focus on: safety, elegance, ingenuity of design, and practicality of design.

YSU's HPV has been constructed at the university in previous years and for this reason some of the existing components and parts will be reused. Our efforts for the design of the 2007 HPV began by stripping the existing bike down to its frame, as many components were analyzed and revised. Some revisions included a partial frame redesign, brake system upgrade, steering system improvement, frontal fairing enhancement, and seat, to maximize ergonomics, efficiency, safety, and ease of use. The components were modeled and analyzed using computer software such as SolidWorks, Algor FEA, and Working Model in order to obtain accurate results and make design trade-offs.

The 2007 HPV competed in a series of tests sponsored by the American Society of Mechanical Engineers (ASME): 1) Design Event, 2) Sprint Event, and 3) Endurance Event. This national competition was at the University of Central Florida in May, 2007.

At the competition a separate design component is built in, where emphasis in judging is based on the new work that has been completed in the last year. Judges considered both a formal written report and an oral presentation given by team members. Vehicle designs were also judged with an emphasis on originality and engineering soundness. Safety, as always, was considered in the design by testing the braking, turning radius, roll bar, and safety belt. The timed portion of the sprint event was a 100 m (0.062 mi) straight a way after a short distance was allowed to attain maximum speed. The Endurance Event tests the vehicle's abilities on a 65 km (40 mi) course with all vehicles competing. Ultimately, the judge's decisions were based on how well the HPV team, as well as, the HPV itself performed in the competition.

Tyrrell, Chris Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Work Measurement and Standards Development at Altronic Inc.

Work measurement and standards development at Altronic Inc. usin a series of analysis including field observation, video recording, stopwatch data collection, pre-determined time systems including Most and MTM, and aslo work sampling techniques.

Ulus, Aylin Mechanical & Industrial Engineering OHIO RM 3:30 - 5:00

Brainard Rivet Company Time Study

A time study was performed at Brainard Rivet Company. It is a certificated world class manufacturer of small rivets, large rivets, clevis pins knurled pins, grooved pins and special shaved fasteners. The time study was one of many processes which included: most, MTM1, and MTM2. Data was collected from the following processes: 1. Make the box, 2. Slide the box through the machine, 3. Pick up the box, and place it on the pallet, and 4. Fork lift. After the data was computed, allowances were added and the result was a fair time standard for the worker.

Vario, Lisa History JONES ROOM 1:30 - 3:00

And Justice for All? The Massacre at My Lai 4

This presentation will focus on the massacre at My Lai (4), which occurred March 16, 1968 during the Vietnam War. The presenter will inform the audience about the events that led up to the massacre, the massacre itself, the one year cover-up, and the results of the extensive investigation and inquiry. A power-point presentation will be used in order for the audience to see photos of the massacre, the hamlet of My Lai (4), and those American soldiers involved.

Venglar, James Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

An Automated System for the Hargreaves Method

The purpose of this project is to design, build, and implement a device that will track and apply a controlled stimulus to the paw of a lab rat in a research setting. This will provide a new and accurate way to measure the temperature of the stimulus and the time for the response of the rat. The system is built on both a digital and an analog knowledge base, which will utilize aspects of both circuit design and digital programming. A color camera will input the tracking data to an Altera DE-2 educational board, and this board will be programmed using VHDL. After digital processing of the camera's information, data will be sent to a digital to analog converter. This will convert the information to an analog signal to position the galvanometers, which will direct the laser to the correct coordinates on the floor of the cage. The final product will be useful to continue research by a biology faculty member.

Verostko, Pete Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Design of a Water-Glycol Exchanger for a Hydronic Heating System

The design of the heat exchanger optimized the initial cost of a hydronic system by reducing the amount of ethylene glycol required to protect a single building territory loop from freezing. A typical building's heating system requires the flow of glycol throughout the entire system, which can be very expensive to fill and maintain. The optimization of the heating system was achieved through the design of a water-glycol heat exchanger that was utilized as a median to transfer heat required to temper combustion air at 0°F (-18°C) and prevent the exposed water lines from freezing. Comparison of the heat transfer results using ChemCad software versus manual calculations determined the style and size to achieve the design of the heat exchanger. The goal was to create an accurate numerical model from which the heat exchanger was built and tested. The overall outcome of the project produced a functioning heat exchanger to which was capable of accepting a water flow rate of 3 gal/min (1.94 x 10-4 m^3/s) at 180°F (82.22°C) and reducing it to an exit temperature of 150°F (65.56°C), by means of a 30% ethylene glycol counter flow at a rate of 2 gal/min (1.24 x 10-4 m^3/s) at an inlet temperature of 70°F (21.11°C) and an exit temperature of 120°F (48.89°C). Other than meeting the required specifications, the heat exchanger design is made of the smallest amount of materials and the simplest construction making the heat exchanger's initial cost an absolute minimum while saving money by using a less amount of glycol in the heat exchanger compared to the use of glycol throughout the entire system.

Vigarino, Dominic Geological & Environmental Sciences OHIO RM 1:30 - 3:00

Interpreting Techtonic History Using Fabric Analysis of Multi. Rock Deformations

This project will be a rare look at multiple episodes of plate tectonic activity acting upon rock units from one locality in California. The rocks of this area experienced multiple deformation events from plate tectonic events millions of years ago. Specifically, the samples will be evaluated for deformation textures on a microscopic scale. For this analysis the rock sample are cut into slices 0.3 millimeter thick for use with a transmitted light microscope. This will display the different minerals present in each sample, the characteristics of each mineral and the different deformation textures present. The rock samples vary in age from 1 billion to 12 million years old. The deformation texture data in each rock will provide insight into the conditions at which each mineral deformed, the relative timing of the multiple episodes of deformation, and how the multiple deformations are related on a small time scale. The most significant result will be the examination of how multiple deformations affect a rock and how these events occurred over time.

Waugh, Elizabeth Mechanical & Industrial Engineering JAMES GALLERY 8:30 - 10:00

Hinged Release System

A problem was presented concerning the disassembling of a trench protection shield. The previous design did not include the vacuum force created by the earth, and therefore made removal of the shield systems a problem. Because of this issue, support beams were burned or cut out in order to release the system from the ground pressure. This in turn minimized cost efficiency and resulted in a limited unit lifetime. A new design had to be created that would deal with all of these issues as well as incorporate diverse weather conditions and government and industry safety standards.

The design that was created utilized simple components due to the desire of cost efficiency and simple assembly and disassembly. The boss supports on the shield walls were used as well, allowing only the need for change in the support shaft. The shaft design had four members connected by three pivot points. The central pivot point was reinforced by a steel bar running parallel with the shaft which was easily removable and replaceable by operators. This reinforcing bar was included for safety reasons only, with the expectation that it would never undergo significant pressure. The shaft members that were used included link tabs on the ends, with the exception of the outer two members which were not given linkable tabs on the ends so as to fit on the existing boss supports. All members were made out of standard galvanized steel in standard sizes.

This design met all of the requirements lain out by the manufacturer. It allowed the quick disassembly of the system using tools as basic as a five pound (22.24 Newton) hammer. It also improved cost efficiency and unit lifetime. This new design also stood up to the harshest of weather conditions and met all Occupational Health and Safety Administration safety requirements.

Webb, Cory Electrical & Computer Engineering JAMES GALLERY 3:30 - 5:00

Wind Turbine

We will design an alternator which can easily be changed for many applications. The alternator will be the generator for a wind turbine. The design has many factors playing into the output. The main tool used for design is Faraday's law. We use faradays law to relate the output voltage, the number of turns in a coil, the coil area and the field subjected to each coil. Once we decide which voltage output we want we can use Ohm's law to determine the current being supplied to the battery bank or device. With a known length of wire we can calculate the resistance and figure out the current. We need to design a rotor size and choose a number of magnets to figure out how many coils are needed. There must be an even number of magnets to have alternating poles. There will be 3 coils for every 4 magnets. The rotor size and number of magnets dictates how large our coils can be. With the coil size determined we can build test coils and determine resistance and area. A weather station controlled by a Freescale 68hc12 will be used to monitor wind speed and direction as well as the alternator's performance. The microcontroller will send this data to a pc where a C# application will graph the different values. This will allow us analyze our data and improve performance and efficiency. It will also allow us to determine what setup is best suited for a particular environment.

Werkmeister, Lora Human Ecology JONES ROOM 3:30 - 5:00

Controversial Issues Surrounding Body Mass Index as a Measure of Health

As one of the most prevalent preventable epidemics, childhood obesity has recently become the subject of much controversy, especially in regard to schools' body mass index policy and child endangerment. This presentation will reflect on the consequences, both positive and negative, of reporting a child's BMI to his or her guardians, focusing on one state's recent experience with mandatory BMI evaluation, recommendation to treat childhood obesity similar to child endangerment, and reduction in childhood obesity. Interpretations and recommendations for reduction in body mass index values that exceed healthy levels, the controversial issues surrounding body mass index as a valid measure of childhood obesity, and the significance of childhood obesity to Healthy People 2010 will also be discussed.

Wilbrink, Paul JAMES GALLERY 8:30 - 10:00

Design of a Water-Glycol Exchanger for a Hydronic Heating System

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Winters, Josh Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

Quick Release System for Trench Box

The purpose of the design was to develop a quick release device for the trench box system. The problem with the original design was the inability to remove the box from the trench due to the vacuum created from the trench and shield walls. The current design does not allow for the spreader piping to be dismantled while in the trench. The current solution entails torching/cutting the spreader piping and then reattaching the spreader piping mounts on the shields. This process is costly and time consuming.

The solution that was developed incorporated a telescoping spreader pipe which allowed the walls of the trench box to retract from the soil wall which released the vacuum from behind the wall. The telescoping pipe is held extended in place by three pins in a two piece section.

The mounts on the spreader walls on each side were a male and a female end. The pipe spreader was placed over the male mount on one side and pinned, while the other end of the spreader pipe was placed inside of the female mount and pinned. The center pin was used to connect the two pipe sections at midspan. By adding another pin, the load that was originally bared by two pins was now bared by three pins. Therefore; the new design reduced the shear stress on each pin.

The design is easily manufactured with minimal geometry change. This allowed for minimal machining thus keeping the cost of the spreader pipes down. This design increased safety by keeping workers out of the trench while removal of the trench box occurred. It also reduced the time of removal of the system and therefore the labor cost associated with torching/cutting and re-welding the pipe in the field.

Wise, Sara Mechanical & Industrial Engineering JAMES GALLERY 1:30 - 3:00

YSU Channel Guard

The goal of the design was to implement a quick removal system for a mass-produced trench shield. Many designs were suggested and in the end, a design utilizing a T-fitted section of tubing to support the shield walls was deemed to be the most effective. The proper sizes of tubing were chosen after adequate analysis was performed. The design utilizes an easily usable channel to install and remove the pipe supports. This design is more time efficient than the previously used pin design. With the T-channels in the walls, the pipes are secured effectively, can be reused, and easily assembled. Removal is simplified with the use of common construction machinery such as a crane, trencher, backhoe, etc. Multiple channels are to be machined into the walls for adaptability to multiple load situations and lengths of pipes. The unif

Wright, Moriah Mathematics & Statistics OHIO RM 10:30 - 12:00

Molecular Modeling and Ring Conformation in Honors Organic Chemistry

In Chemistry 3719 and 3720 we discuss molecular conformation and the use of Nuclear Magnetic Resonance Spectroscopy (NMR) in working out the structures of organic molecules. For the Honors component of these classes we have studied molecular modeling using the ChemDraw and Chem3D package to build and analyze more complex molecules. Consideration of both NMR and molecular modeling results allows the development of a deeper understanding of the uses and applications of both in Organic Chemistry.

Yakubov, Gregory History JONES ROOM 1:30 - 3:00

The 1968 Democratic Convention

The paper covers the 1968 Democratic Convention held in Chicago. It deals with the selection of the city as the location, the politics of the presidential nomination, the riots outside the convention hall, and the trial held afterwards for the Chicago 7.

Younkins, Candace Psychology BRESNAHAN II ROOM 10:30 - 12:00

What Are You Looking At? Effects of Race and Gender on Recognition

The effects of race and gender on recognizing faces will be analyzed. Participants will be tested in either an experimental or control group. The experimental group will first view black and white male and female faces, and the control group will view only faces of the same race and gender as the participant. All participants will then view a second set of faces (half new, half previously viewed) and indicate if they recognize any of the faces from the first slideshow. It is expected that participants' race and gender will have an effect on the types of faces recognized, such that faces of the participants' own race and gender will be more accurately recognized than the other race or gender.

Younkins, Candace Psychology BRESNAHAN II ROOM 10:30 - 12:00

What Do You Have to Hide? Face-ism as a Factor of Gender and Age

The concept of face-ism will be examined by assessing self-cropped photos that are displayed and rated on a website. Male and female photos will be measured among four different age groups, ranging from 18-25, 26-32, 33-40, and 40 and older. The ratio of face measurement to total picture height will be recorded, and the means will be compared. Smaller means will reflect photos that show more body, as compared to just the face or the torso. It is speculated that females will show more of their bodies in self-cropped photographs as opposed to men.

Zampedro, Jesse Geological and Environmental Sciences JONES ROOM 10:30 - 12:00

Paleosols on San Salvador, Bahamas

Upper Pleistocene paleosols were investigated on San Salvador, Bahamas as part of the Field Investigations in Geology (GEOL 3720) course at Youngstown State University. Exposures of paleosols were studied by examining bedding, sediment grainsize, sediment type, and rhizomorph network geometries. Detailed examination of rhizomorph networks suggest root growth was influenced by water availability with in the paleosols. Detailed investigation of bedding, grainsize, sediment type, and rhizomorphs indicate that there was very little soil development in the paleosols prior to lithification. The low degree of soil development is most likely the result of the sediment composition (primarily calcium carbonate) and rapid cementation that inhibited soil development.

Zarzycki-Miller, Rosanna Management COFFELT ROOM 3:30 - 5:00

Yeditepe University Case Study

In May of 2006 I traveled to Istanbul Turkey as part of an Independent Study. During this trip I did independent research and interviews to learn about the impact of the European Union and the Turkish Education System. Specifically applying Michael Po.