YOUNGSTOWN STATE UNIVERSITY
AND
THE SCHOOL OF GRADUATE STUDIES
AND RESEARCH
PRESENTS

QUEST 2010:
A FORUM FOR STUDENT SCHOLARSHIP

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QUEST 2010: A Forum for Student Scholarship marks the 21\textsuperscript{st} year of this special event when Youngstown State University celebrates the outstanding scholarly achievements of its students by providing a forum to present their research, works, and creations to the University community.

The focus of QUEST is student scholarship. The QUEST committee and University administrators acknowledge the guidance and commitment of Youngstown State University’s dedicated and outstanding faculty in motivating their students and making the achievements presented here possible. This year’s program presents 196 separate presentations representing the individual and group effort of 315 students. Many of these presentations represent scholarly endeavors made possible through individual faculty grants and the School of Graduate Studies and Research Undergraduate Student Research Grants and the University Research Council programs.

Dr. Jeffrey C. Dick
Director of Undergraduate Research
ACKNOWLEDGEMENTS

WITHOUT THE HELP AND FINANCIAL SUPPORT OF INDIVIDUALS, ORGANIZATIONS, AND PROGRAMS, QUEST 2010 WOULD NOT BE POSSIBLE. SPECIAL ACKNOWLEDGEMENTS GO OUT TO:

YSU FACULTY
IKRAM KHAWAJA: PROVOST
PETER KASVINSKY, SCHOOL OF GRADUATE STUDIES AND RESEARCH YOUNGSTOWN STATE UNIVERSITY FOUNDATION UNDERGRADUATE STUDENT RESEARCH GRANT PROGRAM 2010 QUEST COMMITTEE COLLEGE OF LIBERAL ARTS AND SOCIAL SCIENCES BEEGHLY COLLEGE OF EDUCATION BITONTE COLLEGE OF HEALTH AND HUMAN SERVICES COLLEGE OF FINE AND PERFORMING ARTS COLLEGE OF SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS WILLIAMSON COLLEGE OF BUSINESS ADMINISTRATION KILCAWLEY CENTER STAFF

QUEST 2010 COMMITTEE

DIRECTOR: Dr. Jeffrey C. Dick

UNIVERSITY REPRESENTATIVES

BEEGHLY COLLEGE OF EDUCATION – Dr. Regina Rees BITONTE COLLEGE OF HEALTH AND HUMAN SERVICES – Dr. John M. Hazy and Ms. Terry Volsko COLLEGE OF SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS – Dr. Jeffrey C. Dick and Dr. Hazel Marie COLLEGE OF FINE AND PERFORMING ARTS – Dr. Cary Horvath COLLEGE OF LIBERAL ARTS AND SOCIAL SCIENCES – Dr. Ronald Shaklee WILLIAMSON COLLEGE OF BUSINESS ADMINISTRATION – Dr. Peter Reday TECHNOLOGY EXPERT – Dr. Salvatore Sanders

QUEST 2010: A FORUM FOR STUDENT SCHOLARSHIP
PROGRAM SCHEDULE

MORNING SESSION I: 8:30 – 10:00

COFFELT ROOM  HEALTH PROFESSIONS
HUMPHREY ROOM  MULTIDISCIPLINARY SESSION
JAMES GALLERY  HISTORY
JONES ROOM  PSYCHOLOGY
OHIO ROOM  MULTIDISCIPLINARY POSTER SESSION
ROOM 2068  HEALTH PROFESSIONS II

MORNING SESSION II: 10:30 – 12:00

BRESNAHAN  ARCHAEOLOGY, GEOGRAPHY and FOREIGN LANG.
COFFELT ROOM  PHYSICS AND ASTRONOMY
HUMPHREY ROOM  EDUCATION
JAMES GALLERY  MECHANICAL ENGINEERING
JONES ROOM  CIVIL AND ENVIRONMENTAL ENGINEERING
OHIO ROOM  BIOLOGY and CHEMISTRY POSTER SESSION
PUGSLEY ROOM  COMMUNICATION
ROOM 2068  SCIENCE OF TEACHING AND LEARNING

CHESTNUT ROOM  QUEST STUDENT – FACULTY LUNCHEON 12:00 – 1:15
KEY NOTE SPEAKER:  Dr. Cynthia Anderson, V.P. for Student Affairs and future Youngstown State University President
“Living Life to its Fullest”

AFTERNOON SESSION I: 1:30 – 3:00

COFFELT ROOM  ELECTRICAL AND COMPUTER ENGINEERING
HUMPHREY ROOM  LINGUISTICS
JAMES GALLERY  MECHANICAL ENGINEERING and TECHNOLOGY
JONES ROOM  GEOLOGY, ENVIRONMENTAL SCIENCE and ECOLOGY
OHIO ROOM  MULTIDISCIPLINARY POSTER SESSION
PUGSLEY ROOM  ECONOMICS AND POLITICAL SCIENCE
ROOM 2068  INTERNATIONAL STUDIES

AFTERNOON SESSION II: 3:30 – 5:00

BRESNAHAN  RESEARCH EXPERIENCES FOR UNDERGRADUATES
COFFELT ROOM  BIOLOGY AND MATHEMATICS
HUMPHREY ROOM  ENGLISH
JONES ROOM  MUSIC
OHIO ROOM  BIOLOGY and CHEMISTRY POSTER SESSION
JAMES GALLERY  MECHANICAL ENGINEERING and TECHNOLOGY
Morning Session I  8:30 – 10:00 AM

COFFELT ROOM – HEALTH PROFESSIONS
Session Moderator: Dr. Sal Sanders

08:30 - 08:15  Weight-loss Outcomes after Laparoscopic Bariatric Surgery are Affected by Emotional Eating
Dana Strollo
Faculty Advisor: Dr. Rachael J. Pohle-Krauza

08:30 - 08:45  Burden Of Families Taking Care Of Patients Suffering From Amytropic Lateral Sclerosis
Zohra Ansari
Faculty Advisor: Ms. Ana-Maria Wetzl

08:45 - 09:00  Ease of Use with 3 Different Metered Dose Inhaler Spacers
Helena Eusanio
Faculty Advisor: Ms. Teresa A. Volsko

09:00 - 09:15  Hospital Identification Badges Act as Bacterial Reservoirs
Tarah Bellino
Faculty Advisor: Ms. Mary L. Yacovone

09:15 - 09:30  The Effects of Antioxidant Deficiency on Functional Lung Capacity in Chronic Lung Disease are Moderated by the Sex of the Patient.
Lauren Furnkase
Faculty Advisor: Dr. Rachael J. Pohle-Krauza

09:30 - 09:45  The Effectiveness of an Educational Brochure designed to Promote an Emphasis for an Accredited Dietetic Program
Lora Werkmeister
Faculty Advisor: Dr. Rachael J. Pohle-Krauza

HUMPHREY ROOM – MULTIDISCIPLINARY SESSION

08:45 - 09:00  Individualized Asynchronous Distance Learning for Less Commonly Taught Foreign Languages
James O’Rell
Faculty Advisor: Dr. Melissa T. Smith

09:00 - 09:15  Information Architecture & Music: A Comparative Study
Wanda Sobieska
Faculty Advisor: Mr. Stephen P. Klein

09:15 - 09:30  Xbox LIVE: Could You be at Risk While Playing Online?
Jeremy Cummins, William Hill, and John Rivera
Faculty Advisor: Dr. Graciela C. Perera

09:30 - 09:45  A Tale of Two Worlds: A Second Life for Higher Education?
Daniel DeMaioLo
Faculty Advisor: Ms. Donna M. Walsh
JAMES GALLERY – HISTORY
Session Moderator: Dr. Fred Viehe

08:30 - 08:45 Comparisons of Ethnic Centers in the U.S.
Aaron Swickard
Faculty Advisor: Dr. Fred W. Viehe

08:45 - 09:00 Idora Park: A Typical Beginning, an Unusual End
Ryan Antonucci
Faculty Advisor: Dr. Fred W. Viehe

09:00 - 09:15 Posse Comitatus in the 21st Century
Jason Tingler
Faculty Advisor: Dr. Fred W. Viehe

09:15 - 09:30 Schools for the Women: A Comparative Study of the Education of Northern Women and Southern Women from 1800-1860
Pamella Tarajcak
Faculty Advisor: Dr. Diane Barnes

09:30 - 09:45 The Historical Impact of the Large Hadron Collider
Jennifer Hanuschak
Faculty Advisor: Dr. Brian Bonhomme

09:45 - 10:00 The Bubonic Plague in the United States: The Importance of the Third Pandemic in San Francisco, 1900-1908
Belinda Vavlas
Faculty Advisor: Dr. Brian Bonhomme

JONES ROOM – PSYCHOLOGY
Session Moderators: Dr. Frank Ragozzine and Dr. Jeffrey Coldren

08:45 - 09:00 Age, Similarity, and Perspective Taking: Factors that Affect Empathy for Animals
Leanna Mattila
Faculty Advisor: Dr. Frank R. Ragozzine

09:00 - 09:15 Impact of Social Partner Type on Coping Method in Anger-Inducing Scenarios
Kathleen Stanko
Faculty Advisor: Dr. Julie B. Boron

09:15 - 09:30 Interference of Perceptual Simulation by Suggested Location of Word and Image Cues
Carrie Melia
Faculty Advisor: Dr. Frank R. Ragozzine

09:30 - 09:45 Race, Gender and Exposure Time Effects on Eyewitness Memory
Tanya Leyman
Faculty Advisor: Dr. Jeffrey T. Coldren

09:45 - 10:00 Strength In Numbers: Salience of Framing, and Effects of Expanded or Contracted Dimensions
Michael Gismondi
Faculty Advisor: Dr. Frank R. Ragozzine
OHIO ROOM - MULTIDISCIPLINARY SESSION
Session Moderators: Dr. Martin Cala and Dr. Jalal Jalali

08:30 - 10:00  Analysis of Structures Using Symbolic Mathematics
               Amar Shukla  
               Faculty Advisor: Dr. Javed Alam
08:30 - 10:00  Evaluation of Google Wave as Student Group Study Tool
               Michelle Stipetich  
               Faculty Advisor: Dr. Javed Alam
08:30 - 10:00  Natural Occurring Arsenic in Groundwater
               Jon Jamison  
               Faculty Advisor: Dr. Isam E. Amin
08:30 - 10:00  Polarized Light and Its Applications in Three-Dimensional Imaging and Entertainment
               Jennifer Dziak, William Hill, and Ryan Lopez  
               Faculty Advisor: Dr. James H. Andrews
08:30 - 10:00  A Time Study At Brainerd Rivet Company
               Sammy Barth  
               Faculty Advisor: Dr. Martin Cala
08:30 - 10:00  Work Design and Time Study Analysis of Material Handling at Altronic Inc.
               Keith Karas and Andrew Kolbus  
               Faculty Advisor: Dr. Martin Cala
08:30 - 10:00  Development of Production Standards in the Food Processing Industry
               Adam O’Brien and Andrew Patrick  
               Faculty Advisor: Dr. Martin Cala
08:30 - 10:00  Machining and Packaging Process Improvements Verification using Work Measurement Analysis Techniques
               Edward Sefton  
               Faculty Advisor: Dr. Martin Cala
08:30 - 10:00  Work Measurement Techniques Applied to the Improvement of a Material Handling Process in the Fastener Manufacturing Industry
               Kathryn Wolf  
               Faculty Advisor: Dr. Martin Cala
08:30 - 10:00  Calibration of OIII Spectrophotometric Standard Stars
               Daniel Nemergut  
               Faculty Advisor: Dr. John J. Feldmeier
08:30 - 10:00  Robot Arm for Medical Applications
               Naser Alwanni, Dan Frankland, Adam Gerstnecker, and Anthony Nuzzi  
               Faculty Advisor: Dr. Jalal Jalali
08:30 - 10:00  Triaxial Method Resonant Chamber for Low Frequency Electromagnetic Testing
               Edward Burden, Stephen Moy, Kristopher Rose, and Michael Zahran  
               Faculty Advisor: Dr. Jalal Jalali
08:30 - 10:00  IEEE MicroMouse
               Craig Butrick and Jarrett Scacchetti  
               Faculty Advisor: Dr. Jalal Jalali
08:30 - 10:00  Parking Deck Monitoring System
               Jonathan Capp, Brock Christie, Aaron Cyphert, and Greg Kosec  
               Faculty Advisor: Dr. Jalal Jalali
08:30 - 10:00  The Effect of NK3 Activation on the Dynamics of Layer V Pyramidal Neurons of the Prefrontal Cortex
               Joshua Mike and Robert Parise  
               Faculty Advisors: Dr. Jozsi Z. Jalics and Dr. Mark Womble
OHIO ROOM - MULTIDISCIPLINARY SESSION - Continued

08:30 - 10:00
Time-domain Utilizing Differential & Integral Calculus, Differential Equations, Laplace Transform and Computer Simulations
Nathan Jones, Aaron McKinney, and Robert Ragan
Faculty Advisor: Mr. Kin P. Moy

08:30 - 10:00
Privacy Scrubber: A Program To Secure Private Data On Windows Computers
Michael Walker
Faculty Advisor: Dr. Graciela C. Perera

08:30 - 10:00
A Mathematical Analysis of Peg Solitaire
Joshua Hodges, Katie Kosela, Brett Vaillancourt, and Tyler Vitullo
Faculty Advisor: Dr. Padraic W. Taylor

08:30 - 10:00
The Effect of NK3 Activation on the Dynamics of Layer V Pyramidal Neurons of the Prefrontal Cortex
Robert Parise and Joshua Mike
Faculty Advisor: Dr. Mark D. Womble and Dr. Jozsi Jalics

ROOM 2068 - HEALTH PROFESSIONS II
Session Moderators: Valerie O’Dell and Kathylynn Feld

09:00 - 09:15
Using a Diagnostic Algorithm to Direct Treatment in Two Patients With Shoulder Impingement Symptoms: a Case Report
Jason Shadle
Faculty Advisor: Dr. Nancy Landgraff

09:15 - 09:30
Medication Errors and Distraction: The Link and How to Prevent it
Alysha Brown
Faculty Advisor: Dr. Jennie M. Wood
Morning Session II  10:30 – 12:00 AM

BRESNAHAN I AND II – ARCHAEOLOGY, GEOGRAPHY and FOREIGN LANGUAGES
Session Moderators: Dr. Ron Shaklee and Dr. Richard Burden

10:30 - 10:45  A Preliminary Study of Human Skeletal Remains on the Island of San Salvador
Molly Toth
Faculty Advisor: Mr. Thomas R. Delvaux

10:45 - 11:00  Archaeological Excavation and Research of Storr's Lake San Salvador
Ronald Madeline
Faculty Advisor: Mr. Thomas R. Delvaux

11:00 - 11:15  Muang Thai: The Growth of the People that have Inhabited the Area in South East Asia Known as Thailand and How They Became the Beautiful Country they are Today
Joseph Zordich
Faculty Advisor: Dr. Dawna L. Cerney

11:15 - 11:30  Understanding Abandonment: A Descriptive Analysis of Vacant Properties in the Wick Park Neighborhood
Jack Daugherty
Faculty Advisor: Dr. Ronald V. Shaklee

11:30 - 11:45  Gli eroi del Risorgimento
Melanie Diorio
Faculty Advisor: Dr. Iole C. Checcone

11:45 - 12:00  The Pura Vida: Costa Rica from an American Student's Punto de Vista
Sarah Lewis
Faculty Advisor: Dr. Diana Q. Burkhart

12:00 - 12:15  Architectural Terra Cotta and Downtown Youngstown
Robyn DePaul
Faculty Advisor: Dr. Stephanie L. Smith

COFFELT ROOM - PHYSICS AND ASTRONOMY
Session Moderators: Dr. Tom Oder and Dr. James Andrews

10:30 - 10:45  Fabrication of Multi-Layered Films by Spin-Coating
James Aldridge
Faculty Advisor: Dr. James H. Andrews

10:45 - 11:00  High Temperature Performance of W2B/SiC Schottky Barrier Diodes
James Aldridge
Faculty Advisor: Dr. Tom N. Oder

11:00 - 11:15  Characterizing WB/ SiC Schottky Barrier Diodes Using I-V-T Method
Andrew Smith
Faculty Advisor: Dr. Tom N. Oder

11:15 - 11:30  Investigation of Ohmic Contacts on p-type Semiconductors
Michael Nycz
Faculty Advisor: Dr. Tom N. Oder

11:30 - 11:45  RR Lyrae as Structural Tracers for the LMC
Katharine Accetta
Faculty Advisor: Dr. Patrick R. Durrell

11:45 - 12:00  Magneto Optics, Multilayer Polymers, and Photonic Band Edge Enhancement
Bijayandra Shakya
Faculty Advisor: Dr. James H. Andrews

12:00 - 12:15  Experiment at YSU: Photonic Band Edge Enhancement of Faraday Rotation
Kyle Comeau
Faculty Advisor: Dr. James H. Andrews

12:15 - 12:30  Design and Application of Multilayer Films as Custom Spectral Filters
Matthew Skaggs
Faculty Advisor: Dr. James H. Andrews
HUMPHREY ROOM - EDUCATION
Session Moderator: Dr. Jeffrey C. Dick

10:30 - 10:45  Field Investigations in Geology: A New Approach to Geoscience Education
               Sara Dager and Charles Spurr
               Faculty Advisor: Dr. Jeffrey C. Dick

10:45 - 11:00  Teaching Reading Skills: Keep Things Simple, but Not Simpler
               Dianne DeEulio
               Faculty Advisor: Dr. Regina M. Rees

11:00 - 11:15  Understanding the Culture of High School Students with Behavior Problems
               as Viewed by School Counselors
               Frank Bellamy
               Faculty Advisor: Ms. Michelle M. Bellamy

JAMES GALLERY - MECHANICAL ENGINEERING
Session Moderator: Dr. Yogendra Panta

10:30 - 10:45  Analysis of Shaft and Gear Transmission for a Small Winch-Crane Unit
               Brooke Johnson, Michael Kennedy, Kevin Miller, and James Neiheisel
               Faculty Advisor: Dr. Yogendra M. Panta

10:45 - 11:00  Design and Construction of A Human Powered Moonbuggy
               Mark Blose, Mark Brown, Genevieve Jerome, and Mark Macali
               Faculty Advisor: Dr. Yogendra Panta

11:00 - 11:15  Design of a Conveyor Machine
               Adam Palumbo, Timothy Ridzon, John Terzak, and Chris Truitt
               Faculty Advisor: Dr. Yogendra M. Panta

11:15 - 11:30  Design of the Pressurized Shell for a Thick-Walled Hydraulic Actuator
               Andrew Bender, Mark Harvey, Charles Hunter, and Brendan Mahoney
               Faculty Advisor: Dr. Yogendra M. Panta

11:30 - 11:45  Development of a Microfluidic Impedance Sensor
               Kelsey Hulea, Benjamin Mabbott, and Nicholas Matune
               Faculty Advisor: Dr. Yogendra M. Panta

11:45 - 12:00  Supercharger Pulley: Stress Distribution and Analysis
               James Davner, Natasha Reid, Adam Seelman, and Arthur Worst
               Faculty Advisor: Dr. Yogendra M. Panta

JONES ROOM - CIVIL AND ENVIRONMENTAL ENGINEERING
Session Moderator: Dr. Scott Martin

10:45 - 11:00  Effectiveness of the Stream Restoration Projects
               Rajesh Poudel
               Faculty Advisor: Dr. Scott C. Martin

11:00 - 11:15  Geomorphic Characterization of Restored Streams
               Santosh Pant
               Faculty Advisor: Dr. Scott C. Martin

11:15 - 11:30  Modeling the Impact of Development on the Value of Environmental
               Services in Allegheny County, Pennsylvania
               Trixie Rife
               Faculty Advisor: Dr. Scott C. Martin

11:30 - 11:45  Reinforcement of a Concrete Canoe
               Michael Lyda
               Faculty Advisor: Dr. Scott C. Martin
10:30 - 12:00 Preliminary Characterization of HIV-1 protein Vpr
Jailakshmi Manasa Majeti and Anubhav Vinayak
Faculty Advisor: Dr. Ganesharatnam K. Balendiran

10:30 - 12:00 Novel Synthesis of Copper Chloride Quantum Dots in a Sodium Chloride Matrix
Elizabeth Zell
Faculty Advisor: Dr. Larry S. Curtin

10:30 - 12:00 Production of Monoclonal Antibodies against Staphylococcus aureus Type 5
Amitha Dhingra
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 The Effect of TC-1-045 on Capsule Formation in Staphylococcus Aureus, Type 5
Kara Kowalczyk and Ryan Schwartz
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 Targeting Staphylococcus aureus, Type 8 Capsule, by Using a Carbohydrate Mimetic: TC-I-045
Michelle Lammon and Sara Sara
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 Glycomimetics as an Inhibitor of Staphylococcus aureus Capsule Formation
Michael Makara
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 Production of Monoclonal Antibodies against Staphylococcus aureus Type 5
Leeann Pavlek
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 Purification and Characterization of Staphylococcus aureus Type 5 Capsular Polysaccharide
Thomas Rudnicki
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 Analysis of Isolated and Purified Staphylococcus aureus Type 5 Capsular Polysaccharide via Monoclonal Antibodies and Nuclear Magnetic Resonance Spectroscopy
Joelle Wells
Faculty Advisor: Dr. Diana L. Fagan

10:30 - 12:00 Lung Function on a Daily Basis
Pamela Galioto, Dawn Helderbran, Alvin Lu, Dylan Thomas, and Sarah Waldinger
Faculty Advisor: Dr. Richard G. Goldthwait

10:30 - 12:00 Synthesis of bis(2,2,2-trifluoroethyl) (Z)-vinyl Phosphonates from bis(2,2,2-trifluoroethyl) 1-alkynylphosphonates using Lindlarâs Catalyst
Ashley DePizzo and Lee Ann Rizzo
Faculty Advisor: Dr. John A. Jackson

10:30 - 12:00 Using Mathematics to Examine the Operation of an Electrochemical Cell
Scott Brand, Jennifer Moy, Chris Scheckelhoff, Caleb Tatebe and Solita Wilson
Faculty Advisor: Dr. Sherri R. Lovelace-Cameron

10:30 - 12:00 Novel Synthesis of Copper Chloride Quantum Dots in a Sodium Chloride Matrix
William Reed
Faculty Advisor: Dr. Howard D. Mettee

10:30 - 12:00 The Impact of CNTs on Actin Organization
Sarah Brothers
Faculty Advisor: Dr. Douglas M. Price
OHIO ROOM – BIOLOGY and CHEMISTRY - Continued

10:30 - 12:00  Cloning of Beta-Glucosidase from Escherichia coli
   Devin Kelly and Carol Pitcairn
   Faculty Advisor: Dr. Nina V. Stourman

10:30 - 12:00  Elucidation of the Function of the Glutathionylspermidine in E. coli
   Lorna Ngo and Brittany Sujka
   Faculty Advisor: Dr. Nina V. Stourman

10:30 - 12:00  The Effects of Housing Treatment on Anxiety-like Behaviors
   Jade Clayton and Madeline D'Orio
   Faculty Advisor: Dr. Jill M. Tall

10:30 - 12:00  The Effects of Acclimation Sessions on Behavioral Measurements
   Lindsay Drotar and Kyle Hartman
   Faculty Advisor: Dr. Jill M. Tall

10:30 - 12:00  Construction and Characterization of a Green Fluorescent Protein (gfp)/Titin ARMD Immunogenic Domain Fusion Protein
   Lisa Ferrando, Nimrit Lotey, Stephanie McCann, and Angela Sherokee
   Faculty Advisor: Dr. Gary R. Walker

10:30 - 12:00  Gels to Resolve the Large Molecular Protein Titin
   David Nguyen
   Faculty Advisor: Dr. Gary R. Walker

10:30 - 12:00  Analysis of Specific Cell Division Genes Using Bioinformatics Tools in Penicillium marneffei
   Sumedha Sethi
   Faculty Advisor: Dr. Gary R. Walker

PUGSLEY ROOM – COMMUNICATION
   Session Moderators: Dr. Rebecca Curnalia and Dr. Adam Earnheardt

10:30 - 10:45  An Examination of the Influences of Genderlect Styles, Nonverbal Communication Behaviors, Social Learning, and Listening on the Communication Barriers between Men and Women
   Amy Kim
   Faculty Advisor: Dr. Adam C. Earnheardt

10:45 - 11:00  An Exploration of Parent-Child Relationship Communication: Motives, Climate, Openness and Age
   Andreen Wilson
   Faculty Advisor: Dr. Adam C. Earnheardt

11:00 - 11:15  Exploring Marital Communication: Identifying Keys To Effective Communication and Marriage Satisfaction
   Kevin Jubach
   Faculty Advisor: Dr. Adam C. Earnheardt

11:15 - 11:30  Paying Sources for the Facts: An Ethical Analysis and Case Study
   Joseph Mamounis
   Faculty Advisor: Dr. Rebecca M. Curnalia

11:30 - 11:45  The Effects of Exposure to Advertising While Watching Sports: A Cultivation Perspective
   Steve Petrinjak
   Faculty Advisor: Dr. Adam C. Earnheardt
ROOM 2068 – SCIENCE OF TEACHING AND LEARNING : A PANEL DISCUSSION
Session Moderators: Dr. Sherry Linkon and Dr. Jodie Krontiris-Litowitz

10:30 - 12:00
 Does Practice with Higher Order Thinking Improve Learning?
Johanna Krontiris-Litowitz
 Faculty Advisor: Dr. Johanna Krontiris-Litowitz

10:30 - 12:00
 E-Portfolio: A Platform for Archiving Students Academic and Co-Curricular Experiences
Melissa Bach
 Faculty Advisor: Dr. Suzanne M. Leson

10:30 - 12:00
 The Electronic Portfolio: A Change in Culture
Julie Beck and Timothy Dewberry
 Faculty Advisor: Dr. Suzanne M. Leson

10:30 - 12:00
 Literature and Politics
Christopher Lettera, Jason Newman and Lindsey Ramdin
 Faculty Advisor: Dr. Sherry L. Linkon

Afternoon Session I  1:30 – 3:00 PM

COFFELT ROOM – ELECTRICAL AND COMPUTER ENGINEERING
Session Moderators: Dr. Salvatore Pansino and Dr. Jalal Jalali

13:30 - 13:45
 Design and Programming of an LED Cube
Chris Barcey, John Fitch, Matthew Guidosh, Adam Hinerman, Justin Hosseinejad, Wael Ilayan, and Patrick O'Rourke
 Faculty Advisor: Dr. Salvatore R. Pansino

13:45 - 14:00
 Encrypted Wireless Network for Vibration Data Acquisition
Ryan Bates, Tim Detwiler, Jesse Nezdoba, and Brittany Stillwagon
 Faculty Advisor: Dr. Frank X. Li

14:00 - 14:15
 IEEE MicroMouse
Craig Butrick and Jarrett Scacchetti
 Faculty Advisor: Dr. Jalal Jalali

14:00 - 14:15
 MicroMouse
Yousef Ilayan
 Faculty Advisor: Dr. Jalal Jalali

14:15 - 14:30
 A Prototype Wireless Thermostat
Don Lesher
 Faculty Advisor: Dr. Salvatore R. Pansino
HUMPHREY ROOM – LINGUISTICS
Session Moderators: Dr. Corey Andrews and Dr. Steven Brown

13:30 - 13:45  
**Going up?: A Sociolinguistic Study of Verbal Interaction in Elevators**
Rebekah Hoy, Chu Shiu Lee, Christopher Lettera and Laura Mistovich
*Faculty Advisor: Dr. Barbara Nykiel-Herbert*

13:45 - 14:00  
**Honey is for Bees: A Look at the Use of Endearments in the Service Industry**
Mary A Anderson, Stephen Flask and Adam Seefeldt
*Faculty Advisor: Dr. Barbara Nykiel-Herbert*

14:00 - 14:15  
**Language Learning Motivation in International Students**
Way Jeng and Rebecca Sumner
*Faculty Advisor: Dr. Barbara Nykiel-Herbert*

14:15 - 14:30  
**'You Said That In Class!': A Study of the Use of Curse Words In College Classrooms**
Heather Lowry and Rebecca Sumner
*Faculty Advisor: Dr. Barbara Nykiel-Herbert*

14:30 - 14:45  
**Taking the Hint: A Cross Sectional Survey of Perception Regarding Requests and Directness**
Lindsay Berger, Joseph Robertshaw and Robert Suter Jr.
*Faculty Advisor: Dr. Barbara Nykiel-Herbert*

JAMES GALLERY – MECHANICAL ENGINEERING and TECHNOLOGY
Session Moderators: Dr. Daniel Suchore and Dr. Elvin Shields

13:30 - 13:45  
**Constructing and Modelling a Small Horizontal Axis Wind Turbine**
Greg Klouse, Jeremy Minor and Mohammad Rameezuddin
*Faculty Advisor: Mr. Michael D. Costarell*

13:45 - 14:00  
**Flow Visualization Wind Tunnel**
Richard Arthur, Kristopher Pierson and Devin Wilmouth
*Faculty Advisor: Dr. Elvin B. Shields*

14:00 - 14:15  
**Natural Gas Engine Conversion**
Jared Bilas and David Lepley
*Faculty Advisor: Mr. Michael D. Costarell*

14:15 - 14:30  
**Permanent Magnet Motor: Generating Electricity from Water Waves**
Eli Good, Matt Kuhns, Matt Norge and Andrew Pirigyi
*Faculty Advisor: Mr. Stephen Kundel*

14:30 - 14:45  
**Supermilege Vehicle**
Matt Drewnowski, Chris Hallett, Dustin Lindsay and Nate Tacsik
*Faculty Advisor: Dr. Elvin B. Shields*
### JONES ROOM – GEOLOGY, ENVIRONMENTAL SCIENCE and ECOLOGY
Session Moderators: Dr. Isam Amin and Ms. Colleen McLean

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<th>Time</th>
<th>Topic</th>
<th>Presenter(s)</th>
<th>Faculty Advisor</th>
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<td>13:45 - 14:00</td>
<td>Heavy metals in Urban Garden located in Youngstown, Ohio</td>
<td>Gina DeCarlo</td>
<td>Dr. Felicia P. Armstrong</td>
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<tr>
<td>14:00 - 14:15</td>
<td>Metal Contamination on the Floodplains of the Mahoning River</td>
<td>Shannon Doherty</td>
<td>Dr. Felicia P. Armstrong</td>
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<tr>
<td>14:15 - 14:30</td>
<td>Changes in Shoreline Sedimentation at Sandy Point, San Salvador</td>
<td>Diana Alexander, Jessica Giblin, Jason Langer and Laura Yamsek</td>
<td>Dr. Jeffrey C. Dick</td>
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<tr>
<td>14:30 - 14:45</td>
<td>Spatiotemporal-dependent Shifts in Grassland Invasibility</td>
<td>Erin Pfeil and Jacob Saborse</td>
<td>Dr. Ian J. Renne</td>
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<td>14:45 - 15:00</td>
<td>Cultural Breakdown of Avian Mobbing Responses to Interspecific Alarm</td>
<td>Jacob Saborse</td>
<td>Dr. Ian J. Renne</td>
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### OHIO ROOM – MULTIDISCIPLINARY SESSION
Session Moderators: Dr. Gordon Frissora and Dr. Janice Elias

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<td>Tara Esker and Scott Wilms</td>
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<td>Zachary Lewis</td>
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<td>Rose Stacy</td>
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<td>How do Budgets Affect the Murder Rate?</td>
<td>John Beshara</td>
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<td>Managing Disruptive Behavior: Health Care Workers Perceptions and Suggestions</td>
<td>Marsha Kenyhercz</td>
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<td>13:30 - 15:00</td>
<td>The Impact of Shift Work on Hospital Employees</td>
<td>Deborah Moyer</td>
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<td>13:30 - 15:00</td>
<td>Raise a Hand Raise a Voice Raise a Killer...What are Some External Factors Related to Serial Killers?</td>
<td>Kristy Protain</td>
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<td>Dental Hygiene: Associate or Baccalaureate Degree</td>
<td>Melissa Sarisky</td>
<td>Dr. John M. Hazy</td>
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<td>Officers Armed with Degrees: Does Higher Education in Law Enforcement Reduce Police Officer Liability?</td>
<td>Edward Villone</td>
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OHIO ROOM – MULTISCIPLINARY SESSION - Continued

13:30 - 15:00  Effects of Ethidium Bromide on Mitochondrial DNA in the yeast Saccharomyces Cerevisiae.
Cassidy Meyer
Faculty Advisor: Dr. Heather E. Lorimer

13:30 - 15:00  The Effects of Depression on Functional Capacity in Chronic Obstructive Pulmonary Disease (COPD) Patients
Heather Dugan
Faculty Advisor: Dr. Michele L. McCarroll

13:30 - 15:00  Assessment of Workers Compensation Claims Among North Carolina Firefighters
Anthony Russo
Faculty Advisor: Dr. Michele L. McCarroll

13:30 - 15:00  Studying Abroad at the University of Winchester
Leah Sakacs and Samantha Schneider
Faculty Advisor: Dr. Barbara Nykiel-Herbert

13:30 - 15:00  Counselor’s Tips for Teachers: Easy Classroom Interventions for Students with Autism
Emily Herman and Dru Perren
Faculty Advisor: Dr. Jake J. Protivnak

13:30 - 15:00  Perceptions of the Functions of Exercise in Weight Management among YSU Students.
Ashley Addessi and Renee Loren
Faculty Advisor: Dr. Zara C. Rowlands

13:30 - 15:00  Perceptions of Causes and Consequences of Childhood Obesity Among YSU Students
Michelle Haddle, Lia Proctor, Nicole Sabo and Kayla Witmer
Faculty Advisor: Dr. Zara C. Rowlands

13:30 - 15:00  Perceptions of Food Labels
Bailey Hinkle, Kristin Hutzen, Callie Oyler and Jennifer Scacchetti
Faculty Advisor: Dr. Zara C. Rowlands

13:30 - 15:00  Attitudes Toward Sexuality in Older Adults
Julie Iudiciani
Faculty Advisor: Dr. Daniel J. Van Dussen

PUGSLEY ROOM – ECONOMICS AND POLITICAL SCIENCE
Session Moderators: Dr. A.J. Sumell and Dr. Tomi Ovaska

13:30 - 13:45  A Political Science Student Witnessing a Mounting and Approaching Political Apex and Possible Revolution in Thailand.
Brian Haughey
Faculty Advisor: Dr. David S. Porter

13:45 - 14:00  Assessing the Assessors: Institutional Research on Bureaucracy and Youngstown State University
Abbie Twyford
Faculty Advisor: Dr. Keith J. Lepak

14:00 - 14:15  Casinos and Economic Growth
Nicole Barnett
Faculty Advisor: Ms. Jolien A. Helsel

14:15 - 14:30  School Facilities and Performance: Evidence from Ohio
Jeffrey Layton
Faculty Advisor: Ms. Jolien A. Helsel
ROOM 2068 – INTERNATIONAL STUDIES
Session Moderators: Dr. Stephanie Smith and Dr. Peter Reday

13:30 - 13:45  A Comparison of the Cost of Living Differences Between Youngstown and San Salvador Island, The Bahamas
Amanda Campbell and Kaley Kastner
Faculty Advisor: Dr. Ronald V. Shaklee

13:45 - 14:00  Study Abroad in Buenos Aires, Argentina
Jessica Thompson and Rikki Vesy
Faculty Advisor: Ms. Laura Goist

14:00 - 14:15  Economic Impact of the Gerace Research Centre On the Economy of San Salvador
Jason Heyman and Lynn Williams
Faculty Advisor: Dr. Ronald V. Shaklee

14:15 - 14:30  Internship Abroad in Prague, Czech Republic 2009
Juliana Cala
Faculty Advisor: Ms. Joy D. Christiansen

14:30 - 14:45  The Penguin Odyssey at Youngstown State University: Exploring the Effects of Faculty-Led Study Abroad Tours
Daniel DeMaiolo, Derek DeMaiolo and Nikki Makridis
Faculty Advisor: Mr. Larry A. Zielke

14:45 - 15:00  Pricing
Nicole Baker and Brittany Carlon
Faculty Advisor: Dr. Peter A. Reday

Afternoon Session II  3:30 – 5:00 PM

BRESNAHAN I and II – RESEARCH EXPERIENCES FOR UNDERGRADUATES
Session Moderator: Dr. Douglas Price

15:30 – 17:00  Undergraduate STEM students Bethany Vlaiku, Benjamin Christiansen, Adam Magana, and Michael Walker will discuss their experiences as participants in the National Science Foundation "Research Experiences for Undergraduate Students" program
COFFELT ROOM – BIOLOGY AND MATHEMATICS
Session Moderators: Dr. George Yates and Dr. Thomas Wakefield

15:30 - 15:45  Determining Muscle Fiber Types in the Tails of Two Disparate Species: Oppossum
Faculty Advisor: Dr. Michael T. Butcher
Pano Hazimihalis

15:45 - 16:00  Sex and Regional Differences in L-Type Calcium Current Levels in Rabbit Heart Arrhythmogenesis
Faculty Advisor: Dr. Carl Sims
Zane Kalik

16:00 - 16:15  Proposed Resistance Mechanisms of Enterobacter sp. to Toxic Selenite
Faculty Advisor: Dr. George T. Yates
Hillary Howard and Lisa Curl

16:15 - 16:30  The Effect of NK3 Activation on the Dynamics of Layer V Pyramidal Neurons of the Prefrontal Cortex
Faculty Advisor: Dr. Mark D. Womble
Joshua Mike and Robert Parise

16:30 - 16:45  Techniques for Solving Nonlinear Diophantine Equations
Faculty Advisor: Mr. Jacek Fabrykowski
Matt Alexander

HUMPHREY ROOM – ENGLISH
Session Moderators: Dr. Corey Andrews and Dr. Steve Brown

15:30 - 15:45  Evolution of the International Phonetic Alphabet
Faculty Advisor: Ms. Cynthia L. Vigliotti
Tracilyn Tsarnas

15:45 - 16:00  Mystical Sunshine Lover
Faculty Advisor: Mr. Christopher M. Barzak
Christopher Lettera

16:00 - 16:15  The News Outlet
Faculty Advisor: Ms. Alyssa J. Lenhoff
Doug Livingston

16:15 - 16:30  Little Red Cap and Hansel and Gretel: Conspiracies in Children's Literature
Faculty Advisor: Ms. Cynthia L. Vigliotti
Jessica Troy

JONES ROOM – MUSIC
Session Moderators: Ms. Terry Volsko and Ms. Mary Yacovone

15:30 - 15:45  La Monte Youngâs The Well-Tuned Piano and the Truth in Tuning
Faculty Advisor: Dr. Ewelina Boczkowska
Joseph Finkel

15:45 - 16:00  Laughter and Tears in Mozart's Opera Buffa
Faculty Advisor: Dr. Ewelina Boczkowska
Stephanie Ruozzo

16:00 - 16:15  Mozart's Die Zauberflöte as an Opera of the Enlightenment
Faculty Advisor: Dr. Ewelina Boczkowska
Sara Gulgas

16:15 - 16:30  The Evolution of the Third Movement in Symphonies of Haydn, Mozart, and Beethoven
Faculty Advisor: Dr. Ewelina Boczkowska
Deidra Nuss

16:30 - 16:45  Well-Traveled Tunes: The Circulation of Song in Renaissance Europe
Faculty Advisor: Mr. Randall E. Goldberg
Margaret Jones

16:45 - 17:00  Digitizing the Scholar Experience
Faculty Advisor: Mr. Randall E. Goldberg
Rachel Lundberg, Justin McIntyre and Cory Okular
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<td>Katie Allen</td>
<td>Dr. David K. Asch</td>
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<td>Expression Kinetics of the Quinic Acid (qa) Gene Cluster in Neurospora crassa</td>
<td>Melissa Fleeger</td>
<td>Dr. David K. Asch</td>
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<td>15:30 - 17:00</td>
<td>Quantitation of mRNA levels in ΔS strain of Neurospora crassa</td>
<td>Rathna Veeramachaneni</td>
<td>Dr. David K. Asch</td>
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<td>15:30 - 17:00</td>
<td>Patterns of Strain in the Femur of the Opossum (Didelphis virginiana) During Terrestrial Locomotion</td>
<td>Bartholomew White</td>
<td>Dr. Michael T. Butcher</td>
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<td>15:30 - 17:00</td>
<td>Characterization of Eight Metal Resistant Enterobacter Species from a Metal Contaminated Site</td>
<td>Carlisle Heinselman</td>
<td>Dr. Jonathan J. Caguiat</td>
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<td>15:30 - 17:00</td>
<td>Chitin Synthase Expression in the Dimorphic Fungus Penicillium marneffei</td>
<td>Melinda Daisher</td>
<td>Dr. Chester R. Cooper</td>
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<td>15:30 - 17:00</td>
<td>Analysis of Cell Wall Mutants in the Dimorphic Fungus Penicillium marneffei Generated by Agrobacterium-Mediated Transformation</td>
<td>Andrew Holmes</td>
<td>Dr. Chester R. Cooper</td>
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<td>Characterization of Mutants of Wangiella dermatitis Generated by Agrobacterium tumefaciens Mediated Transformation</td>
<td>Eric Price</td>
<td>Dr. Chester R. Cooper</td>
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<td>15:30 - 17:00</td>
<td>Two-Dimensional Polyacrylamide Gel Electrophoresis characterization of Decorin Bound Collagen I, Comparison to Male and Female Spontaneously Hypertensive Rats</td>
<td>Andrew Brown</td>
<td>Dr. Johanna Krontiris-Litowitz</td>
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<td>15:30 - 17:00</td>
<td>2D Gel Profile of Cyanogen Bromide Digested Bovine Serum Albumin</td>
<td>Sierra Carbone</td>
<td>Dr. Johanna Krontiris-Litowitz</td>
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<td>15:30 - 17:00</td>
<td>Morphometric Quantification of Myocyte Dimensions in SHR Rat Hearts</td>
<td>Douglas Hudoba</td>
<td>Dr. Johanna Krontiris-Litowitz</td>
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<td>15:30 - 17:00</td>
<td>Quantitation of Ventricular Collagen in Male and Female Spontaneously Hypertensive Rats using Hydroxyproline Analysis</td>
<td>Lisa Tofil</td>
<td>Dr. Johanna Krontiris-Litowitz</td>
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<td>15:30 - 17:00</td>
<td>Constructing MHR1 Containing Plasmids as a Tool for Understanding Mitochondrial DNA Replication</td>
<td>Brandon Grant</td>
<td>Dr. Heather E. Lorimer</td>
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Analysis of Genetic Variations of cpDNA in Elm species
Jenna Kupec and Alaina Zeljak
Faculty Advisor: Dr. Heather E. Lorimer

Determining the Role of MGT1 in the Biased Inheritance of Mutant mtDNA in the Yeast Saccharomyces cerevisiae
Heather Williams
Faculty Advisor: Dr. Heather E. Lorimer

FunSecKB: A Knowledge Base of Fungal Secretomes
Gengkon Lum
Faculty Advisor: Dr. Xiangjia Min

Phylogenomic Analysis of the Chitin Synthetic Pathway in Fungi
David Sedlacko
Faculty Advisor: Dr. Xiangjia Min

Safe Alkyl and Acyl azide Synthesis Using Arylsulfonyl Azides
Krista Cunningham, Antony Okumu, Brooke Katzman and Tracy Vadjinia
Faculty Advisor: Dr. Peter Norris

Reduced Competition from White-Tailed Deer Grazing Facilitates Non-Native Plant Invasion
Samantha Adams
Faculty Advisor: Dr. Ian J. Renne

Gender and Regional Differences in ICa-L Distribution in Adult Rabbit Right Ventricle Influence AP Duration and the Propensity for EADs in a Model of Long QT Syndrome Type 2
Cassandra Doinoff
Faculty Advisor: Dr. Carl Sims

Development of Magnetohydrodynamics (MHD) Channel
Wei Lin
Faculty Advisor: Dr. Yogendra M. Panta

A Heat Transfer Model for Industrial Food Processes
Joseph Pietromonaco
Faculty Advisor: Dr. Darrell R. Wallace

Alternative Fuels Examined: Are Electric Cars the Future?
Nicholas Mancuso
Faculty Advisor: Ms. Sharon L. Cline

Smoke Visualization Wind Tunnel
Gregory Hall
Faculty Advisor: Dr. Elvin B. Shields

Research in Engine Efficiency: The 100mpg Diesel Motorcycle
Matthew Proch
Faculty Advisor: Dr. Brian D. Vuksanovich

Water Conservation
Alexandria Globeck and Nicholas Mikula
Faculty Advisor: Mr. Greg K. Moring

Gaia
Michelle Curl
Faculty Advisor: Dr. Brian D. Vuksanovich
QUEST 2010 ABSTRACTS

Accetta, Katharine  
Astronomy / Physics  
RR Lyrae as Structural Tracers for the LMC  
Coffelt Room 11:30 - 11:45

RR Lyrae variable stars are key distance indicators because they have a predictable period-luminosity relation. Previous surveys by the OGLE and MACHO collaborations have identified RR Lyrae stars within the Large Magellanic Cloud (LMC), but as the prime directive of these surveys was to search for gravitational lensing effects, precision photometry was not a primary concern. We have obtained accurate V and R photometry of a sub-sample of OGLE RR Lyrae located around the central bar. The results presented here encompass two of the twenty-six surveyed fields, one field on the far east side of the central bar and the other on the far west. Distances and reddening along the line of sight of 50 RR Lyrae can be used to map out the structure of the old stellar populations within the LMC. A comparison on the properties of the RR Lyrae in these two fields allow constraints to be made on the orientation of the LMC, and to place limits on the warping of the LMC disk.

Adams, Samantha  
Biological Sciences  
Reduced Competition from White-Tailed Deer Grazing Facilitates Non-Native Plant Invasion  
Ohio Room 15:30 - 17:00

Non-native plant invasions have changed the composition and diversity of plant communities in many North American forests. Successful invasions are often facilitated by factors that alter competitive hierarchies, one of which being the high abundance of white-tailed deer due to their propensity toward differential grazing. This project examines the interactive effects of white-tailed deer grazing and removal of garlic mustard, Alliaria petiolata, a non-native, invasive, biennial plant, on the structure and invasibility of forest understory communities. The experimental design is a two-way, split-plot factorial, with two whole-plot levels of grazing (i.e., control and fence exclusion) and A. petiolata removal (control and weeded). Additionally, seeds from native, herbaceous plants will be sown in subplots to examine the effect of seed augmentation in each treatment combination. Response variables include changes in native species diversity, abundance, and relative cover, establishment and growth rates of sown individuals, and the abundance and relative cover of A. petiolata. Key questions include whether white-tailed deer grazing facilitates A. petiolata invasion and if the separate and combined effects of grazing and A. petiolata competition limit native species recruitment and growth. From our conclusions, management recommendations will be offered to reduce the prevalence of A. petiolata and restore depleted native forest understory plant diversity.

Addessi, Ashley  
Human Ecology  
Perceptions of the Functions of Exercise in Weight Management among YSU Students.  
Ohio Room 13:30 - 15:00

Americans have an obsession with weight management. Among those who exercise to manage their weight, perceptions of the functions of exercise may vary according to individual self-assessment of appearance, weight and health status (Weisz et al, 2006). This study will assess the perceptions of YSU students who use the Andrews Wellness and Recreation Center, regarding the role and efficacy of exercise in weight management. Participants (n=100) who provide signed informed consent will self-administer a 29-item survey that asks about their beliefs, attitudes and knowledge about the role of exercise in weight management. The pooled data will be analyzed using SPSS, 15.0. It is anticipated that significantly (p<0.05) more female participants will choose cardiovascular activity/exercise for weight loss than males; more males than females will combine supplement use, diet and exercise for weight management; and significantly more males will employ weight training than females in their weight management regimens.

Aldridge, James  
Chemical Engineering  
High Temperature Performance of W2B/SiC Schottky Barrier Diodes  
Coffelt Room 10:45 - 11:00

The importance of silicon carbide (SiC) semiconductor for high temperature and high power microelectronic device applications has long been established. SiC Schottky barrier diodes using tungsten boride (W2B) deposited at 200°C and 600°C as the Schottky contacts are currently being characterized. Using the current-voltage-temperature method, samples are mounted on a heated stage and temperature then varied from about 25°C to 400°C at intervals of 25°C. From the variation of the ideality factor and the temperature, we determined that the characteristics of these diodes are not altered by exposure to 400°C. The high temperature stability was traced to the exceptionally high Schottky barrier heights of 1.7 eV, which was determined by the I-V-T measurements. The characteristic energy of 0.02 eV to 0.04 eV across the range of measurement temperatures indicates that thermionic emission is the dominant process of the electron transport across the barrier. The implications of these results to current device developments will be discussed.

Aldridge, James  
Chemical Engineering  
Fabrication of Multi-Layered Films by Spin-Coating  
Coffelt Room 10:30 - 10:45

Polymeric multi-layered films with a periodic structure can exhibit a photonic band-gap in the form of enhanced reflectivity and inhibited transmission due to multilayer optical interference. Polymers are particularly attractive as one-dimensional photonic band gap materials because the polymer properties can be tailored for use as magneto-optic materials, lasers, and other applications. In this talk, I will describe our techniques for fabricating multilayer structures and thin films using spin coating and Langmuir film floating. These techniques are useful for multi-layering of polymers that are not amenable to co-extrusion and melt-processing techniques, but considerable care is required for stacking individual polymer layers. The optimum reflection band peak is zero % transmittance. Our most recent multi-layering efforts have reached approximately 11 % transmittance. We assume a deviation in layer thickness to be present.
Alexander, Diana  
Geological & Environmental Science  
Changes in Shoreline Sedimentation at Sandy Point, San Salvador

Sandy Point is a prominent landform located at the southwestern corner of San Salvador, Bahamas. It is a massive peninsula-shaped sand deposit created by the combination of long-shore drift along the southern and western shores of the island and intensive wave refraction at the point. GPS surveys of the shoreline conducted in March for the years 2005 & 2009 demonstrate regular and non-predictable change of the shoreline position from year to year. Visual observations and crude line-level transects for the same years indicate equally dramatic change in the overall morphology of the deposit. In an effort to better understand the processes responsible for the observed changes and document the magnitude of change, a detailed study of Sandy Point was initiated in June 2009. The data included shoreline GPS surveys, shoreline to back-beach transects (GPS and total station), and sand textural analyses. A second set of measurements and analyses was completed in March 2010. Preliminary results demonstrate a dramatic change in shoreline position from June 2009 to March 2010. In accordance with shoreline change, the beach transects show dramatic change in the overall morphology of the sand deposit. Over all, the sediment can be characterized as poorly sorted coarse sand composed of primarily carbonate shell fragments. The resulting data of shoreline and transect surveys were plotted on the topographic map of the island (1971) using ArcGIS.

Alexander, Matt  
Mathematics & Statistics  
Techniques for Solving Nonlinear Diophantine Equations

Nonlinear Diophantine equations are frequently found in various levels of mathematical competitions. In this presentation, we will examine common techniques used to solve such problems. Often it is much simpler to show that no solution exists for a particular equation than to attempt to find the form that all possible solutions may take on. Therefore, our methods will either show that there are no solutions or that there are infinitely many solutions.

Allen, Katie  
Biological Sciences  
Protein Profiling of Wild-type Neurospora crassa Grown on Various Carbon Sources

Neurospora crassa possesses characteristics that make it an ideal model organism for eukaryotes. N. crassa utilizes a variety of different carbon sources. Preferred carbon sources such as dextrose can be metabolized, but it has the ability to metabolize less preferred carbon sources such as glycerol or quinic acid. The quinic acid (qa)-gene cluster in N. crassa controls the ability of quinic acid to be utilized as a carbon source. When grown on quinic acid the expression of the qa genes is enhanced, but reduced when grown on a preferred carbon source such as dextrose. Other changes in gene expression should be seen as well when the carbon sources are switched. In this study, we look at the protein profiles of wild-type N. crassa grown on the carbon sources, dextrose and glycerol and quinic acid. To perform the study, wild-type N. crassa was grown on Vogels minimal media and shifted to various carbon sources. Protein was extracted from the tissue and ran on two-dimensional gel electrophoresis (2-DGE). The two dimensional (2-D) gels were imaged and analyzed using PDQuest. The results from the study reveal that more protein is expressed on the preferred carbon source, dextrose, compared to the less preferred carbon sources, quinic acid and glycerol. Unique protein expression patterns have also been observed for the different carbon sources.

Alwanni, Naser  
Electrical & Computer Engineering  
Robot Arm for Medical Applications

The robotic arm was designed for real-time applications to which it would operate over a network. The design purpose was to construct a network host-server connection through which an operator that may be able to perform tasks from a remote location. This would give the user freedom to operate on objects or complete projects at their leisure without the need to travel to the given location. The design was made from aluminum in order to give it strength and durability. The control interfaces, which were implemented to provide user control and to facilitate the movement of the arm, were written in C# language and allow real-time user control through USB connectivity. The host-server connection was achieved via pre-existing VNC freeware. The result of the design gives the user freedom to rotate freely around a two feet radius, and the robotic arm can lift multiple objects of size and weight.

Anderson, Mary A  
English  
Honey is for Bees: A Look at the Use of Endearments in the Service Industry

The three student investigators will study the use of endearments in service encounters. We believe our research and field data will reveal a trend that is related to age and gender. We also hope to measure attitudes concerning the use of endearments in the service industry. The data we collect will allow us to measure not only what specifics endearments are used by strangers in these settings, but the attitudes and connotative meanings behind these terms. We will gather our data with the use of short surveys (12 fictional scenarios) to be completed by volunteer students at Youngstown State University, with the approval of each instructor in the classroom. The survey is completely anonymous and the information used is to be kept confidential, to be viewed by Mary Anne, Adam and Steve. There will no names used, nor will it be necessary for respondents to reveal campus location. (See attached for sample survey) The anonymous nature of the surveys will be clearly noted at the beginning of the survey. Potential respondents are not obligated to begin nor continue a survey. They may opt out at any time. We believe our data will reflect our hypothesis that older men use endearments more often than younger females in service related jobs. We believe the attitude is more permissive when age is a factor. We believe our data will reveal trends in acceptance and attitude of these common terms used among strangers.
Andrews, James  Astronomy / Physics  Room 2068  10:30 - 12:00
Is the Third Time the Charm? Teaching Introductory Physics in Three Cycles
Four years ago I began to reorganize a section of our introductory physics course to introduce major concepts in a simple context in the first third of the course, and then to revisit them in two more increasingly sophisticated and interconnected cycles, each followed by hour exams. This approach allows an early overview of the whole course, addresses midterm exam difficulties and improves retention through revisiting, eliminates the long gap between early material and the final exam, provides time for students to assimilate harder concepts previously introduced only at the end of the course, and provides increased opportunities for using multi-concept problems. Challenges include pace, level, and the role of the textbook. I describe experiences and feedback over 20 semesters with seven different lecturers at two universities and the development by a colleague at Case Western Reserve University of a mechanics text for three-cycle use.

Ansari, Zohra  Health Professions  Room 08:30 - 08:45
Burden Of Families Taking Care Of Patients Suffering From Amytrophic Lateral Sclerosis
Amyotrophic Lateral sclerosis (ALS), a motor neuron disease, is also commonly known as Lou Gehrig disease. The disease slowly paralyzes the upper part of the body including respiratory system. When it starts affecting the respiratory system, often patients are kept on Mechanical Ventilation (MV). Although ALS progresses slowly, entire upper part of the body is affected and consequently patients die due to the respiratory failure. In ALS, not only patients but also their caregivers go through tremendous psychological trauma. To get rid of their sufferings and pain, often patients desire to commit suicide. ALS patients are required to be on mechanical ventilator to survive, which imposes considerable financial burden on patients and as well as their family members. The US government has proposed a policy that would make health care within the reach of a common person. Such an initiative would provide significant relief to ALS patients and also provide comfort to the family. I am involved in taking care of patients without any monetary reward. This paper reviews various studies and their finding related to ALS and discusses the symptoms, diagnosis, management, and treatment option available to cure this disease. The paper also describes personal experience with a family member, my father-in-law, who suffered with ALS and died due to the respiratory failure.

Antonucci, Ryan  History  James Gallery  08:45 - 09:00
Idora Park: A Typical Beginning, an Unusual End
Idora Park was the product of a nationwide movement that began over one-hundred year ago: the establishment of “trolley parks” at the end of streetcar lines. To increase use of the street railway system during the evening and on weekends, trolley companies created green park areas to attract riders. Most of these simple parks were later improved to include bandstands and other forms of amusements. Although Idora Park had a typical beginning that paralleled the development of most other American trolley parks, Idora, unlike most of its contemporaries, survived the demise of the street car. The park ultimately collapsed due to the local economy and a series of unfortunate events, rather than disinterest.

Arthur, Richard  Mechanical & Industrial Engineering  James Gallery  13:45 - 14:00
Flow Visualization Wind Tunnel
A small flow visualization wind tunnel was designed and built to study the pattern of flow around bluff and streamlined models. The visualization is created by injecting thin filaments of white smoke at the inlet of a small low-turbulence wind-tunnel. The wind-tunnel is a draw-through type and the flow is initiated by a small radial blower fan mounted near the exit of the tunnel. Air is drawn in through the inlet and exhausted at the tunnel exit. Part of the air exhausted can be forced into a smoke generating reservoir. The smoke, generated by vaporizing propylene glycol, is forced through the supply pipe into small nozzles and then emerges out of the nozzles as fine filaments. Models were placed in the test section for the study of flow patterns. The heater element and the blower fan are instrumented and controlled using computer software as well as manual controls. The machine has controls for starting the fan and the heating element along with a safety feature to turn off the heater and the fan if the temperature inside the smoke reservoir exceeds a certain threshold temperature. The flow patterns observed corroborated the concepts learned in fluid dynamics. In addition, flow visualization is used in many industries concerned with aerodynamics.

Bach, Melissa  Psychology  Room 2068  10:30 - 12:00
E-Portfolio: A Platform for Archiving Students Academic and Co-Curricular Experiences
This is a Scholarship of Teaching and Learning (SOTL) presentation. One way to foster and develop the reflective thinking process is to provide the student with a tool that allows longitudinal reflection of work. There is an increased focus (from all stakeholders) on accountability for student learning outcomes. The electronic portfolio (e-portfolio) has been adopted on many campuses as a means to integrate teaching, reflective learning, and assessment. Unlike the paper that is written, graded, and stored in a folder, the e-portfolio provides the student with a dynamic and systematic process of reflecting upon their educational and co-curricular experiences over time. As part of a pilot project, at Youngstown State University, Youngstown, Ohio, select academic programs and courses were enlisted to participate in the development of student electronic portfolios and the subsequent process of archiving student work samples to an electronic platform for assessment purposes. This presentation will document and highlight a Psychology/Sociology student’s experiences with developing an e-portfolio. The poster presentation will benefit students, faculty, and administration by helping to engage students in reflective thinking, moving them to take responsibility for their own education, and become better learners.

Baker, Nicole  Accounting & Finance  Room 2068  14:45 - 15:00
Pricing
United Kingdom Pound vs. United States Dollar I will be giving a power point presentation on the comparison of currency exchange rates between the Pound and the Dollar. I was inspired to do this project from a recent trip that I took to the United Kingdom, where I toured London and used the pound as my way of purchasing. The presentation will also cover exchange rate influences, purchasing power parity and the law of one price. The big mac index is also given as an example in this presentation to clearly display the exchange rate comparison.
Barney, Chris
Electrical & Computer Engineering
Coffelt Room 13:30 - 13:45
Design and Programming of an LED Cube
As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.

Barnett, Nicole
Economics
Pugsley Room 14:00 - 14:15
Casinos and Economic Growth
During the fourth quarter of 2009, Ohio voters finally said yes to a proposed constitutional amendment that allowed the creation of casinos in four cities: Cleveland, Columbus, Toledo, and Cincinnati. This made Ohio the 39th state to legalize casino gambling. Passage of this amendment was preceded by considerable debate on the effects of casino gambling on various components of the Ohio economy, including the effects on labor markets and state revenues. In the economic literature, too, most articles that discuss the advantages and disadvantages of casino gambling concentrate on specific social or economic outcomes, such as crime and employment rates. Few studies examine the effects of casino gambling on overall economic well-being or economic growth. The purpose of my study is to analyze the effect that casinos have had on states’™ economic growth. My econometric model uses economic growth rates for the 48 contiguous states created from panel data from 1997 to 2008. The results suggest that there is no statistically significant relationship between casino gambling and state economic growth except in the extreme case of Nevada.

Barth, Sammy
Mechanical & Industrial Engineering
Ohio Room 08:30 - 10:00
A Time Study At Brainerd Rivet Company
A Time Study Performed At Brainerd Rivet Company By Sam Barth Industrial systems Engineering Department Methods Engineering ISEN 3736 Youngstown State University Abstract: Background: Time studies are a useful tool in industry for establishing a time standard for accomplishing a task and subsequently for assessing possible improvements in the process. A time study was performed at the Brainerd Rivet Company in Girard, Ohio. The task chosen for study was the rivet packing operation. The individual tasks that were studied were the making of the boxes, closing and taping the package, and palletizing the boxes. The subject was videotaped and the process was timed using computer software. The process is then statistically analyzed and a time standard is set for the job. Results: The time standard will allow the facility to use the time standard in its scheduling activities as well as assess individual performance. It will also allow for review to see if the process may possibly be improved.

Bates, Ryan
Electrical & Computer Engineering
Coffelt Room 13:45 - 14:00
Encrypted Wireless Network for Vibration Data Acquisition
The integrity of U.S. bridges is to be monitored via wireless sensor networks to determine and monitor the structural health of a highway bridge. An algorithm will determine bridge health based on vibration data collected from a wireless network of SunSPOTs. This health index will further the efforts to save human lives, avoid costly repairs, prevent unnecessary reconstructions, and provide timely restorations. The basis for the hardware design is the Sun Small Programmable Object Technology, or SunSPOT. These devices contain a Squawk based Java VM and an IEEE 802.15.4 radio (Zigbee). The SunSPOT has digital I/Os on board to which a daughter card can be added. An attached daughter PCB houses an adjustable gain op amp and a single axis vibration sensor. The vibration sensor measures continuous and impulsive vibrations produced from automobile traffic. A network consisting of three SunSPOTs and their individual vibration sensors complete the mesh network. The network of sensors is integrated with a host computer to collect and organize the vibration data.

Beck, Julie
Human Ecology
Room 2068 10:30 - 12:00
The Electronic Portfolio: A Change in Culture
One way to foster and develop the reflective thinking process is to provide the student with a tool that allows longitudinal reflection of work. There is an increased focus (from all stakeholders) on accountability for student learning outcomes. The electronic portfolio (e-portfolio) has been adopted on many campuses as a means to integrate teaching, reflective learning, and assessment. Unlike the paper that is written, graded, and stored in a folder, the e-portfolio provides the student with a dynamic and systematic process of reflecting upon their educational and co-curricular experiences over time. As part of a pilot project, at Youngstown State University, Youngstown, Ohio, select academic programs and courses were enlisted to participate in the development of student electronic portfolios and the subsequent process of archiving student work samples to an electronic platform for assessment purposes. This presentation will document and highlight a Dietetics student’s experiences with developing an e-portfolio. The poster presentation will benefit students, faculty, and administration by helping to engage students in reflective thinking, moving them to take responsibility for their own education, and become better learners.

Bellamy, Frank
Understanding the Culture of High School Students with Behavior Problems as Viewed by School Counselors
This research proposal will engage a mixed method research approach (both qualitatively and quantitatively) in order to help uncover more expanded research questions and hypotheses to be tested in future research projects. The Qualitative Portion of this research will seek to understand the culture of high school students with behavior problems as viewed by high school Counselors. The intent qualitatively here is to uncover quantifiable questions for use in survey research and program applications. Quantifiable similarities derived from the qualitative research inquiry, to understand the culture of high school students with behavior problems could produce some valuable research facts. These research facts could be compared independently to the effect of which distance learning and computer aided high school course learning techniques have produce graduations in a normative student population. The quantitative portion of this research is to simply compare the high school graduation success rates of students who are involved in distance learning and computer aided education against the success of students enrolled in traditional high schools using the classroom course model. In addition, this research proposes the use of an anonymous Likert Attitudinal Scale Questionnaire to high school councilors and recent high school graduates for a broader quantifiable inquiry.
How do Budgets Affect the Murder Rate?

Crime has always been part of our society; and for the foreseeable future will remain so. Unless you're a recluse and out of touch with the world, everyday you read a newspaper or turn on a television you see or hear about crime that's been perpetrated on some segment of society. Complex systems, aka the criminal justice system, have evolved to address our crime problem. These complex systems don't exist without a cost. Most communities dedicate a large portion of their budgets to the C.J. system. Dependent on these budgets is how communities decide to go about fighting their war on crime. Some of the variables budgets affect is how many police officers are working, what equipment is bought and how much training is given. Decisions of how much money needs to be budgeted to the criminal justice system are always a subject of much debate so understanding how money spent affects crime is essential. The crime of homicide is a major problem that costs our society immensely in ethical, moral and monetary ways. Our society believes that homicide is the worst possible crime that can be perpetrated on society so how do we contend with it? We should start with what variables affect the murder rate. I propose to research, how money spent affects crime is essential. The main question we are addressing in our research is: Who do respondents believe will use higher levels of directness when making requests and who do respondents expect to be more indirect in request making? We initially suspected that we would find that respondents expect older women to offer more indirect requests but do not expect younger people or older men to be as likely to follow that practice. Our data gathering methods returned a sample of about 75-100 (analysis continues and some may be discounted) of scenario questionnaires. These questionnaires are multiple choice scenarios that have 4 possible responses. The responses have been secretly coded according to speech direction and according to directness. Our survey was completely voluntary and anonymous. Further levels of analysis will identify patterns of opinion with regard to gender and age groups within the scenarios and among the respondents. We have identified our subjects of data collection as YSU students taking Beginning and Intermediate Spanish classes and National College students. At this time, final results and conclusions are forthcoming. Possible applications for our research: Why do people have these socially-constructed expectations? Are these stereotypes? If so, what qualifies them as stereotypes? Have our findings indicated any change from the body of literature and research that the group consulted?

Natural Gas Engine Conversion

The presentation discusses a two-semester, multidisciplinary Engineering Technology project where a 2.2L Cavalier engine is converted from gasoline fuel to natural gas fuel. Modifications include completely redesigned ignition, control, and fuel systems. Key engine parameters are variable, and then monitored, displayed, and recorded. This project will remain a permanent improvement to the Mechanical Engineering Dynamometer Lab, allowing other students and faculty to use the system in research or teaching scenarios.
Brown, Mark  
Mechanical & Industrial Engineering

Design and Construction of A Human Powered Moonbuggy

The moonbuggy project is part of a student competition known as the NASA Great Moonbuggy Race. This competition is held every year during the spring at the U.S. Space & Rocket Center in Huntsville, Alabama. Approximately fifty universities from all around the world compete for the best time. The event involves a vehicle erection time, course run time, and penalty time. The vehicle erection time is the amount of time it takes to erect the vehicle from a storage condition to an operable, drivable state. The course run time is the amount of time it takes a team to complete the course. The penalty time involves different penalties that are garnered during the vehicle erection and race. Penalties are attributed for a plethora of reasons from getting out of the moonbuggy to not completing an obstacle. The course is composed of harsh terrain conditions and several obstacles that emulate the surface of the moon. A collapsible human-powered vehicle was designed and fabricated that had design specifications provided by NASA to fit in a maximum volume of $4\times4\times4$ in a collapsed fully assembled state. The vehicle was powered and controlled by one woman and one man. The design was improved by making a lighter frame out of aluminum; in addition, other things were improved: a new gearing system, more absorbent shocks, and all terrain tires. The challenge in constructing the moonbuggy was to keep it strong and durable while decreasing the weight of the vehicle.

Brand, Scott  
Chemical Engineering

Using Mathematics to Examine the Operation of an Electrochemical Cell

The basics of an electrochemical cell were explored. In order to evaluate and understand the current distribution across an electrochemical cell, mathematical equations were investigated. These equations are expressed through upper-level calculus and differential equations. An objective of the project was to gain a better understanding of these equations.

Brothers, Sarah  
Mechanical & Industrial Engineering

The Impact of CNTs on Actin Organization

The mechanism of carbon nanotube (CNT) induced cytoskeleton disruption was investigated, specifically regarding the protein actin. In the presence of CNTs, cell proliferation was impeded and alterations in actin organization were observed in a dose-dependent manner. The actin was disrupted in such a way that the actin density migrated away from the cell membrane and basal plane, and clumps of actin were visible instead of long filaments. It was discovered that actin organization could adapt and repair if cells were given time to recover after CNT removal. Despite the significant confluency increase during the recovery duration, it was unclear if proliferation was fully recovered because of CNT treatment, such as fused cytoskeletons and multinucleated cells, were still apparent. Actin disruption was found to begin occurring immediately after CNT addition. It was also concluded that CNTs did not physically interact with actin filaments in a way that would prevent them from depolymerizing. From these results, it can be hypothesized that the CNT-actin interaction is as dynamic as the actin equilibrium and CNTs are continuously ingested by cells during exposure.

Brown, Mark  
Mechanical & Industrial Engineering

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Brown, Alysha  
Nursing

Medication Errors and Distraction: The Link and How to Prevent it

The objective of this work is to discover what the current literature shows in regards to medication errors during preparation and administration that are attributable to nurse distraction and effective ways to reduce these errors. A review of literature was conducted using CINAHL, AHRQ and Cochrane databases. Inclusion criteria were acute-care settings, adult populations and published dates between the years of 1995 and 2009. Nurses and researchers commonly rank distraction as one of the top sources of medication administration and preparation error. One intervention aimed at reducing distractions included having nurses wear a specific article of clothing while administering medications to remind staff, families and patients to limit non-emergent interruptions. Also, relocating medications from a central cart to an individual cupboard in the patient’s room was studied as a way to limit distractions during administration. Finally, educating nurses and other personnel on the importance of working together as a team to limit distractions was effective in reducing interruptions. It is well documented in the literature that distractions and interruptions are a leading cause of medication errors; however, little research focuses on effective interventions to prevent the distractions. More studies are needed to replicate the interventions previously studied, as well as, other interventions to reduce nurse interruptions during medication rounds.
Hypertension is a chronic illness characterized by a significant increase in blood pressure. This increase in blood pressure causes many physiological changes to the circulatory system, among them is left ventricular hypertrophy (LVH). LVH is characterized as an increase in the size of cardiac myocytes and an increased heart mass to body mass ratio, this has been shown to cause drastic restructuring to its extracellular matrix (ECM), allowing for the heart to remain in this state. Evidence suggests alterations in the ECM, particularly the increased collagen deposition, may be regulated by small leucine rich proteoglycans (SLRPs). SLRPs are present in the cardiac ECM and have a high affinity for collagen. While bound to collagen, SLRPs have been shown to inhibit the ability of the collagen digesting matrix-metalloproteases (MMPs). Numerous different SLRPs have been discovered to date, they show differences in efficacy of MMP inhibition. Decorin (Dec), is a SLRP that has been shown to have a high degree of MMP inhibitory activity. SLRP synthesis is thought to be regulated by sex hormones such as estrogen, due to the higher incidence of LVH in post-menopausal females. This project will determine if female SHRs have a higher content of decorin than male SHRs (when adjusted for cardiac mass). This study will analyze two-dimensional gel electrophoresis (2D-PAGE) profiles of male and female SHRs and compare them to decorin bound collagen 2D-PAGE profiles. Sample peptide fragments that show similarity (pI and molecular weight) with decorin bound collagen fragments will be analyzed for quantity of decorin present.

The field of robotics has expanded greatly in the second half of last century. Robots now work in manufacturing, patrol next to our soldiers, and park our cars. The MicroMouse competition is a hallmark in the field of robotics. A robot has been constructed at Youngstown State University to compete in this event. Various areas of electrical and computer engineering have been explored; micro-electronics to computer simulation and hardware interface to low-level artificial intelligence. The advantages of hardware types to software algorithms are discussed and a demonstration of the robot is shown.

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The presentation will focus on my summer semester interning abroad as a photographer for The Prague Post in Prague, Czech Republic. It will include a variety of experiences working with the locals and photographing Czech life as well as personal experiences, history of popular sites and areas, cultural differences, and my overall observations on daily life in Prague.
The Effects of Housing Treatment on Anxiety-like Behaviors

Numerous studies have shown that external factors, such as housing conditions, affect data collected from preclinical studies. However, the magnitude of these effects has not been thoroughly researched. Anxiety levels in test subjects will affect data through a variety of mechanisms. To better understand the relationship between environment and anxiety, this study explored the effect of housing conditions on anxiety-like behavior.

Two variables typically associated with housing were studied: socialization and enrichment. Twelve, male subjects were randomly assigned to four housing treatment groups: (1) three per cage, enriched environment, (2) three per cage, non-enriched environment, (3) one per cage, enriched environment, (4) one per cage, non-enriched environment. All housing environments provided food, water, and bedding; however, the enriched environment included a variety of toys and objects. Before subjects were assigned to their treatment groups, baseline behavioral measures were taken. Two different tests were used to examine behaviors associated with anxiety: the open field test and the elevated plus maze. After being placed in their treatment groups, these behavioral parameters were investigated over the course of eight weeks, one time per week. Data were manually collected and entered into SPSS Statistical Software. The data indicate that housing environment significantly affects anxiety-like behaviors.
Field Investigations in Geology: A New Approach to Geoscience Education

Field Investigations in Geology is an upper division geology course designed to develop basic field mapping skills and to provide a framework for understanding geologic history and the natural processes responsible for geologic change. The course involves a one-week field experience on the tiny remote island of San Salvador, Bahamas. Students are introduced to orienteering, GPS navigation, aerial photo and topographic map interpretation techniques, as well as concepts related to global sea level change, coastal change, and interpretation of ancient marine and shoreline environments. The course participants consisted of twenty students from a wide variety of academic disciplines; Biology (1), Chemistry (2), Education (9), Geology (3), Information Technology (1), Psychology (3), Undecided (1). The teaching methods were assessed using five separate evaluation instruments: a pre-field experience and post-field experience fifty question general topic survey, a pre and post orienteering ten question survey, a pre-field experience and post-field experience orienteering exercise, eight field book exercises dealing with individual and related topics, and one comprehensive field exercise conducted at the end of the field experience. The preliminary findings of the research are presented.
Daisher, Melinda  Biological Sciences  Ohio Room  15:30 - 17:00

**Chitin Synthase Expression in the Dimorphic Fungus Penicillium marneffei**

Penicillium marneffei is a pathogenic fungus endemic to South-east Asia. It is the only Penicillium species that displays thermally dependent dimorphism. At 25°C, the fungus grows as a filamentous mold, but grows as a fission yeast at 37°C. The pathogenicity of P. marneffei is associated with this dimorphism. Presumably, dimorphism directly reflects changes in the cell wall structure. A major cell wall component is chitin. Seven chitin synthase genes have been identified in P. marneffei and each is presumed to serve different functions during cell wall development, hyphal growth, conidiospore development and septum formation. Discovering which genes are expressed at specific times and in which regions would provide a better understanding into the growth and morphogenesis of P. marneffei. A timeline of chitin synthase expression was generated using RNA extraction of mold and yeast at different growth times along with RT-PCR for all seven chitin synthase genes. Our results indicate that many of these genes in P. marneffei are differentially expressed and specific to particular modes of growth.

Daugherty, Jack  Geography  Bresnahan I and II  11:15 - 11:30

**Understanding Abandonment: A Descriptive Analysis of Vacant Properties in the Wick Park Neighborhood**

Vacant and abandoned properties in once-vibrant urban neighborhoods have become a serious epidemic. The primary source of research has been conducted via policy proposals and community plans that attempt to suggest redevelopment strategies. However, some community plans merely scratch the surface of the vacancy trends and patterns in a given community. The unique spatial patterns and property statistics for each neighborhood must be understood in order to propose specific and viable solutions. This paper produces a descriptive study of vacant property for the Wick Park Neighborhood in Youngstown, Ohio, an area targeted by local stakeholders for redevelopment. This study will focus on site and situation characteristics for vacant parcels in the neighborhood by looking at basic attributes such as property ownership, land use, and foreclosures in a spatial and statistical context to provide a detailed understanding of the current state of these properties and to verify trends proposed by community plans and vacant property reports.

Davner, James  Mechanical & Industrial Engineering  James Gallery  11:45 - 12:00

**Supercharger Pulley: Stress Distribution and Analysis**

An automobile supercharger ultimately increases the power output of the engine and is driven by a belt pulley system. As rotational speed increases on a pulley, the driving force or applied torque will decrease because they are inversely proportional. When the driving belt force decreases it in turn causes the inertial load to increase making the internal stress in the pulley higher. A continuation of last year’s supercharger pulley research, this project is a computational approach to determining the stress distributions in the pulley for various input RPMs. Two pulleys are to be examined; one with a carbide coating and one without a carbide coating. Assuming that power at the rotating shaft remains constant; the acting forces on the pulley are calculated and then simulated on the pulley using Finite Element Analysis (F.E.A.) software. The location of the maximum Von Mises equivalent stress will be determined by the F.E.A. software. Also a plot of the Von Misses stress for the various rotational speed inputs will be created for different positions on the pulley. By knowing the power input, angle of contact of the belt on the pulley, and the pulley disk dimensions we conducted a complete stress analysis of the two pulleys.

DeCarlo, Gina  Geological & Environmental Science  Jones Room  13:45 - 14:00

**Heavy metals in Urban Garden located in Youngstown, Ohio**

The Youngstown, Ohio area has suffered population decline over the past 40 years since the steel mills shutdown. This has resulted in many areas with dilapidated homes. One solution has been to remove the structures to prevent harm to people and their lowering property values. Various groups in the community have acquired these now vacant lots in attempts to beautify the neighborhood. One such group, Grow Youngstown, has made it their mission to promote local food growth by raising urban agricultural skills and available resources. There is concern that there is a potential of heavy metal contamination on the site from the structures, previous land uses and atmospheric deposition originating from the steel industries. A few home sources of heavy metals include lead based paints; batteries with lead, nickel and cadmium; mercury and arsenic from insecticides, fungicides and adhesives. The area obtained by Grow Youngstown was about 8 city lots on the corner of Fairgreen Avenue and Ohio Avenue. This site was sampled in a grid pattern with 15 foot (or meter) squares. Composite samples were taken using a 5 spot pattern from each grid square and separated into two soil layers: from the surface to 6 inches deep (15.2cm) and 6-12 inches (15.2-30.4cm) deep. The soil was analyzed for total metal using EPA Method 3050B. The soil samples were tested for the following metals: Arsenic, Cadmium, Cobalt, Copper, Chromium III, Chromium VI, Nickel, Lead and Zinc. Zinc had the highest overall average concentration (136.4mg/L) followed by lead (98.1mg/L) then copper (60.2mg/L). Arsenic levels ranged from 13.7-18.6mg/L. There were no detected areas of specific concentration in the garden for any metal and the results do not indicate any potential hazard. The levels that were found are below the Ohio State Guidance levels for each metal respectively.

DeEulio, Dianne  Humphrey Room  11:00 - 11:15

**Teaching Reading Skills: Keep Things Simple, but Not Simpler**

Teaching reading skills with phonics rules has not worked for all students. Teaching reading skills using the whole language approach has proven ineffective for the majority of students in the United States and other English speaking countries. A reached based method helping all kinds of learners to become more proficient readers will be presented. This method will show educators that there is a complex logic to our language and how to present that logic to the emergent reader as well as the struggling reader. Einstein figured out that a difficult concept could be explained in a very brief way. E = MC 2. He said, "Make things as simple as possible but not simpler." The theory to be presented follows his advice.
A Tale of Two Worlds: A Second Life for Higher Education?

With the advent of rapidly changing technology in the 21st century, new recreational activities and subsequent business models have inevitably unfolded; moreover, entire industries have emerged and challenged the way people and businesses function and interact. Specifically, the proliferation of online video games and virtual worlds such as Second Life have fundamentally altered consumers' lifestyles and instilled change in the way corporations must think and conduct business in order to reach their target markets. Although not all demographic segments are considered throughout the study, this exploratory research illuminates the virtual world industry, the explanations for growth of the industry among its target market, and the emerging trends for entrepreneurial ventures and integrated marketing communications inside the medium. The research explores the effectiveness of operating and promoting higher education in Second Life. The results illustrate consumers 17-24 years old still rely on more consistent, traditional media for information content related to higher education. The development of a business model and marketing mix in such vehicles as Second Life that often feature uncensored content may not serve as an appropriate method of connecting with the target demographic. Benefits of utilizing the innovative medium for commerce, education, and promotion include rapid growth of the industry, sophisticated segmentation, and increased brand awareness and reach related to the added reality that such content contributes. Further research and recommendations are suggested in making Second Life a viable option for providing and promoting higher education.

Synthesis of bis(2,2,2-trifluoroethyl) (Z)-vinyl Phosphonates from bis(2,2,2-trifluoroethyl) 1-alkynylphosphonates using Lindlar's Catalyst

A new method for the synthesis of bis(2,2,2-trifluoroethyl)-beta-ketophosphonates from 1-alkynylphosphonates is described. 1-Alkynylphosphonates can be treated with primary and secondary amines to prepare enamine vinyl phosphonates. Bis(2,2,2-trifluoroethyl)-beta-ketophosphonates are obtained after hydrolysis of the enamine vinyl phosphonate.

Architectural Terra Cotta and Downtown Youngstown

The wide use of architectural terra cotta was an important transitional development on the road to modern architecture that is often overlooked or unknown. The design of the first modern day skyscrapers were made possible by using terra cotta because it is light weight, fire proof, inexpensive and easy to mass produce. However, new building materials such as plastic, glass, and new metals soon replaced terra cotta for similar reasons. Due to some problematic attributes of the material, and the nature of our culture, terra cotta was soon forgotten. The use of terra cotta in architecture today is rare, and the buildings that remain represent a period of anomaly in American architecture that will never reoccur. Architectural terra cotta plays a unique role in the history of American architecture from the late 19th century to the early 20th century. Many large American cities continued to expand and urban development destroyed many terra cotta buildings. However, due to a massive halt in industry during the mid 20th century, Youngstown, Ohio stood frozen in time. Since the economic system in Youngstown has yet to recover, Youngstown, Ohio has preserved a condensed wealth of diverse terra cotta facades.

The Penguin Odyssey at Youngstown State University: Exploring the Effects of Faculty-Led Study Abroad Tours

As globalization continues to sweep across the world changing the way societies must think and act, the demand for an international education has become imperative. To meet the demands of the global marketplace, Youngstown State University has provided students from a variety of disciplines with opportunities to interact with their international peers, develop appreciation and understanding of foreign cultures, and engage in field work relevant to their areas of study. Through application of our collective qualitative research and cross-cultural studies in San Salvador, Hong Kong, Shanghai, Beijing, London, and Dublin, we conclude that faculty-led study tours allow students to transcend the traditional classroom setting and gain invaluable exposure to global travel in diverse cultures and their various stages of development.

Encrypted Wireless Network for Vibration Data Acquisition

The structural integrity of U.S. bridges is to be monitored via wireless sensor networks to determine and monitor the structural health of a highway bridge. An algorithm will determine bridge health based on vibration data collected from a wireless network of SunSPOTs. This health assessment will further the efforts to save human lives, avoid costly repairs, prevent unnecessary reconstructions, and provide timely restorations. The basis for the hardware design is the Sun Small Programmable Object Technology, or SunSPOT. These devices contain a Squawk based Java VM and an IEEE 802.15.4 radio (Zigbee). The SunSPOT has digital IOs on board to which a daughter card can be attached. An attached daughter PCB houses an adjustable gain op amp and a single axis vibration sensor. The vibration sensor measure continuous and impulsive vibrations produced from automobile traffic. A network consisting of three SunSPOTs and their individual vibration sensors complete the mesh network. The network of sensors is integrated with a host computer to collect and organize the vibration data.
One way to foster and develop the reflective thinking process is to provide the student with a tool that allows longitudinal reflection of work. There is an increased focus (from all stakeholders) on accountability for student learning outcomes. The electronic portfolio (e-portfolio) has been adopted on many campuses as a means to integrate teaching, reflective learning, and assessment. Unlike the paper that is written, graded, and stored in a folder, the e-portfolio provides the student with a dynamic and systematic process of reflecting upon their educational and co-curricular experiences over time. As part of a pilot project, at Youngstown State University, Youngstown, Ohio, select academic programs and courses were enlisted to participate in the development of student electronic portfolios and the subsequent process of archiving student work samples to an electronic platform for assessment purposes. This presentation will document and highlight a Dietetics student’s experiences with developing an e-portfolio. The poster presentation will benefit students, faculty, and administration by helping to engage students in reflective thinking, moving them to take responsibility for their own education, and become better learners.

Dhingra, Amitha
Production of Monoclonal Antibodies against Staphylococcus aureus Type 5
Staphylococcus aureus is the strain that most commonly infects humans, causing illnesses ranging from minor skin infections to life-threatening diseases. Each year, about 500,000 patients in American hospitals contract a staphylococcus infection. Our goal is to develop hybridomas that produce monoclonal antibodies against Staphylococcus aureus Type 5. A hybridoma is a fusion of a myeloma cell and a cell that is producing a specific antibody; hybridomas are capable of secreting the specific antibody over a long period of time. These monoclonal antibodies will specifically bind to only Staphylococcus aureus Type 5 and can help quickly detect the bacteria for clinical use. The hybridomas are produced using MRC-5 feeder cells and P3X myeloma cells. Subcloning is done by diluting the solution until only one cell is present in each well of a plate. An indirect enzyme-linked immunosorbent assay (ELISA) test will be done on the supernatant of each well to test if the monoclonal antibodies bind to the Staphylococcus aureus Type 5 bacteria.

Diorio, Melanie
Gli eroi del Risorgimento
For this research project, I treated the heroes of the Italian Risorgimento, which translates into resurgence, of the mid-1800s. This movement marks the unification of the country of Italy. Many historical figures played important roles during this key political movement, like Giuseppe Garibaldi, Giuseppe Mazzini, and Camillo Cavour. I completed research on these three men who contributed significantly to the Risorgimento. First, I read and took notes on primary texts, which included film strips and accompanying print materials written in Italian. Then, I constructed initial and final drafts of narrative slides of a comprehensive PowerPoint presentation, which will be the forum for my QUEST segment. I found that although these three men were completely different from one another and played contrasting roles during this movement, their goal was ultimately the same: to unify their country of Italy. I shortened the length of my original presentation and now have bilingual slides (half-English, half-Italian) for the purposes of the QUEST program.

Doherty, Shannon
Metal Contamination on the Floodplains of the Mahoning River
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Doinoff, Cassandra
Gender and Regional Differences in ICa-L Distribution in Adult Rabbit Right Ventricle Influence AP Duration and the Propensity for EADs in a Model of Long QT Syndrome Type 2
Sex and apex-base differences in cardiac L-type calcium current (ICa-L) levels have been found to modulate vulnerability to arrhythmogenic early afterdepolarizations (EADs) in a drug-induced model of Long QT Syndrome Type 2 (LQTS2) in adult rabbit heart left ventricular epicardial myocytes. However, it is unknown whether similar gender and regional differences in ICa-L exist in the right ventricle. To further investigate the role of ICa-L as a determinant of EAD genesis, the apex-base distribution and biophysical properties of the calcium current in adult male and female right ventricles were assessed by the patch clamp technique and a modified Luo Rudy dynamic model of the cardiac action potential (AP). We found that ICa-L density measured at 0 mV was 92.1% higher in female (7.3±1.2 pA/pF; n=6) compared to male base myocytes (3.8±0.5, n=9, p<0.0008). Analysis of regional differences in ICa-L in female right ventricle revealed 62.2% higher current density at the base (7.3±1.2 pA/pF, n=6) compared to female apex myocytes (4.5±0.5 pA/pF, n=8, p=0.04). There were no significant sex differences in ICa-L density in apex myocytes. Incorporation of ICa-L differences into the model showed that suppression of the rapid delayed rectifier potassium current to mimic LQTS2 resulted in increased AP duration and enhanced propensity for EADs in simulated female base myocytes. Taken together, these data demonstrate that sex and apex-base differences in right ventricle ICa-L correlate with the LQTS2-arrhythmia phenotype found in adult rabbit left ventricular epicardium and support the hypothesis that higher ICa-L underlies the propensity for EAD genesis.

Dewberry, Timothy
The Electronic Portfolio: A Change in Culture

Doherty, Shannon
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The Effects of Housing Treatment on Anxiety-like Behaviors

D'Orio, Madeline  
Biological Sciences  
Ohio Room 10:30 - 12:00

Numerous studies have shown that external factors, such as housing conditions, affect data collected from preclinical studies. However, the magnitude of these effects has not been thoroughly researched. Anxiety levels in test subjects will affect data through a variety of mechanisms. To better understand the relationship between environment and anxiety, this study examined the effects of housing conditions on anxiety-like behavior. Two variables typically associated with housing were studied: socialization and enrichment. Twelve, male subjects were randomly assigned to four housing treatment groups: (1) three per cage, enriched environment, (2) three per cage, non-enriched environment, (3) one per cage, enriched environment, (4) one per cage, non-enriched environment. All housing environments provided food, water, and bedding, however the enriched environment included a variety of toys and objects. Before subjects were assigned to their treatment groups, baseline behavioral measures were taken. Two different tests were used to examine behaviors associated with anxiety: the open field test and the elevated plus maze. After being placed in their treatment groups, these behavioral parameters were investigated over the course of eight weeks, one time per week. Data were manually collected and entered into SPSS Statistical Software. The data indicate that housing environment significantly affects anxiety-like behaviors.

The Effects of Depression on Functional Capacity in Chronic Obstructive Pulmonary Disease (COPD) Patients

Drotar, Lindsay  
Biological Sciences  
Ohio Room 10:30 - 12:00

Depression is a widespread psychological disorder, and previous research has demonstrated that it is associated with adverse health outcomes in persons with Chronic Obstructive Pulmonary Disease (COPD). The objective of this study was to assess depression in a sample of 27 patients with COPD (through use of the Beck Depression Inventory, BD), and to examine its relationship with lung function (as defined by Forced Expiratory Volume, FEV1) and functional capacity (classified by six-minute walk distance, 6MWD). Data were analyzed using SAS 9.1. Descriptive statistics were used to show the mean and range for BDI, FEV1 and 6MWD. T-tests were used to determine the differences in FEV1 and 6MWD between patients who did or did not present with clinical depression (i.e. scores ≥10 or <10, respectively). Approximately seven patients (26%) were depressed. Differences were noted between depressed and non-depressed individuals for FEV1 (0.87 ± 0.24 L/s versus 1.37 ± 0.66 L/s, p = 0.0088), but not for 6MWD. In contrast to previous studies, we found that depression is related to lung function and not functional capacity, in patients with chronic lung disease, however our findings may have been limited by the small size of the sample. Furthermore, the directionality of the relationship between depression and lung function is unclear, and requires further elucidation.

The Effects of Acclimation Sessions on Behavioral Measurements

Drotar, Lindsay  
Biological Sciences  
Ohio Room 10:30 - 12:00

A standard protocol in preclinical research includes acclimation of the test subjects. This procedure acts to reduce stress and anxiety in the subjects; however, the number of acclimation sessions is highly variable among studies. To better understand how the number of acclimation sessions alters behavioral measurements, this study examined the effects of acclimation and the investigator on behavioral measurements. Sixteen male subjects were used in this study, and two researchers, blinded to the treatment groups, collected all data. Subjects were randomly assigned to four treatment groups: (0) four subjects per cage, no acclimation sessions, (1) four subjects per cage, one acclimation session, (2) four subjects per cage, two acclimation sessions, and (3) four subjects per cage, three acclimation sessions. All treatment groups were provided with standard housing conditions, including food, water, and bedding. Acclimation sessions, including acquainting each subject to both investigators for five minutes per session, were performed on treatment groups 1, 2, and 3 within a week. In the following week, behavioral measurements, including withdrawal latency to a heat stimulus and withdrawal threshold to a mechanical stimulus, were taken. Behavioral data were analyzed by each investigator via a two-way ANOVA using the GraphPad and SPSS Software. These data indicate that the number of acclimation sessions affects the behavioral measurements.

The Effects of Functional Capacity in Chronic Obstructive Pulmonary Disease (COPD) Patients

Dugan, Heather  
Human Performance & Exercise Science  
Ohio Room 13:30 - 15:00

Supermileage Vehicle

D'Orio, Madeline  
Biological Sciences  
Ohio Room 10:30 - 12:00

Polarized Light and Its Applications in Three-Dimensional Imaging and Entertainment

Esker, Tara  
Psychology  
Ohio Room 13:30 - 15:00

Study Abroad in Winchester, England

Esker, Tara  
Psychology  
Ohio Room 13:30 - 15:00

Supermileage Vehicle

D'Orio, Madeline  
Biological Sciences  
Ohio Room 10:30 - 12:00

With the current economy recovering from a recession, high fuel economy is used more often than it has in the past. One of the areas includes the use of gasoline. Fuel economy is used often in today’s car industry as the basis of marketing. The ability of a lightweight vehicle to obtain the most fuel economy possible was tested. The vehicle was built to specifications provided by the Supermileage Vehicle Competition rulebook, which is sponsored by the Society of Automotive Engineers (SAE). A lightweight frame, aerodynamics, and a modified engine were the basis for achieving maximum fuel economy. The overall goal was to achieve a high miles-per-gallon rating, while following the standards of the competition. The overall design met the specifications mentioned in the SAE rulebook. Some of these included weight, brakes, and safety issues. All were taken into consideration in the design, while also maintaining an operative, fuel efficient vehicle.

Polarized Light and Its Applications in Three-Dimensional Imaging and Entertainment

Esker, Tara  
Psychology  
Ohio Room 13:30 - 15:00

Utilized in such films as Pixar's UP and James Cameron's Avatar, circularly polarized light holds the key to making two-dimensional images 'pop' into three-dimensions pace. However, while producing an interesting effect; few people understand what effort goes into optimizing the image for public entertainment. Using various polarizers and lasers of different wavelengths, we conduct experiments to determine which wavelengths produce the most stable, optimal image quality. Likewise, we rotate the circular polarizers and compare the resulting intensities to known laws, such as Malus's Law. From this research, we identify patterns in three-dimensional films, and identify what makes three-dimensional effects successful.

Study Abroad in Winchester, England

Esker, Tara  
Psychology  
Ohio Room 13:30 - 15:00

This poster presentation will focus on a forty page book we wrote detailing our experiences while studying abroad in Winchester, England. Our goal with this book/project is to provide advice to students at Youngstown State who would like to study abroad. This project describes in detail our personal, cultural and academic experiences in the United Kingdom. This book primarily explains the detailed preparation process. Overall, this project provides information from a student's perspective to future study abroad students.
We believe the attitude is more permissive when age is a factor. We believe our data will reveal trends in acceptance and our data will reflect our hypothesis that older men use endearments more often toward younger females in service related jobs.

Potential respondents are not obligated to begin nor continue a survey. They may opt out at any time. We believe location. (See attached for sample survey) The anonymous nature of the surveys will be clearly noted at the beginning of the survey. Each instructor in the classroom. The survey is completely anonymous and the information used is to be kept confidential, to be viewed by Mary Anne, Adam and Steve. There will no names used, nor will it be necessary for respondents to reveal campus location. These settings, but the attitudes and connotative meanings behind these terms. We will gather our data with the use of short survey. Twenty patients between the ages of 30 and 80 years participated. Mean length of MDI use was 8.6 years (+ SD 12.4). Hand strength problems were reported in 38.6%. The LeverHaler took more than twice the time to use when compared with those of traditional design. All patients preferred traditional designs, p < 0.002. CONCLUSIONS: Design did not influence patient preference. Traditional designs were acceptable to patients with strength problems.

The 1960s and 1970s were a time of radical experimentation in art, and especially in the realm of jazz and contemporary music. An example of this experimentation was an emerging movement of minimalism, pioneered by composer and saxophonist La Monte Young. Young found in minimalism an outlet for experimentation with static sounds that fascinated him but shocked his contemporaries. Listening for static sounds and their overtones -- pitches produced by the interference of other sound waves -- led the composer to experiment with tuning systems, specifically equal temperament and just intonation. Young’s interest in tuning systems coincided with his formation of Theater of Eternal Music in 1961 which influenced his major work, The Well Tuned Piano, and helped shape his philosophy of music. The purpose of this presentation is to explore the development of La Monte Young’s philosophy on static sound and tuning in his composition of The Well Tuned Piano.

The aim of this study is to understand the role of specific titin domains in muscle development and function. This lab has been studying a specific titin domain RMMG6. Ultimately we want to transfect mouse myocytes. The RMMG6 on the cell's activity and development. The work presented here describes the construction of a fluorescent green protein/ ARM immunogenic domain fusion protein (gfp/RMMG6). The plasmid chosen as the fusion vector is pAcGFP-C1, providing for a fluorescent marker protein. RMMG6 is derived from a plasmid originally constructed in this lab containing the rmmg6 gene (GenBank accession # EU428784). DNA sequence and restriction enzyme analysis of the resulting plasmids, indicate that we achieved fusion gene should be a composite protein consisting of the fluorescent tag gfp and RMMG6. This will allow use to trace the RMMG6 within the muscle cells and thus define what part of the cell RMMG6 localizes to and what potential role it may play in structure/ function of the developing myocytes.

Spacers augment medication administration for metered dose inhalers (MDI). The LeverHaler is a spacer designed to assist patients with hand strength problems to actuate an MDI. This study sought to determine if spacer design affected spacer preference. We hypothesize that hand strength will not affect the patient’s choice. METHODS: Adult patients enrolled in a pulmonary rehabilitation program with the diagnosis of asthma or chronic obstructive pulmonary disease and MDI experience were enrolled. Proper use of an MDI with the LeverHaler, AeroChamber, and MediSpacer was reviewed with each patient. Participants provided return demonstrations to verify an understanding of device use. Procedural errors noted during return demonstrations were corrected prior to the data collection. Time to administer a sham MDI dose with each spacer was recorded. Subjects completed a questionnaire evaluating the characteristics, spacer ease of use, type of hand strength problems, length of MDI use and prior experience with a spacer. Descriptive statistics were used to report study population demographics. Preferences for spacer use were analyzed with Chi-Square. Statistical significance was established at p < 0.05. RESULTS: Twenty patients between the ages of 30 and 80 years participated. Mean length of MDI use was 8.6 years (+ SD 12.4). Hand strength problems were reported in 38.6%. The LeverHaler took more than twice the time to use when compared with those of traditional design. All patients preferred traditional designs, p < 0.002. CONCLUSIONS: Design did not influence patient preference. Traditional designs were acceptable to patients with strength problems.

As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.

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Gerstnecker, Melissa

Expression Kinetics of the Quinic Acid (qa) Gene Cluster in Neurospora crassa

Eukaryotic genes are tightly regulated though a highly complex system with a number of checks and balances. When environmental conditions change, organisms need to adapt. Part of this reaction may be a shift in gene expression based on the regulation of that particular gene or gene cluster. The quinic acid (qa) gene cluster of Neurospora crassa is such a system. N. crassa is a fungus that is widely used to study molecular genetics. The regulation of the qa gene cluster in the wild type strain of N. crassa, 74A, is being studied. Expression of the qa cluster is triggered by the carbon source quinic acid. When the fungus is grown on quinic acid as a sole carbon source, the qa genes are expressed at high levels. However, when a preferred carbon source, such as dextrose, is used, the qa genes are repressed. The focus of this study is the kinetics of induction of the various quinic acid genes as the environment changes. RNA was isolated from N. crassa grown under various conditions. Transcript levels of the various genes are detected by SYBR Green using quantitative reverse transcriptase polymerase chain reaction (qRT-PCR). Results are normalized to the internal control gene, 18s rRNA and analyzed with Bio-Rad iQ5 software. These results reveal that the up-regulation in expression of the qa genes is detectable within 15 minutes of incubation with quinic acid and reaches a peak levels within 3 hours.

Frankland, Dan

Robot Arm for Medical Applications

The robotic arm was designed for real-time applications to which it would operate over a network. The design purpose was to construct a network host-server connection through which an operator that may be able to perform tasks from a remote location. This would give the user freedom to operate on objects or complete projects at their leisure without the need to travel to the given location. The design was made from aluminum in order to give it strength and durability. The control interfaces, which were implemented to provide user control and to facilitate the movement of the arm, were written in C# language and allow real-time user control through USB connectivity. The host-server connection was achieved via pre-existing VNC freeware. The result of the design gives the user freedom to rotate freely around a two feet radius, and the robotic arm can lift multiple objects of size and weight.

Furnkase, Lauren

Health Professions

The Effects of Antioxidant Deficiency on Functional Lung Capacity in Chronic Lung Disease are Moderated by the Sex of the Patient.

Previous data have shown that a poor dietary intake of nutrients, and malnutrition are predominant in persons with chronic lung disease (i.e. COPD), and it may be that poor antioxidant intake exacerbates the pro-inflammatory progression that occurs in this disease. The objective of this study was to assess habitual dietary intake of antioxidants in a sample of patients with COPD and to examine the relationship between these dietary variables and functional lung capacity. Twenty participants completed food-frequency questionnaires in order to assess habitual dietary intake of Vitamins A, C, D, E and selenium. Participants also underwent concomitant assessment of lung function in order to measure forced vital capacity (FVC). General linear models were used to test for effects of nutrient deficiency status (i.e. over or under the DRI value for each nutrient) as a categorical covariate (Deficient, DE or Not Deficient, NDE), sex, and all interactions of these variables, with a primary endpoint of FVC. Two-way interactions of deficiency status and sex were found for Vitamins A, C, and D, where FVC was lower in the DE compared to NDE groups in male, but not female, participants. In conclusion, the contribution of antioxidant deficiency to decreased lung function in COPD patients appears to be more pronounced in men compared to women, and strategies for dietary modification and/or supplementation regimens should be implemented accordingly.

Galioto, Pamela

Biological Sciences

Lung Function on a Daily Basis

Our experiment is designed to compare and contrast the human lung capacity and breath period in differing physical situations of the body. The members of our group, five subjects total, will be studied while performing four differing breathing situations; standing, sitting, laying down, and after exercise. Breathing data will be collected using a spirometer and the accompanying equipment. Data will then be analyzed by hand using varying degrees of mathematics and using the SPSS 12.0.1 system, doing two-way ANOVA and SNK values. We hypothesize that when your lungs are more open and have more room to expand, you will then inhale and exhale a much larger lung volume. We suspect the breathing forms investigated, from greatest lung capacity to least, will be in the following order; standing, sitting, lying, and post exercise.

Gerstnecker, Adam

Electrical & Computer Engineering

Robot Arm for Medical Applications

The robotic arm was designed for real-time applications to which it would operate over a network. The design purpose was to construct a network host-server connection through which an operator that may be able to perform tasks from a remote location. This would give the user freedom to operate on objects or complete projects at their leisure without the need to travel to the given location. The design was made from aluminum in order to give it strength and durability. The control interfaces, which were implemented to provide user control and to facilitate the movement of the arm, were written in C# language and allow real-time user control through USB connectivity. The host-server connection was achieved via pre-existing VNC freeware. The result of the design gives the user freedom to rotate freely around a two feet radius, and the robotic arm can lift multiple objects of size and weight.
Giblin, Jessica  Sociology & Anthropology  Jones Room 14:15 - 14:30

Changes in Shoreline Sedimentation at Sandy Point, San Salvador

Sandy Point is a prominent landform located at the southwestern corner of San Salvador, Bahamas. It is a massive peninsula-shaped sand deposit created by the combination of long-shore drift along the southern and western shores of the island and intense wave refraction at the point. GPS surveys of the shoreline conducted in March for the years 2005 and 2009 demonstrate regular and non-predictable change of the shoreline position from year to year. Visual observations and crude line-level transects for the same years indicate equally dramatic change in the overall morphology of the deposit. In an effort to better understand the processes responsible for the observed changes and document the magnitude of change, a detailed study of Sandy Point was initiated in June 2009. The data included shoreline GPS surveys, shoreline to back-beach transects (GPS and total station), and sand textural analyses. A second set of measurements and analyses was completed in March 2010. Preliminary results demonstrate a dramatic change in shoreline position from June 2009 to March 2010. In accordance with shoreline change, the beach transects show dramatic change in the overall morphology of the sand deposit. Over all, the sediment can be characterized as poorly sorted coarse sand composed of primarily carbonate shell fragments. The resulting data of shoreline and transect surveys were plotted on the topographic map of the island (1971) using ArcGIS.

Gismondi, Michael  Psychology  Jones Room 09:45 - 10:00

Strength In Numbers: Salience of Framing, and Effects of Expanded or Contracted Dimensions

Decisions are influenced not only by the data available, but by the presentation of the data. A sample of students at Youngstown State University (N = 82) individually assessed two hypothetical medical treatment options and rated how strongly one was preferred over the other. While all participants were shown identical data regarding the effectiveness of the two treatments, the data were framed differently. Some forms of data were presented as expanded (e.g., 9 out of 10), while others were contracted (e.g., 9 out of 10). Additionally, half of the data forms presented the effectiveness of the treatments in terms of how many would live if either treatment worked, while half highlighted how many would die (e.g., 9 out of 10 vs. 1 out of 10). Results show that manipulation of the at how many would live/how many would die framing variable influenced the strength of preference for one treatment relative to the other.

Globeck, Alexandria  Art  James Gallery 16:45 - 17:00

Water Conservation

This project unites the mechanical skills of an engineer and the inventive concepts of an artist. We constructed a pro-active piece that allures the viewer with an unrecognizable construct. When water becomes polluted with anthropogenic contaminants it becomes dangerous for human activities and can no longer sustain life for aquatic communities. in the Mahoning Valley, inorganic water pollutants are the leading contributor to our water conservation concerns. As a community we must become aware of our essential environment and work together to preserve it for the future of our natural world. By increasing public curiosity, we as students are presented with the opportunity to expand this awareness through a combination of sculpture and engineering.

Good, Eli  Mechanical & Industrial Engineering  James Gallery 14:15 - 14:30

Permanent Magnet Motor: Generating Electricity from Water Waves

The continuous expansion of industrialization and new technologies dependence upon electricity has caused an increasing burden on the available resources. This shortage of available energy sources has caused a dramatic increase in research in the field of alternative energy sources. Several new concepts have been developed due to the push for new alternative energy methods. One alternative energy method is the generation of electricity by utilizing the power of ocean waves; in particular, the use of a permanent magnet motor to harness the energy from water waves. The permanent magnet motor is a device that converts reciprocating motion into rotational motion without direct contact. The sinusoidal like form of a wave creates the reciprocating motion of the motor, which in turn is transferred into rotational motion that can be used to run a generator. For every wave, there is one rotation, and each rotation can be geared to produce several rotations of a rotor to effectively generate electricity. The main challenge of this concept was developing a design to capture as much power from each wave as possible. Considerations included properly mounting magnets to achieve the optimal generation of force, high quality machining and easy assembly to reduce unnecessary energy losses. The utilization of SolidWorks was key to fabricating an effective design. The software allowed for several designs to be developed without the expense of materials.

Grant, Brandon  Biological Sciences  Ohio Room 15:30 - 17:00

Constructing MHR1 Containing Plasmids as a Tool for Understanding Mitochondrial DNA replication

The objective of this project is to investigate the Saccharomyces cerevisiae MHR1 gene and its ability to form and/or resolve replication intermediates by homologous recombination. Mitochondrial DNA (mtDNA) is necessary for aerobic respiration. S. cerevisiae is an excellent model because it can undergo fermentation if its mitochondrial genome is defective. The MHR1 (Mitochondrial homologous recombination) gene product initiates homologous recombination by single-strand invasion. Cruciform cutting endonuclease, CCE1, resolves these recombination structures. It has been shown (Ling and Shibata) that these two nuclearly-encoded genes, MHR1 and CCE1, are synthetically lethal to mtDNA. We are investigating their role in mtDNA replication. The main goal of this project is to isolate and clone the MHR1 gene through PCR and inserting it in pRS316. This is then used to construct knockout vectors, and shutoff vectors which will be used to observe mitochondrial loss in a ∆mgt1 background. In addition, a tagged expression vector is being assembled to isolate the MHR1 protein, MHR1p, which will be raised to monoclonal antibodies and analyzed by Western Blot. Lastly, pull-down experiments can then be done with the MHR1 protein to see what other proteins it interacts with. The MHR1p can shed light on how mutant genomes are maintained, as well as issues of age and diseases related to changes in mammalian mtDNA.

Guidosh, Matthew  Electrical & Computer Engineering  Coffelt Room 13:30 - 13:45

Design and Programming of an LED Cube

As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.
Hallel, Michelle  Mechanical & Industrial Engineering  Ohio Room  13:30 - 15:00

**Smoking Visualization Wind Tunnel**

A small flow visualization wind tunnel was designed and built to study the pattern of flow around bluff and streamlined models. The visualization is created by injecting thin filaments of white smoke at the inlet of a small low-turbulence wind-tunnel. The wind-tunnel is a draw-through type and the flow is initiated by a small radial blower fan mounted near the exit of the tunnel. Air is drawn in through the inlet and exhausted at the tunnel exit. Part of the air exhausted can be forced into a smoke generating reservoir. The smoke, generated by vaporizing propylene glycol, is forced through the supply pipe into small nozzles and then emerges out of the nozzles as fine filaments. Models were placed in the test section for the study of flow patterns. The heater element and the blower fan are instrumented and controlled using computer software as well as manual controls. The machine has controls for starting the fan and the heating element along with a safety feature to turn off the heater if the temperature inside the smoke reservoir exceeds a certain threshold temperature. The flow patterns observed corroborated the concepts learned in fluid dynamics. In addition, flow visualization is used in many industries concerned with aerodynamics.

Hallett, Chris  Mechanical & Industrial Engineering  James Gallery  14:30 - 14:45

**Supermileage Vehicle**

With the current economy recovering from a recession, high fuel economy is used more often than it has in the past. One of the areas includes the use of gasoline. Fuel economy is used often in today’s car industry as the basis of marketing. The ability of a lightweight vehicle to obtain the most fuel economy possible was tested. The vehicle was built to specifications provided by the Supermileage Vehicle Competition rulebook, which is sponsored by the Society of Automotive Engineers (SAE). A lightweight frame, aerodynamics, and a modified engine were the basis for achieving maximum fuel economy. The overall goal was to achieve a high miles-per-gallon rating, while following the standards of the competition. The overall design met the specifications mentioned in the SAE rulebook. Some of these included weight, brakes, and safety issues. All were taken into consideration in the design, while also maintaining an operative, fuel efficient vehicle.

Hanuschak, Jennifer  History  James Gallery  09:30 - 09:45

**The Historical Impact of the Large Hadron Collider**

The Large Hadron Collider, or the LHC, is the largest particle accelerator in the world. The LHC not only represents the potential that current physics can do, but it represents the progress we have made in scientific exploration since the early twentieth century. From the time we split the atom 1917, we have started a process to discover the building blocks of the universe...what we are made of. By stringing together the continuum of modern scientific discoveries, we can see the real need for the Large Hadron Collider. We do not yet know the whole story of the universe's creation, and we might never, but this huge particle accelerator is giving us the opportunity to find another, and perhaps the most important, piece to this puzzle.
The Effects of Acclimation Sessions on Behavioral Measurements

A standard protocol in preclinical research includes acclimation of the test subjects. This procedure acts to reduce stress and anxiety in the subjects; however, the number of acclimation sessions is highly variable among studies. To better understand how the number of acclimation sessions alters behavioral measurements, this study examined the effects of acclimation and the investigator on behavioral measurements. Sixteen male subjects were used in this study, and two researchers, blinded to the treatment groups, collected all data. Subjects were randomly assigned to four treatment groups: (0) four subjects per cage, one acclimation session, (2) four subjects per cage, two acclimation sessions, and (3) four subjects per cage, three acclimation sessions. All treatment groups were provided with standard housing conditions, including food, water, and bedding. Acclimation sessions, including acquainting each subject to both investigators for five minutes per session, were performed on treatment groups 1, 2, and 3 within a week. In the following week, behavioral measurements, including withdrawal latency to a heat stimulus and withdrawal threshold to a mechanical stimulus, were taken. Behavioral data were analyzed by each investigator via a two-way ANOVA using the GraphPad and SPSS Software. These data indicate that the number of acclimation sessions affects the behavioral measurements.

Design of the Pressurized Shell for a Thick-Walled Hydraulic Actuator

The goal of this project is to design a pressurized shell of a thick-walled cylindrical hydraulic actuator. Hydraulic actuators are used in large variety applications in heavy machinery. In this project the thickness of the 1020 steel cylinder must be determined for a design factor of safety of 2.5 in order to be able to lift a static load of 14,000lbs via a pressure supply of 2000psi. To simplify the problem, the stress concentration factors and deflections were ignored. The approach was to calculate the stresses within the wall of the pressure vessel as influenced by the wall thickness. In addition, parametric studies of various wall thicknesses were performed in order to optimize the cylinder design. Results were verified with a computer simulation using COMSOL, a commercially available FEA software and also compared with published literature.

Determine Muscle Fiber Types in the Tails of Two Disparate Species Oppossum

The arrangement and orientation of muscle fibers (i.e. muscle architecture) and the composition of slow and fast muscle fibers (i.e. fiber type) reflect functional specializations of muscle. Muscles show remarkable diversity in their architecture as well as distributions of slow and fast muscle fibers and their make-up of myosin heavy chain (MHC) isoforms. Architecture and fiber type are well studied properties in limb muscles, however, much less is understood about these properties in other extremity muscles such as tail musculature. The opossum is an interesting marsupial lineage in this context, as all species of opossum have characteristic long and prehensile tails, but occupy different habitats (e.g. arboreal versus terrestrial). Differences in habitat, and consequent use of the tail in locomotion, suggest that muscle architecture and fiber type composition in the tail may also be different between species. To test this possibility, this study investigates muscle fiber type (and architecture) in the tails of one terrestrial species of opossum (Didelphis virginiana) and one arboreal species of opossum (Didelphis aurita). Muscle fiber type was determined by both histochemical methods and immunohistochemical techniques that use primary antibodies to react with a specific MHC isoform. Preliminary results indicate the prehensile (distal) region of the tail is composed of 54% slow-twitch fibers and 46% fast-twitch fibers. Future analyses will quantify MHC isoform distributions in the tails of both species to specify adaptations of opossum tail muscle that correlate with hanging and climbing behavior.

Characterization of Eight Metal Resistant Enterobacter Species from a Metal Contaminated Site

The Y-12 plant in Oak Ridge, TN processed uranium and lithium to manufacture nuclear bombs during WWII and the Cold War. Waste products from these operations contaminated East Fork Poplar Creek and the surrounding area with mercury and other heavy metals. Stenotrophomonas maltophilia Oak Ridge strain O2 (S. maltophilia O2), which was found at the site displayed high metal resistance characteristics. While using 16s rRNA sequencing to identify other bacteria from East Fork Poplar Creek, we found that our working strain of S. maltophilia O2 was actually a strain of Enterobacter, which we called Enterobacter sp. YSU. This strain was metal resistant at intermediate levels compared to S. maltophilia O2. Analysis of the 16s rRNA from 8 other multmetal resistant strains suggested that they were related to species of Enterobacter. To see if they were related to Enterobacter sp. YSU, we analyzed their biochemical properties using an API identification kit and their plasmid content by gel electrophoresis. Their biochemical properties and plasmid profiles were almost identical to those of Enterobacter sp. YSU. Preliminary 1.5 kb, 16s rRNA sequences of the isolates differed by only one to five base pairs. Through these experiments, it appears that Enterobacter sp. YSU probably originated from East Fork Poplar Creek. Analysis of these bacteria may provide strategies that could be used to clean up metal contaminated sites and may provide information on gene transfer within the environment.
Helterbran, Dawn  
**Biological Sciences**  
*Lung Function on a Daily Basis*

Our experiment is designed to compare and contrast the human lung capacity and breath period in differing physical situations of the body. The members of our group, five subjects total, will be studied while performing four differing breathing situations; standing, sitting, laying down, and after exercise. Breathing data will be collected using a spirometer and the accompanying equipment. Data will then be analyzed by hand using varying degrees of mathematics and using the SPSS 12.0.1 system, doing two-way ANOVA and SNK values. We hypothesize that when your lungs are more open and have more room to expand, you will then inhale and exhale a much larger lung volume. We suspect the breathing forms investigated, from greatest lung capacity to least, will be in the following order; standing, sitting, lying, and post exercise.

Herman, Emily  
**Accounting & Finance**  
*Counselor's Tips for Teachers: Easy classroom interventions for Students with Autism*

According to the Center for Disease Control (CDC), data shows that 1 in every 150 children can be classified as having Autism Spectrum Disorder (ASD). Those affected with ASD experience communication and social delays, and stereotyped behaviors that are usually recognized within a childâ€™s first three years of life. Currently, there is no cure and no cause of ASD. Thus, it is difficult to diagnose, treat, and most specifically educate those affected. Without early diagnosis it will be difficult for students diagnosed to participate appropriately in the classroom. Interventions need to be in place for those who interact with these students in order to ensure the highest quality of education. To aid the educational experience of these students, school and clinical mental health counselors can provide teachers with helpful interventions that can be used in a classroom setting. These strategies will benefit all of the students in the classroom as well as the educators. Different types of clinical interventions and evidence based treatments can be used in classrooms such as Antecedent Manipulations, Differential Reinforcement, Change in Instructional Context and self management. This poster explores each of those in more depth. These interventions can help reduce or eliminate problem behaviors students with autism often exhibit in the classroom.

Heyman, Jason  
**Accounting & Finance**  
*Economic Impact of the Gerace Research Centre On the Economy of San Salvador Island*

The Gerace Research Centre is located on San Salvador Island in the Bahamas and operates as a research and educational facility in collaboration with The College of The Bahamas. In the 2008-2009 season, over 1,300 students and faculty visited the Gerace Research Centre constituting over 13,000 nights in residence at the centre. These excess of 13,000 nights generated over $650,000 for room-and-board fees. In addition to this, students and faculty spend money on various items around the island leading to even greater expenses impacting the economy of San Salvador. My research analyzed expenditures of a group of 25 Youngstown State University students and faculty; this group consisted of two different classes that traveled to the Gerace Research Centre in December 2009. The faculty and students were all given a log to track their daily expenditures on, and this log consisted of five different areas: food/drink and social club/restaurant, souvenirs (manufactured), souvenirs (local handicrafts), incidentals, and other. One purpose of this research was to provide the Gerace Research Centre with an estimate of the overall monetary expenditures that the visiting students, faculty, and researchers bring to the island of San Salvador. The other purpose of this research was to provide Youngstown State University faculty with an estimate of the student and faculty spending patterns so they can make recommendations to oncoming students about estimated spending money that may be brought on the trip.

Hill, William  
**Astronomy / Physics**  
*Polarized Light and Its Applications in Three-Dimensional Imaging and Entertainment*

Utilized in such films as Pixar's UP and James Cameron's Avatar, circularly polarized light holds the key to making two-dimensional images 'pop' into three-dimensional space. However, while producing an interesting effect; few people understand what effort goes into optimizing the image for public entertainment. Using various polarizers and lasers of different wavelengths, we conduct experiments to determine which wavelengths produce the most stable, optimal image quality. Likewise, we rotate the circular polarizers and compare the resulting intensities to known laws, such as Malus's Law. From this research, we identify patterns in three-dimensional films, and identify what makes three-dimensional effects successful.

Hill, William  
**Astronomy / Physics**  
*Xbox LIVE: Could You be at Risk While Playing Online?*

Are you compromising your personal security while playing your favorite games online? We investigate the possible ways in which Xbox LIVE one of the most popular online gaming services can pose a threat to user security. Xbox LIVE is a complicated network of matchmaking servers and other Xboxes. When you play a game, a matchmaking server connects you to a game lobby and chooses an Xbox to serve as the host. However, directly connecting to another user’s Xbox causes security concerns. The host is directly connected to each player in the game, and by using a simple packet sniffer, can get the IP address of all players in the game. Since many of the network protocols used are proprietary, the information being sent over the network is unknown. Nevertheless, just knowing another player’s IP address creates security concerns. A Distributed Denial of Service (DDOS) attack can be performed using a botnet, causing a playerâ€™s connection to the game to drop. Due to the Xbox LIVE game rules, when you leave a game in progress, no matter what the reason, you automatically lose the game. While DDOS attacks are illegal, tracing the attack is almost impossible because the attack comes from infected computers around the world. DDOS attacks are one of the most common forms of cheating on Xbox LIVE, as a player can DDOS all other players, causing the attacker to win. More importantly, knowing a user’s IP address allows hackers to perform attacks on a user’s network and compromise security. Our presentation suggests solutions that may help promote security on Xbox LIVE.

Hinerman, Adam  
**Electrical & Computer Engineering**  
*Design and Programming of an LED Cube*

As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.
Hinkle, Bailey

Perceptions of Food Labels

A standard food label on most packaged foods in the US, in accordance with the Nutrition Labeling and Education Act of 1990, highlights caloric and nutrient content per serving including, carbohydrates, fiber, protein, total fat, saturated fat, cholesterol, and sodium (USDA, 2009). There is evidence that reading food labels can help individuals to change their eating patterns; however, the food label can be intimidating to those not familiar with the terminology or interpretation of the dietary information listed. The objective of this study is to define the scope of knowledge regarding food labels and their use among the undergrad student population at Youngstown State University. Students (n = 200), male and female, will be recruited from the YSU campus common areas and once the protocols are explained, will be asked to sign the Informed Consent form if they wish to participate. Participants will self-administer the 27-item survey. It is anticipated that significantly more female participants (p < 0.05) will read food labels than males and that there will be gender differences in the nutritional content values used by participants. It is also expected that participants who have taken a nutrition or health education course will use food labels for selecting foods significantly more frequently than those who have not.

Hodges, Joshua

A Mathematical Analysis of Peg Solitaire

In this project we use the structure of the Klein 4 Group and tessellation to analyze the solvability of various peg solitaire games, including Central Solitaire, French Solitaire, and Triangular Solitaire. We have concluded based on our research that any board that can be successfully tessellated and can maintain a constant signature throughout game play is potentially solvable based on if the player moves the pegs correctly.

Holmes, Andrew

Analysis of Cell Wall Mutants in the Dimorphic Fungus Penicillium marneffei Generated by Agrobacterium-Mediated Transformation

Penicillium marneffei is a dimorphic fungus that causes fatal disseminated infection in immunocompromised individuals. At 25°C, the fungus develops mycelia and conidia typical of other Penicillium species. At 37°C, the fungus undergoes phase transition to form fission yeast cells. These changes obviously involve distinct alterations in cell wall structure and synthesis. To date, however, analyses of this pathogen have yet to identify the molecular mechanism(s) responsible for the dimorphic nature of P. marneffei. To better understand the molecular mechanisms that underlie dimorphism in this fungus, we employed an Agrobacterium-mediated transformation strategy to generate random-insertion mutants via T-DNA integration. Transformants are screened for cell-wall defects using the cell-wall inhibitors Calcofluor White (CFW) and Congo Red (CR). These two agents bind to cell wall components, thereby destabilizing its formation. The morphology of hypersensitive mutants, selected by failure to grow at sub-lethal levels of CFW and CR, were analyzed by growth various media at both 25°C and 37°C. Furthermore, the specific mutations were identified by sequencing the flanking regions at the sites of T-DNA insertion.

Hosseinejad, Justin

Design and Programming of an LED Cube

As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.

Howard, Hillary

Proposed Resistance Mechanisms of Enterobacter sp. to Toxic Selenite

The effects of toxic selenite on bacterial growth are explored for a wild-type selenite resistant strain of Enterobacter and a selenite sensitive mutant. A system of differential equations models the coupled interaction of cell growth and selenite uptake. This study will examine, from a sociolinguistic perspective, the nature and occurrence of verbal interactions between passengers involved in elevator encounters. The examination will attempt to define and predict which factors, if any, precipitate, predict, and limit acts of greeting and leave-taking between strangers who find themselves in unavoidably close proximity with other strangers in an elevator setting. In addition to incorporating live recorded data samples collected during actual elevator rides, the study will collect and analyze questionnaires regarding elevator behavior, distributed among members of the YSU student body. The results of these questionnaires will be compared to the results of the live data for the purposes of distinguishing between perceived and actual speech behavior. Our predictions are threefold: that greetings will reliably predict leave-taking; that the presence of fewer passengers will engender a greater likelihood of interaction, and the inverse; and that the occurrence of interaction is the exception rather than the norm.

Hoy, Rebekah

Going up?: A Sociolinguistic Study of Verbal Interaction in Elevators

This study will examine, from sociolinguistic perspective, the nature and occurrence of verbal interactions between passengers involved in elevator encounters. The examination will attempt to define and predict which factors, if any, precipitate, predict, and limit acts of greeting and leave-taking between strangers who find themselves in unavoidably close proximity with other strangers in an elevator setting. In addition to incorporating live recorded data samples collected during actual elevator rides, the study will collect and analyze questionnaires regarding elevator behavior, distributed among members of the YSU student body. The results of these questionnaires will be compared to the results of the live data for the purposes of distinguishing between perceived and actual speech behavior. Our predictions are threefold: that greetings will reliably predict leave-taking; that the presence of fewer passengers will engender a greater likelihood of interaction, and the inverse; and that the occurrence of interaction is the exception rather than the norm.

Hudoba, Douglas

Morphometric Quantification of Myocyte Dimensions in SHR Rat Hearts

Clinical studies have shown that while hypertension can affect anyone, the prevalence of the disease in premenopausal women is lower compared with men of the same age and that after menopause, the incidence of hypertension in women elevates and becomes similar to that of men. These observations suggest that the presence of the female gonadal steroids, such as estrogen, may protect premenopausal women against the development of hypertension and its subsequent complications such as cardiac hypertrophy. The goal of this study is to examine left ventricular myocyte dimensions of males (M), females (F), female ovariectomized (OVX) and female ovariectomized with supplemental estrogen administration (OVX+E) to quantify the development of hypertrophy. Three subsequent staining procedures, Mayers haematoxylin, azocarmine solution and then aniline blue-orange will be used to stain 5 um thin sections of LV tissue from each of the animal models. Myocyte width, area, length and volume will be measured under a light microscope to assess the development of hypertrophy. Though no data has yet been collected, I hypothesize that male samples will show greater development of hypertrophy than females and that OVX samples should produce a hypertrophy pattern similar to males. I would also expect to show a lesser degree of hypertrophy in OVX+E as compared to their female OVX counterparts.
Natural Occurring Arsenic in Groundwater

Arsenic is a common health problem in many ground water resources throughout the world, including parts in the state of Ohio. Arsenic can cause a variety of health issues ranging from Nausea, feelings of ‘pins and needles’ on the hands and feet, and long term effects of the inorganic variety can lead to darkening of the skin and growth of small warts on the various regions of the body. The current maximum contaminant level (MCL) for public water sources set by the EPA for Arsenic is 10 parts per billion (ppb). This reduction of the MCL of Arsenic raises a greater concern for the presence of this element in groundwater. In Mahoning county groundwater was examined for potential correlation between the presence of this element in groundwater. In Mahoning county groundwater was examined for potential correlation between the presence of this element in groundwater. In Mahoning county groundwater was examined for potential correlation between the presence of this element in groundwater.

Microelectromechanical systems (MEMS) are a rapidly expanding research and development area. Nationwide research is being done to develop MEMS based sensing systems for the rapid detection of pathogenic bacteria and contaminants, which pose a threat to the public health. The technology is currently needed in the automotive, food, and medical industries. There are many methods for sensing pathogenic bacteria and contaminants in a sample available, but this study was done solely on impedance sensors. Two methods of production were used in this study. The first method was traditional micromachining. The second method was photolithography. Both methods were challenging for different reasons and their pros and cons were explored and analyzed. In addition, a computer model based on continuity equations was constructed for comparison with the actual sensors. The computer model consisted of a long microchannel with two electrodes placed on opposite sides of the channel. It was challenging to produce results consistent with the physical world from the computer program due to the model containing many variables. However the results were consistent with past research that had been performed in this field. Tests of the actual sensors detected contaminants. These results were compared with the computer model for verification.

Design of the Pressurized Shell for a Thick-Walled Hydraulic Actuator

The goal of this project is to design a pressurized shell of a thick-walled cylindrical hydraulic actuator. Hydraulic actuators are used in large variety applications in heavy machinery. In this project the thickness of the 1020 steel cylinder must be determined for a design factor of safety of 2.5 in order to be able to lift a static load of 14,000lbs via a pressure supply of 2000psi. To simplify the problem, the stress concentration factors and deflections were ignored. The approach is to calculate the thickness of the wall of the pressure vessel as influence of the geometric studies of various wall thicknesses were performed in order to optimize the cylinder design. Results were verified with a computer simulation using COMSOL, a commercially available FEA software and also compared with published literature.

Design and Programming of an LED Cube

As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.

Attracting the Attitudes Toward Sexuality of Older Adults

In the present study we will be conducting a survey on the attitudes towards sexuality in older adults. An e-mailed survey using survey monkey and the campus wide e-mail system was used to contact a sample of the undergraduate population of students to send the survey in order to obtain a range of ages, ethnicities, and places of residency. For the campus wide e-mail, survey monkey will be used to generate the survey and distribute it. Julie Iudiciani, a senior Gerontology major, will be creating the survey and sending the campus wide e-mail to the sampled undergraduate population of students. Names of the participants will not be linked to completed surveys and data will be processed in SPSS software by Julie Iudiciani. The survey Data will be used to determine the attitude of sexuality toward older adults across all age groups. Informed consent was assumed upon return of the survey and sending the campus wide e-mail to the sampled undergraduate population of students to send the surveys in order to obtain a range of ages, ethnicities, and places of residency.
**Jeng, Wayne**

**Language Learning Motivation in International Students**

The purpose of this study was to deduce whether international students are more or less motivated to learn additional languages, and what their motivations are for learning additional languages. Information was collected via questionnaire. The questionnaire was based on a survey first developed by Bishop and Cannon (2009) and included multiple choice questions, a Leichardt scale, and constructed response questions. The responses were collected in person, at the Center for International Studies coffee hour, at the English Language Institute, and in the English for non-native speakers class. We also collected surveys online with the help of the Center for International Studies and Programs. We projected that international students would be more likely to learn a foreign language than American students and for different, more productive reasons. We found that 56% of international students surveyed are learning English simply because it would be useful in their future profession, and 41% are studying English because it was required in school. When asked what additional language they would learn, 33% responded French; however 62% had no preference as to which language they would prefer their (future) children to learn.

**Jerome, Genevieve**

**Mechanical & Industrial Engineering**

**Design and Construction of A Human Powered Moonbuggy**

The moonbuggy project is part of a student competition known as the NASA Great Moonbuggy Race. This competition is held every year during the spring at the U.S. Space & Rocket Center in Huntsville, Alabama. Approximately fifty universities from around the world compete for the best time. The event involves a vehicle erection time, course run time, and penalty time. The vehicle erection time is the amount of time it takes to erect the vehicle from a storage condition to an operable, drivable state. The course run time is the amount of time it takes a team to complete the course. The penalty time involves different penalties that are garnered during the vehicle erection and course run time. Penalties are attributed for a plethora of reasons from getting out of the moonbuggy to not completing an obstacle. The course is composed of harsh terrain conditions and several obstacles that emulate the surface of the moon. A collapsible human-powered vehicle was designed and fabricated that had design specifications provided by NASA to fit in a maximum volume of 4\(\text{m}^3\). The design was improved by making a lighter frame out of aluminum; in addition, other things were improved: new gearing system, more absorbent shocks, and all terrain tires. The challenge in constructing the moonbuggy was to keep it strong and durable while decreasing the weight of the vehicle.

**Johnson, Brooke**

**Mechanical & Industrial Engineering**

**Analysis of Shaft and Gear Transmission for a Small Winch-Crane Unit**

A transmission assembly constructed of steel spur gears has been analyzed for use in a small winch-crane unit operating at 95% efficiency. A winch-crane unit is a device utilized for lifting moderately heavy loads and transporting these around a shop or laboratory environment. Geometrical parameters of the transmission have been provided which contains 6 gears of given geometry, supported with flanged bearings. Analysis includes output speed and torque of the transmission, stress analysis performed on each gear and supporting shaft as well as stress analysis for the transmission housing itself. The analysis of the transmission have been done theoretically and validated through Finite Element Analysis (FEA) software simulation. Completion of this project has provided the company with insight into the reliability and efficiency of the winch-crane transmission.

**Jones, Nathan**

**Electrical & Computer Engineering**

**Differential Equations, Laplace Transform and Computer Simulations.**

Derivations of time domain transients of charging voltage and current of a RC circuit utilizing Differential & Integral Calculus, Derivaations of time domain transients of charging voltage and current of series RC (Resistor & Capacitor) circuit can be obtained utilizing various mathematical and simulation techniques. In this research project, the time-domain differential equations will be derived by using integration techniques and differential equation solutions. The differential equation will also be solved by applying Laplace Transform (transformation into complex frequency domain). The solutions (amplitude vs. time) will be shown in a graphic form using Microsoft Excel. This graph will be compared to the results obtained from RC circuit simulations utilizing Electronic Work Bench (EWB) Circuit Design Suite Multisim 10.1.

**Jones, Margaret**

**Dana School of Music**

**Well-Traveled Tunes: The Circulation of Song in Renaissance Europe**

Orlante de Lassus’s Susanne un Jour was one of the most widely known chanson spirituel in late-Renaissance Europe. Published in 1567, by the end of the century the chanson had been translated, transcribed, reprinted, and dispersed to nearly every corner of the continent. In spite of Lassus’s great renown, however, the authorship and title of this work became nearly entirely obscured in the process of its dissemination. This presentation will focus on one particular source of this chanson, the Wickhambrook MS, with the goal of gaining a better understanding of the musical culture of Europe in the sixteenth century. The Wickhambrook MS, for which the provenance remains unclear, contains Lassus’s chanson, without attribution, as well as many works by other prolific composers who are accredited by name. Successful chronological placement of this manuscript has great potential for determining how music was accumulated and used by amateur musicians in household settings. Furthermore, evidence in this manuscript, cross-referenced with evidence in other manuscripts and publications, demonstrates what import documents like the Wickhambrook MS have for determining how music was appreciated in Europe in the sixteenth century, as well as recognizing the extent to which composers, publishers, and audiences of the era considered musical works as defined, intellectual property.
Alkyl and acyl azides are important intermediates in the synthesis of various organic functional groups and heterocycles, however their use is often hampered by inherent instability and the use of metallic azides for their preparation. We have now found that readily handled arylsulfonyl azides are convenient reagents for azidation reactions of alkyl and acyl halides, as well as alcohols. Microwave heating speeds up conversions and the formation of azide products is easily monitored by IR analysis of reaction mixtures.
Kelly, Devin  Chemistry  Ohio Room 10:30 - 12:00

Cloning of Beta-Glucosidase from Escherichia coli

β-glucosidase is an enzyme that catalyzes the hydrolysis of glucose polymers containing 1-4 bonds, such as cellulose. Microorganisms such as Escherichia coli utilize the action of this enzyme to degrade polysaccharides containing these bonds as a fuel source. Humans, and more generally eukaryotes, do not make β-glucosidase. Due to the lack of this enzyme in humans and the necessity of this enzyme in E. coli, the enzyme can be a target for drug therapy. Inhibition of the enzyme will cease the vital breakdown of cellulose for energy in the bacteria, leading to its death. The patient would remain unaffected since humans do not use β-glucosidase. The gene encoding for β-glucosidase is amplified by polymerase chain reaction (PCR) using E. coli genomic DNA. The gene will be then incorporated into an expression vector and used to produce large amounts of the enzyme β-glucosidase. Inhibitors of the enzyme will then be tested for potential use against bacterial infections. The enzyme may also be studied and characterized to model the active site of the enzyme where the catalytic properties are contained or to locate allosteric effector sites. This information can be used to eliminate the catalytic properties of the enzyme by inducing mutations in the active site.

Kennedy, Michael  Mechanical & Industrial Engineering  James Gallery 10:30 - 10:45

Analysis of Shaft and Gear Transmission for a Small Winch-Crane Unit

A transmission assembly constructed of steel spur gears has been analyzed for use in a small winch-crane unit operating at 95% efficiency. A winch-crane unit is a device utilized for lifting moderately heavy loads and transporting these around a shop or laboratory environment. Geometrical parameters of the transmission have been provided which contains 6 gears of given geometry, supported with flanged bearings. Analysis includes output speed and torque of the transmission, stress analysis performed on each gear and supporting shaft as well as stress analysis for the transmission housing itself. The analysis of the transmission have been done theoretically and validated through Finite Element Analysis (FEA) software simulation. Completion of this project has provided the company with insight into the reliability and efficiency of the winch-crane transmission.

Kenyhercz, Marsha  Communication & Theater  Ohio Room 13:30 - 15:00

Managing Disruptive Behavior: Health Care Workers Perceptions and Suggestions

The purpose of this study is to examine disruptive behavior in health care nurses, physicians, and administrators at a local community hospital. The study evaluated the health care workers’ awareness of disruptive behavior and how it related to their negative work attitude and their perception of a higher stress level. A non-experimental research design was utilized in this investigation. The study used a survey tool in the form of a questionnaire. It was distributed using a non-random convenience sampling of procedural nursing staff, physicians, and administrators at a community hospital. Surveys were given to seventy-five workers and forty were completed and returned yielding a 53% response rate. Data were analyzed utilizing SPSS version 17.0 for Windows and consisted of descriptive, comparison, and connective statistics. The findings showed that all participants acknowledged that disruptive behavior exists in the workplace. No differences were shown by occupation or gender. The results also confirmed that an increased stress level was noted as a result of disruptive behavior. This determination was based upon the number of disruptive behavior occurrences and unanimous concerns for patient safety. Furthermore, a resounding number of respondents agreed that a negative work attitude is pervasive among the organization surveyed. It is acknowledged that disruptive behavior exists and promotes a negative work environment which may be detrimental to patient safety. The understanding of codes of conduct and methods of learning will be fundamental in influencing future development of strategies designed to limit this behavior.

Kim, Amy  Communication & Theater  Pugsley Room 10:30 - 10:45

An Examination of the Influences of Genderlect Styles, Nonverbal Communication Behaviors, Social Learning, and Listening on the Communication Barriers between Men and Women

This paper identifies genderlect styles, nonverbal communication behaviors, social learning, and listening as important variables to consider when exploring the differences in the communication styles of men and women. In this paper, I explore all these variables and their contribution to the problems men and women face when communicating. The rationale and relevance of each variable is offered. For example, genderlect style differences suggest men are more aggressive in their communication styles and women are more submissive communicators. With nonverbal communication, women more than men are better able to understand nonverbal behavior and women more than men tend to use more nonverbal communication during social interactions. Men and women are socialized at a young age to their specific gender roles (i.e., men learn to be masculine and women learn to be feminine). Finally, this paper explores the overall communication of both gender lects by identifying problems men and women face and how to overcome some of these communication obstacles.

Klouse, Greg  Mechanical & Industrial Engineering  James Gallery 13:30 - 13:45

Constructing and Modelling a Small Horizontal Axis Wind Turbine

With the increasing interest in green technologies, privately owned small scale wind turbines are becoming more and more popular. According to the American Wind Energy Association, the domestic market saw a 78% increase in sales from 2008 to 2009. This presentation documents the construction, modeling, and testing of a small horizontal axis wind turbine based on the following design variables: headwind speed, tip speed ratio, blade angle, rotor diameter, and airfoil shape of the blades. The main focus in construction was the design and fabrication of the blades and hub connections. The fabricated blades used a double airfoil design to maximize start-up in low winds and regulate rotation speeds in high winds. They were manufactured using polyurethane foam injection molding and reinforced with fiberglass. A second set of commercially available blades which used a single airfoil design and had known performance specifications were tested for comparison to the fabricated blades. Models of the various components of the wind turbine were created in a computer aided design package (Solidworks). Mechanical and fluid behavior of the system was predicted using computer analyses (Algor and Fluent) to ensure structural stability and fluid flow. Computer predictions of the wind turbine system using both sets of blades were compared with real world test data from the constructed wind turbine system.
Electrical & Computer Engineering

Parking Deck Monitoring System

Parked space availability has become an issue due to the increase in student population and an inefficient parking environment. An LCD Parking Deck Monitoring System will alleviate congestion and the struggles of parking. The system will be comprised of an LCD screen and a master control unit, will communicate with the spot sensors via CAN. This leaves us room to expand the system based upon the needs of the parking deck. Implementing the system will encourage an efficient and safe parking environment.

Kosela, Katie

Computer Science & Information Systems

A Mathematical Analysis of Peg Solitaire

In this project we use the structure of the Klein 4 Group and tessellation to analyze the solvability of various peg solitaire games using Central Solitaire, French Solitaire, and Triangular Solitaire. We have concluded based on our research that any board that can be successfully tessellated and can maintain a constant signature throughout game play is potentially solvable based on if the player moves the pegs correctly.

Kovach, Michael

Mechanical & Industrial Engineering

Design of the Pressurized Shell for a Thick-Walled Hydraulic Actuator

The goal of this project is to design a pressurized shell of a thick-walled cylindrical hydraulic actuator. Hydraulic actuators are used in large variety applications in heavy machinery. In this project the thickness of the 1020 steel cylinder was determined for a design factor of safety of 2.5 in order to be able to lift a static load of 14,000lbs via a pressure supply of 2000psi. To simplify the problem, the stress concentration factors and deflections were ignored. The approach is to calculate the stresses within the wall of the pressure vessel as influenced by the wall thickness. In addition, parametric studies of various wall thicknesses were performed in order to optimize the cylinder design. Results were verified with a computer simulation using COMSOL, a commercially available FEA software and also compared with published literature.

Kowalczyk, Kara

Biological Sciences

The Effect of TC-1-045 on Capsule Formation in Staphylococcus Aureus, Type 5

Despite many medical advancements, Staphylococcus aureus is still a prevalent pathogen due to its resistance to antibiotics. The bacterial unique polysaccharide capsule is composed of acidic polymers of uronic acid, which contributes to the virulence of this bacterium. Type 5 and type 8 S. aureus are the virulent strains of the bacteria; therefore, investigation of a chemical to disrupt capsule formation was performed in attempt to find a more effective treatment for S. aureus type 5 infections. To accomplish this, S. aureus samples were mixed with the chemical TC-1-045. In order to measure the effectiveness of the chemical, hybridoma cell antibodies were prepared and an ELISA was performed to determine the amount of bacterial type 5 capsule produced. A positive result (inhibition of capsule synthesis) would show decreased binding of the antibody to the bacterial capsule as the concentration of TC-1-045 increased. This trend was not present in the results, indicating the chemical may be ineffective. However, experimental errors may have also contributed to these results and further experiments should be performed.

Krontiris-Litowitz, Johanna

Biological Sciences

Does Practice with Higher Order Thinking Improve Learning?

Many students, particularly first year students, come to the biology classroom with the preconceived notion that learning can be accomplished by memorizing facts, reactions, molecules and processes. Because of class size, some courses are conducted as lecture classes without homework assignment or interactive class activities. Thus for some first year students, the exam is the first and primary encounter with critical thinking or higher order thinking at the college level. This can be problematic since higher order thinking and critical thinking, like many cognitive processes, require guidance and practice to become effective habits. This study tests the hypothesis that "practice with higher order thinking and critical thinking questions can improve learning". In this protocol students were give 2 opportunities to practice higher order and critical thinking, 1) homework assignments where students practiced writing higher order and critical thinking questions and 2) classroom quizzes where students answered higher order thinking and critical thinking questions. Student learning was measured by exam performance and student attitude was evaluated by a self-report survey.

Kuhn, Andrew

Mechanical & Industrial Engineering

Work Design and Time Study Analysis of Material Handling at Altronic Inc.

A team of methods engineering students enrolled in Youngstown Stateâ€™s Industrial and Systems Engineering program conducted a time study and system analysis of material handling at Altronic Inc. in Girard, OH. The time study analysis was conducted using video recording software then evaluated using methods including MTM-1, MTM-2, MOST and work sampling. The data generated from the time study was then used to determine standard times and allowances for the material handling process. The primary goal in the project was to identify process time and use the information gathered as a basis for potential improvement in the material handling study.

Kosec, Greg

Mechanical & Industrial Engineering

Permanent Magnet Motor: Generating Electricity from Water Waves

The continuous expansion of industrialization and new technologies dependence upon electricity has caused an increasing burden on the available resources. This shortage of available energy sources has caused a dramatic increase in research in the field of alternative energy sources. Several new concepts have been developed due to the push for new alternative energy methods. One alternative energy method is the generation of electricity by utilizing the power of ocean waves; in particular, the use of a permanent magnet motor to harness the energy from wave waves. The permanent magnet motor is a device that converts reciprocating motion into rotational motion without direct contact. The sinusoidal form of a wave creates the reciprocating motion of the motor, which in turn is transferred into rotational motion that can be used to run a generator. For every wave, there is one rotation, and each rotation can be geared to produce several rotations of a rotor to effectively generate electricity. The main challenge of this concept was developing a design to capture as much power from each wave as possible. Considerations included properly mounting magnets to achieve the optimal generation of force, high quality machining and easy assembly to reduce unnecessary energy losses. The utilization of SolidWorks was key to fabricating an effective design. The software allowed for several designs to be developed without the expense of materials.
Lepley, David  
Technology  
Natural Gas Engine Conversion  
The presentation discusses a two-semester, multidisciplinary Engineering Technology project where a 2.2L Cavalier engine is converted from gasoline fuel to natural gas fuel. Modifications include completely redesigned ignition, control, and fuel systems. Key engine parameters are variable, and then monitored, displayed, and recorded. This project will remain a permanent improvement to the Mechanical Engineering Dynamometer Lab, allowing other students and faculty to use the system in research or teaching scenarios.

Kupec, Jenna  
Criminal Justice  
Analysis of Genetic Variations of cpDNA in Elm species  
Chloroplasts are the membranous organelles found in plant and algae cells that produce energy through the process of photosynthesis. Chloroplasts have their own separate genome which is often and maternally inherited, known as chloroplast DNA (cpDNA). Chloroplast DNA can be used in research to examine genetic diversity within plant genus™ and species, as well as evolutionary relationships. The American elm, Ulmus Americana, is a deciduous tree found primarily in bottomlands and floodplains, but also naturally thrives near streams along and throughout the Appalachian Mountains. The resilience of the American elm allowed for the species to be cultivated and widely planted outside of its natural hardiness zone. Unfortunately much of the cultivated American elm tree population was destroyed by Dutch elm disease, caused by the fungus ascomycete microfungi. The vector by which the disease is transferred is the Elm Bark Beetle. This research is investigating the cpDNA genetic diversity between two particular Elm species, Ulmus americana and Ulmus rubra. DNA was isolated from healthy tissues in the old growth forest in Zoar Valley, New York, and from cultivated trees in the vicinity of YSU. CpDNA has been amplified through polymerase chain reaction conserved primers that flank more variable regions. These products are cloned, isolated and then quantitated before being sequenced for analysis. The goal of this research is to analyze the genetic differences within the cpDNA to see if there is a difference between Healthy wild trees and cultivated susceptible Elms.

Lammon, Michelle  
Biological Sciences  
Targeting Staphylococcus aureus, Type 8 Capsule, by Using a Carbohydrate Mimetic: TC-I-045  
Staphylococcus aureus is a serious hospital acquired infection due to increased antibiotic resistance. Type 5 and type 8 S. aureus cause 70 percent of S. aureus infections in hospitals. Capsular polysaccharides of Staphylococcus aureus (S. aureus) are virulence factors, especially in type 5 and type 8 S. aureus. In this study, a carbohydrate mimic competes with the enzymes that produce the capsules, thus inhibiting the production of the capsule structure. If the mimetic decreases capsule production, it would elicit an immune response to fight the bacteria. Samples of T8 (49525) S. aureus were incubated with different amounts of the chemical TC-I-045 or ethanol, where ethanol acted as the control. The presence of capsular carbohydrate was tested for via an indirect enzyme-linked immunosorbent assay (ELISA). Results indicate that TC-I-045 does not prevent the synthesis of the bacterial capsule independent of the concentration of the chemical in the samples.

Langer, Jason  
Geological & Environmental Science  
Changes in Shoreline Sedimentation at Sandy Point, San Salvador  
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Sandy Point is a prominent landform located at the southwestern corner of San Salvador, Bahamas. It is a massive peninsula-shaped sand deposit created by the combination of long-shore drift along the southern and western shores of the island and intensive wave refraction at the point. GPS surveys of the shoreline conducted in March for the years 2005 â€“ 2009 demonstrate regular and non-predictable change of the shoreline position from year to year. Visual observations and crude line-level transects for the same years indicate equally dramatic change in the overall morphology of the deposit. In an effort to better understand the processes responsible for the observed changes and document the magnitude of change, a detailed study of Sandy Point was initiated in June 2009. The data included shoreline GPS surveys, shoreline to back-beach transects (GPS and total station), and sand textural analyses. A second set of measurements and analyses was completed in March 2010. Preliminary results demonstrate a dramatic change in shoreline position from June 2009 to March 2010. In accordance with shoreline change, the beach transects show dramatic change in the overall morphology of the sand deposit. Over all, the sediment can be characterized as poorly sorted coarse sand composed of primarily carbonate shell fragments. The resulting data of shoreline and transect surveys were plotted on the topographic map of the island (1971) using ArcGIS.

Lee, Chu Shiu  
English  
Going up?: A Sociolinguistic Study of Verbal Interaction in Elevators  
This study will examine, from a sociolinguistic perspective, the nature and occurrence of verbal interactions between passengers involved in elevator encounters. The examination will attempt to define and predict which factors, if any, precipitate, predict, and limit acts of greeting and leave-taking between strangers who find themselves in unavoidably close proximity with each other in a elevator setting. In addition to incorporating live recorded data samples collected during actual elevator rides, the study will collect and analyze questionnaires regarding elevator behavior, distributed among members of the YSU student body. The results of these questionnaires will be compared to the results of the live data for the purposes of distinguishing between perceived and "actual" speech behavior. Our predictions are three fold: that greetings ill reliably predict leave-taking; that the presence of fewer passengers will engender likelihood of interaction, and the inverse; and that the occurrence of interaction is the exception rather than the norm.

Layton, Jeffrey  
Economics  
School Facilities and Performance: Evidence from Ohio  
The 1997 establishment of th Ohio School Facilities Commission sought to equalize both buildings and opportunities for students across the state. Since its inception, billions have been spent by the commission to implement its goals. This study looks at the effectiveness of this spending by examining the Ohio Graduation Test results in renovated school districts both before and after the construction spending.

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Lesher, Don

A Prototype Wireless Thermostat

A general purpose wireless transmitter represents a tool to engineer drop-in solutions to problems with preexisting equipment. The wireless module that was used is called the XBee module by Digi. It was chosen because of its numerous features. One possible application is the addition of a thermostat to equipment with no such device originally. A simple heater could benefit from this. Since drop-in devices are price sensitive, the design must be as simple as possible. Cadence Orcad and Psice were used to test the feasibility of circuit designs. This system has wide applicability, and the simple thermostat design is one of many uses.

Lettera, Christopher

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Lettera, Christopher

Literature and Politics

For this presentation, I will be working under the guidance of my Senior Seminar instructor Dr. Sherry Linkon and alongside my Senior Seminar classmates Jay Newman and Lindsey Ramdin to present research that I completed for my final project during Fall semester of 2009. My studies focused on the reemerging sociopolitical relevance of the Western genre in literature and film. I analyzed Cormac McCarthy’s 2005 novel, No Country for Old Men, as well as Tommy Lee Jones’ 2005 feature film, The Three Burials of Melquiades Estrada, and I dissected the sociopolitical elements in each work, focusing particularly on how the traditional narrative structure of the Western was reworked in both cases to reflect sociopolitical concerns of the creators. During my oral presentation at Quest, I will read brief portions of the paper I produced on this topic and I will make use of an accompanying PowerPoint presentation to discuss the process as well as the product of my work, analyzing my experience with political literature as a Senior Seminar student as well as the critical steps I took in researching and creating my final paper.

Lettera, Christopher

Mystical Sunshine Lover

For Quest 2010, I will be producing a chapbook comprised of four short stories set at the Burning Man Festival in the Black Rock Desert of Nevada. The chapbook itself as well as my accompanying oral presentation will be titled Mystical Sunshine Lover. Burning Man is an experimental yearly festival that celebrates community, the arts, and radical forms of self-expression. Under the guidance of YSU English instructor Christopher Barzak, my aim is to employ the medium of the short story to explore the various meanings that Burning Man holds to its attendees as well as its larger place in American culture. Each of my stories will explore the perspective of an American or groups of Americans from various cultural and socioeconomic backgrounds. I will draw from a variety of scholarly articles on Burning Man as well as popular media coverage and video footage of the event to shape the narratives I create. My end goal is to produce a thirty page mosaic of historical fiction that challenges audiences by incorporating elements of Western, ecological horror, and drug literature genres. During my oral presentation at Quest, I will blend discussion of my research with readings from my chapbook. Attendees will be presented with printed excerpts of my work.

Lewis, Zachary

Environmental Enrichment of Captive Gibbons

From December 24th 2009 to January 3rd, 2010, I observed three gibbons at the Gibbon Conservation Center (GCC) in Santa Clarita, California. The study was conducted under the supervision of Alan Mootnick, Director of the GCC. The intent of this study was to record the behavior of the subject animals prior to and following the addition of numerous large branches to both cages. Observations were made using the JWatcher™ program developed by the Animal Behavior Laboratory at Macquarie University in Sydney, Australia. This program allows for empirical observations of behaviors by allowing the researchers to record them with a single push of a keyboard button, and by providing exact times and durations of behaviors. The specific aim of this study is to provide a low-cost, basic solution which will provide environmental enrichment in the form of large branches added to the enclosures in order to allow additional avenues for brachiation. Branches will be added with a focus on providing a more natural medium from which to brachiate along commonly used paths through the enclosures as identified by the director of the Gibbon Conservation Center and myself. The addition of these branches fulfills the four aims of environmental enrichment as identified by Novak and Drewson (1989): (1) promoting health by encouraging activity; (2) providing comfortable and stress-free environments by making them more natural; (3) encouraging species-specific behaviors associated with brachiating locomotion; and (4) providing social and environmental enrichment by naturalizing the enclosure. Changes to behavior and activity budgets were assessed using the JWatcher™ program’s analysis capabilities.

Lewis, Sarah

The Pura Vida: Costa Rica from an American Student’s Punto de Vista

Costa Rica has become a haven for American tourists and expatriates alike. Its natural beauty, affordable cost of living, friendly population, and democratic stability have made tourism the leading industry in the Costa Rican economy. Of particular interest in Costa Rican development are the effects of abolishing the military in 1948 and the resulting political environment. Drawn from research and personal experience as a student studying in Costa Rica, this presentation will explore the factors that attract Americans to Costa Rica and what they discover while there.
Race, Gender and Exposure Time Effects on Eyewitness Memory

The accuracy of eyewitness memory was tested in this study, which is an extension of a study by Smith, Stinson, and Prosser (2004). One hundred and seven (39 male and 68 female) participants were tested. Participants each viewed a crime scene photograph and were then asked to respond to a brief survey answering questions about the photograph. Between the groups, there were a total of four photographs shown, but each group only saw one photograph. Each of the four photographs contained a different perpetrator, but the crime scenes remained the same, and no victim was present. There were 12 conditions, which differed in the arrangement of the independent variables (race of the perpetrator, gender of the perpetrator, and exposure time). The results revealed no significance for gender and exposure time. However, as predicted, race has shown to play a vital role in eyewitness memory.
Lotey, Nimrit  
Biological Sciences  
"Construction and Characterization of a Green Fluorescent Protein (gfp)/Titin ARMD Immunogenic Domain Fusion Protein."

The aim of this study is to understand the role of specific titin domains in muscle development and function. This lab has been studying a specific titin domain RMMG6. Ultimately we want to transfect mouse muscle stem cells with an Autoimmune Rippling Muscle Disease (ARMD) immunogenic titin domain, RMMG6, and determine its effects of over expression of the RMMG6 on the cell's activity and development. The work presented here describes the construction of a fluorescent green protein/ ARMD immunogenic titin domain fusion protein (gfp/RMMG6). The plasmid chosen as the fusion vector is pAcGFP-C1, providing for a fluorescent marker protein. RMMG6 is derived from a plasmid originally constructed in this lab containing the rmmg6 gene (Gen Bank accession # EU428784). DNA sequence and restriction enzyme analysis of the resulting plasmids, indicate that we achieved construction of the correct plasmid. The expressed fusion gene should be a composite protein consisting of the fluorescent tag gfp and RMMG6. This will allow use to trace the RMMG6 within the muscle cells and thus define what part of the cell RMMG6 localizes to and what potential role it may play in structure/ function of the developing myocytes.

Lowry, Heather  
English  
"You Said That In Class!": A Study of the Use of Curse Words In College Classrooms"

Since using curse words in college courses seems to happen more frequently, we are distributing a survey to English 1550 courses to find out which curse words are being used, who is saying these words, the context in which curse words are used and/or accepted, and whether or not certain curse words are acceptable when used. We would like to do a presentation where we share our results with our colleagues. We hypothesize that there will be differences among survey participants in regards to age, gender, and what area of study the students are pursuing. Results are still being collected, at this point, and will be fully completed and tabulated by April 6, 2010.

Lu, Alvin  
Biological Sciences  
"Lung Function on a Daily Basis"

Our experiment is designed to compare and contrast the human lung capacity and breath period in differing physical situations of the body. The members of our group, five subjects total, will be studied while performing four differing breathing situations; standing, sitting, laying down, and after exercise. Breathing data will be collected using a spirometer and the accompanying equipment. Data will then be analyzed by hand using varying degrees of mathematics and using the SPSS 12.0.1 system, doing two-way ANOVA and SNK values. We hypothesize that when your lungs are more open and have more room to expand, you will then inhale and exhale a much larger lung volume. We suspect the breathing forms investigated, from greatest lung capacity to least, will be in the following order; standing, sitting, lying, and post exercise.

Lum, Gengkon  
Biological Sciences  
"FunSecKB: A Knowledge Base of Fungal Secretomes"

FunSecKB (http://proteomics.ysu.edu/secretomes/fungi.html) provides a resource of all secreted proteins, i.e. secretomes, in all fungi. The database was constructed with all available protein data in fungi from the NCBI RefSeq database. The secreted proteins contains information from three sources: (1) the entries were identified using a computational protocol including SignalP, TMHMM, WolfPsort, Phobius and PS-Scan; (2) the entries were mapped to UniProt database with annotation of subcellular locations that were either manually curated or computationally predicted; (3) the entries we manually curated from recent literature. With a web-based user interface, the database is searchable, browseable, and downloadable by using NCBI GI, RefSeq accession number, UniProt ID, key words, and species. A BLAST utility was integrated to allow users to query the database based sequence similarity to protein sequences of their interest. A tool was also included to support community annotation. With the complete data available from fungi and associated web-based tools, FunSecKB will be a valuable resource for exploring the potential applications of fungal secreted proteins.

Lundberg, Rachel  
Dana School of Music  
"Digitizing the Scholar Experience"

Recently, the Scholars Program of Youngstown State University has integrated the LiveText ePortfolio into its curriculum. On behalf of the Scholars Program, Justin McIntyre, Cory Okular, and Rachel Lundberg, three University Scholars and Scholar Trustees, will present the LiveText ePortfolio and the possible impact that it can have on a student's undergraduate experience. The LiveText ePortfolio is a comprehensive collection of a student's work, including scholarship, leadership, community work, work experience, or any other category that a student wishes to integrate into their portfolio. It can then be used as a valuable tool in a student's attempts at procuring internships, scholarships, education following graduation from Youngstown State University, or entrance into a profession. What separates the LiveText ePortfolio from other ePortfolios that are available to students is the networking that the program allows. Work can be easily and efficiently shared with professors, advisers, fellow students, or anyone interested in a student's college experience. From there, LiveText ePortfolio becomes a communication tool and a student can receive feedback on their ePortfolio so that they may work improve their work before submitting to potential employers or other professionals. Justin McIntyre, Cory Okular, and Rachel Lundberg will use their own experience with the LiveText ePortfolio and its implementation into the Scholars Program to inform viewers on the potential benefits that students can receive by using an ePortfolio. Sample ePortfolios will be used to provide a base for viewers to understand the possibilities available with the LiveText ePortfolio.
Reinforcement of a Concrete Canoe

Reinforced concrete has many applications. One such application is in a lightweight concrete canoe. The purpose of this research was to investigate different methods of reinforcement in a concrete canoe. Concrete is known for being very strong in compression and very weak in tension. So in order to construct a structurally sound concrete canoe, research has to be conducted to find a suitable reinforcement material to withstand the tensile forces in a canoe. For this research, four different types of reinforcement mesh, and different methods of prestressing were investigated to find an ideal reinforcement scenario. Testing was conducted by casting concrete plates representative of a canoe hull (0.5" thick featuring two layers of reinforcement sandwiched between 3 layers of concrete). The plates were then loaded until failure, and the values recorded. Tests featuring prestressing tendons impregnated into the tensile face of the concrete plate were also conducted. These tests also featured a chemically prestressed concrete mix which is an innovation the YSU Concrete Canoe team has never before used. Through all the testing, it was found that a mix of chemically prestressed concrete, reinforced by 3/8" fiberglass mesh and 3/32" steel prestressing tendons will give the concrete canoe the required flexural strength it needs to withstand the rigors of competition racing.

Development of a Microfluidic Impedance Sensor

Microelectromechanical systems (MEMS) are a rapidly expanding research and development area. Nationwide research is being done to develop MEMS based sensing systems for the rapid detection of pathogenic bacteria and contaminants, which pose a threat to the public health. The technology is currently needed in the automotive, food, and medical industries. There are many methods for sensing pathogenic bacteria and contaminants in a sample available, but this study was done solely on impedance sensors. Two methods of production were used in this study. The first method was traditional micromachining. The second method was photolithography. Both methods were challenging for different reasons and their pros and cons were explored and analyzed. In addition, a computer model based on continuity equations was constructed for comparison with the actual sensors. The computer model consisted of a long microchannel with two electrodes placed on opposite sides of the channel. It was challenging to produce results consistent with the physical world from the computer program due to the model containing many variables. However, the results were consistent with past research that had been performed in this field. Tests of the actual sensors detected contaminants. These results were compared with the computer model for verification.

Design and Construction of a Human Powered Moonbuggy

The moonbuggy project is part of a student competition known as the NASA Great Moonbuggy Race. This competition is held every year during the spring at the U.S. Space & Rocket Center in Huntsville, Alabama. Approximately fifty universities from all around the world compete for the best time. The event involves a vehicle erection time, course run time, and penalty time. The vehicle erection time is the amount of time it takes to erect the vehicle from a storage condition to an operable, drivable state. The course run time is the amount of time it takes a team to complete the course. The penalty time involves different penalties that are garnered during the vehicle erection and race. Penalties are attributed for a plethora of reasons from getting out of the moonbuggy to not completing an obstacle. The course is composed of harsh terrain conditions and several obstacles that emulate the surface of the moon. A collapsible human-powered vehicle was designed and fabricated that had design specifications provided by NASA to fit in a maximum volume of 4ftx4ftx4ft in a collapsed fully assembled state. The vehicle was powered and controlled by one woman and one man. The design was improved by making a lighter frame out of aluminum; in addition, other things were improved: a new gearing system, more absorbent shocks, and all terrain tires. The challenge in constructing the moonbuggy was to keep it strong and durable while decreasing the weight of the vehicle.

Archaeological Excavation and Research of Storr's Lake San Salvador (Commonwealth of the Bahamas)

Excavation at the archaeological site SS-4 at the North end of Storr's Lake, on San Salvador Island in the Commonwealth of the Bahamas. The excavations were completed by Youngstown State University students. As lead investigator, I took a team of six fellow YSU students to this site in order to excavate for artifacts from the Lucayan Indian Culture, who inhabited the island of San Salvador in the 1400's. Our job was to choose a site, clear, map, and lay transects where I decided to place our test pits. Our test pits were 1 by 1 square meters placed within our transects, and were dug approximately 40cm below the surface or until we hit sterile ground. The tools we used for our work included trowels, dust pans, brushes, shovels, compasses, string, marking tape, tape measures, five gallon buckets, stakes, and machetes for clearing our site. Our findings included broken pieces of Palmetto ware, shell beads, fish vertebrae, and broken pieces of shells. All of our finds were taken back to an archaeology lab where they were examined, cataloged, and stored.

Design of the Pressurized Shell for a Thick-Walled Hydraulic Actuator

The goal of this project is to design a pressurized shell of a thick-walled cylindrical hydraulic actuator. Hydraulic actuators are used in large variety applications in heavy machinery. In this project the thickness of the 1020 steel cylinder must be determined for a design factor of safety of 2.5 in order to be able to lift a static load of 14,000lbs via a pressure supply of 2000psi. To simplify the problem, the stress concentration factors and deflections were ignored. The approach is to calculate the stresses within the wall of the pressure vessel as influenced by the wall thickness. In addition, parametric studies of various wall thicknesses were performed in order to optimize the cylinder design. Results were verified with a computer simulation using COMSOL, a commercially available FEA software and also compared with published literature.
Majeti, Jilakshmi Manasa  Chemistry  Ohio Room  10:30 - 12:00

**Preliminary Characterization of HIV-1 protein Vpr**

Human immunodeficiency virus type 1 (HIV-1) is a retrovirus that is well known to be the causative agent for acquired immunodeficiency syndrome (AIDS). HIV-1 contains many proteins such as Vpr, Tat, Rev, Vif, Ypu and Nef that help regulate its function. Viral protein R (Vpr) is an accessory protein that is involved in virus replication and plays a key role in the function of HIV-1. Vpr has the ability to arrest the cell cycle of infected cells in the G2 phase which leads to the immunopathogenicity of HIV-1. There are 96 amino acid residues in Vpr and is well conserved in HIV-1, HIV-2 and simian immunodeficiency virus (SIV). Structure determination and analysis of Vpr (1-96) molecule is anticipated to reveal more insights into its biological function and the role played by this protein during the virus life cycle. Our ongoing study involves the relationship between the structure and function of Vpr as it plays a significant role in HIV biology and in the pathogenesis of AIDS.

Makara, Michael  Biological Sciences  Ohio Room  10:30 - 12:00

**Glycomimetics as an Inhibitor of Staphylococcus aureus Capsule Formation**

Staphylococcus aureus is a bacterial pathogen that causes a wide range of clinical infections. The enhanced virulence seen in S. aureus can be attributed to the formation of a protecting polysaccharide capsule that surrounds and protects the organism. The goal of this study is to synthesize a molecule that mimics the structure of an individual sugar unit, but, once incorporated, would halt the synthesis of capsular polysaccharide. The biomimetic tested, named TC-I-027, was added to growing cultures of S. aureus in varying concentrations and left to incubate. Once grown, the S. aureus was fixed and an ELISA was performed to determine the amount of capsule produced. In the ELISA assay, the S. aureus was incubated with antibodies that had previously been shown to bind to the capsular polysaccharide. The amount of antibody bound corresponded to the amount of capsule produced. Results of the data showed that compound TC-I-027 did not prevent capsule synthesis.

Makridis, Nikki  Marketing  Room 2068  14:30 - 14:45

**The Penguin Odyssey at Youngstown State University: Exploring the Effects of Faculty-Led Study Abroad Tours**

As globalization continues to sweep across the world changing the way societies must think and act, the demand for an international education has become imperative. To meet the demands of the global marketplace, Youngstown State University has provided students from a variety of disciplines with opportunities to interact with their international peers, develop appreciation and understanding of foreign cultures, and engage in field work relevant to their areas of study. Through application of our collective qualitative research and cross-cultural studies in San Salvador, Hong Kong, Shanghai, Beijing, London, and Dublin, we conclude that faculty-led study tours allow students to transcend the traditional classroom setting and gain invaluable exposure to global travel in diverse cultures and their various stages of development.

Mamounis, Joseph  Communication & Theater  Pugsley Room  11:15 - 11:30

**Paying Sources for the Facts: An Ethical Analysis and Case Study**

This paper analyzes the ethical dilemma presented to celebrity gossip website TMZ.com when they reportedly paid a source within the Los Angeles Police Department (LAPD) to leak the graphic crime scene photo of RnB singer Rihanna. To achieve this, moral and non-moral values considered in making this decision are analyzed to gain an understanding of the decision-making process. Also the moral theory of Natural Law is applied to the said situation in an attempt to evaluate whether the appropriate conclusion was made. The paper also includes the author's opinion regarding the decision made and in relation to the ethical dilemma.

Mancuso, Nicholas  Mechanical & Industrial Engineering  James Gallery  16:00 - 16:15

**Alternative Fuels Examined: Are Electric Cars the Future?**

This presentation addresses the ongoing search for alternative fuels with regard to automobiles and finds electricity to be the leading prospect. Ethanol, methanol, biodiesel, propane, and natural gas are other popular alternatives that are all briefly examined, but electricity outperforms the field in efficiency and supply. Electric cars are becoming increasingly popular among car manufacturers, and as competition increases to place an affordable, long-distance electric car on the market, it is speculated that technology will augment and costs will drop significantly. Lithium-ion batteries have already experienced such a technological enhancement as in just over one year they’ve jumped from powering cell phones to power tools, all while packing 10 more volts into a slimmer, smaller model battery. As engineers continue to work on improving battery life, the sky is the limit for electric car technology.

Mattila, Leanna  Psychology  Jones Room  08:45 - 09:00

**Age, Similarity, and Perspective Taking: Factors that Affect Empathy for Animals**

In this study, the effects of three factors that affect empathy for animals is examined: age of animal, animal-to-human similarity, and perspective taking instructions. As was done in the work by Allen et al. (2002), subjects were presented with scenarios describing an instance of animal abuse. The animal was described as being young or adult, and as being an iguana or a chimpanzee. Half of the participants were given instructions to take the perspective of the animal prior to reading the scenario. The participants were then asked to offer a recommendation for the abuser’s penalty and to rate their experience of empathy for the animal. Results showed that there was a significant effect of the animal's species on the fine amount recommended by the participant.
**Development of a Microfluidic Impedance Sensor**

Microelectromechanical systems (MEMS) are a rapidly expanding research and development area. Nationwide research is being done to develop MEMS based sensing systems for the rapid detection of pathogenic bacteria and contaminants, which pose a threat to the public health. The technology is currently needed in the automotive, food, and medical industries. There are many methods for sensing pathogenic bacteria and contaminants in a sample available, but this study was done solely on impedance sensors. Two methods of production were used in this study. The first method was traditional micromachining. The second method was photolithography. Both methods were challenging for different reasons and their pros and cons were explored and analyzed. In addition, a computer model based on continuity equations was constructed for comparison with the actual sensors. The computer model consisted of a long microchannel with two electrodes placed on opposite sides of the channel. It was challenging to produce results consistent with the physical world from the computer program due to the model containing many variables. However the results were consistent with past research that had been performed in this field. Tests of the actual sensors detected contaminants. These results were compared with the computer model for verification.

**Construction and Characterization of a Green Fluorescent Protein (gfp)/Titin ARMD Immunogenic Domain Fusion Protein.**

The aim of this study is to understand the role of specific titin domains in muscle development and function. This lab has been studying a specific titin domain RMMG6. Ultimately we want to transfect mouse muscle stem cells with an Autoimmune Rippling Muscle Disease (ARMD) immungenic titin domain, RMMG6, and determine its effects of over expression of the RMMG6 on the cell's activity and development. The work presented here describes the construction of a fluorescent green protein/ ARMD immunogenic titin domain fusion protein (gfp/RMMG6). The plasmid chosen as the fusion vector is pAcGFP-C1, providing for a fluorescent marker protein. RMMG6 is derived from a plasmid originally constructed in this lab containing the rmm6 gene (Gen Bank accession # EU428784). DNA sequence and restriction enzyme analysis of the resulting plasmids, indicate that we achieved construction of the correct plasmid. The expressed fusion gene should be a composite protein consisting of the fluorescent tag gfp and RMMG6. This will allow use to trace the RMMG6 within the muscle cells and thus define what part of the cell RMMG6 localizes to and what potential role it may play in structure/ function of the developing myocytes.

**Digitizing the Scholar Experience**

Recently, the Scholars Program of Youngstown State University has integrated the LiveText ePortfolio into its curriculum. On behalf of the Scholars Program, Justin McIntyre, Cory Okular, and Rachel Lundberg, three University Scholars and Scholar Trustees, will present the LiveText ePortfolio and the possible impact that it can have on a student's undergraduate experience. The LiveText ePortfolio is a comprehensive collection of a student's work, including scholarship, leadership, community work, work experience, or any other category that a student wishes to integrate into their portfolio. It can then be used as a valuable tool in a student's attempts at procuring internships, scholarships, education following graduation from Youngstown State University, or entrance into a profession. What separates the LiveText ePortfolio from other ePortfolios is that it is available with the LiveText ePortfolio. Conceptually, the LiveText ePortfolio becomes a communication tool that students can receive feedback on their ePortfolio so that they may work improve their work before submitting to potential employers or other professionals. Justin McIntyre, Cory Okular, and Rachel Lundberg will use their own experience with the LiveText ePortfolio and its implementation into the Scholars Program to inform viewers on the potential benefits that students can receive by using an ePortfolio. Sample ePortfolios will be used to provide a base for viewers to understand the possibilities available with the LiveText ePortfolio.

**Time-domain transient equations for charging voltage and current of a RC circuit utilizing Differential & Integral Calculus, and Circuit Simulation Software**

Derivations of time domain transients of charging voltage and current of series RC (Resistor & Capacitor) circuit can be obtained utilizing various mathematical and simulation techniques. In this research project, the time-domain differential equations will be derived by using integration techniques and differential equation solutions. The differential equation will also be solved by applying Laplace Transform (transformation into complex frequency domain). The solutions (amplitude vs. time) will be shown in a graphic form using Microsoft Excel. This graph will be compared to the results obtained from RC circuit simulations using Electronic Work Bench (EWB) Circuit Design Suite Multisim 10.1.

**Interference of Perceptual Simulation by Suggested Location of Word and Image Cues**

Perceptual simulations are composed of modal symbols and are thought to represent concepts in the brain by activating neural pathways in the sensory cortices of the brain (Barsalou, 1999). Interference can occur if similar simulations are activated (Estes et al., 2008). In this study, the interference of simulations was tested by presenting subjects with words and images that denoted a high, a neutral, or a low spatial location, followed by a target appearing at the top or at the bottom of the screen. If perceptual simulations occur, reaction time (RT) should increase if the location indicated by the stimulus is the same as the presented target location (Estes et al., 2008). I found that there is a significant effect of suggested location and target position on RT. This study is an extension of Estes, Verges, and Barsalou (2008), and will be modified to include an image condition.
Effects of Ethidium Bromide on Mitochondrial DNA in the yeast Saccharomyces Cerevisiae.

Mitochondria are organelles found in eukaryotic cells. Mitochondria function as the powerhouse of the cells, converting food into energy though the Krebs cycle and oxidative phosphorylation. Mitochondria contain their own DNA (mtDNA) which varies in size depending on the organism. In humans it is ~80kbs, while yeast mtDNA is ~17kbs. This difference in size does not reflect the content and function of the genome. The larger yeast mtDNA genome actually encodes fewer proteins of the respiratory chain than the human mtDNA genome does. Mitochondrial DNA mutates at a higher rate than nuclear DNA, most likely due to inadequate repair mechanisms. Mutants (rho-) of yeast mtDNA with massive deletions occur spontaneously or can be induced by mutagens such as Ethidium bromide (EtBr). Some rho- mutants, HS rho-, contain a conserved rep sequence and have a pronounced replication/segregation advantage; others do not (N rho-). A nuclear gene, MGT1, that resolves recombination structures, is required for preferential transmission of HS rho- mutants, but is not required for normal mtDNA maintenance. Previous research done by Dr. Lorimer discovered that not all rho- mutants, HS or N, are maintained in the absence of MGT1, while others are relatively stable. Currently, not enough different rho- mutants have been screened for maintenance to determine what cis-acting DNA sequences may be involved in either maintenance or loss in the absence of MGT1. Therefore we are generating new rho- mutants with EtBr, and characterizing them. Mutants that have genomes of 1,000 bp or less will then be tested for stability in MGT1 knockouts and sequenced.

The Effect of NK3 Activation on the Dynamics of Layer V Pyramidal Neurons of the Prefrontal Cortex

Senktide is a drug that increases firing activity in prefrontal cortex layer V pyramidal neurons. Senktide activates the NK3 receptor in the neurons. In order to investigate this response, we developed a biophysically based model incorporating the multiple currents effecting the firing activity of these neurons. This model was compared to our experimental data, obtained from whole cell patch recordings of the neurons in vitro, in order to determine the currents sensitive to senktide. Additionally, the model was numerically analyzed using dynamical systems techniques to determine the mechanisms of NK3 activation.

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Water Conservation

This project unites the mechanical skills of an engineer and the inventive concepts of an artist. We constructed a pro-active piece that allures the viewer with an unrecognizable construct. When water becomes polluted with anthropogenic contaminants it becomes dangerous for human activities and can no longer sustain life for aquatic communities. in the Mahoning Valley inorganic water pollutants are the leading contributor to our water conservation concerns. As a community we must become aware of our essential environment and work together to preserve it for the future of our natural world. By increasing public curiosity, we as students are presented with the opportunity to expand this awareness through a combination of sculpture and engineering.

Analysis of Shaft and Gear Transmission for a Small Winch-Crane Unit

A transmission assembly constructed of steel spur gears has been analyzed for use in a small winch-crane unit operating at 95% efficiency. A winch-crane unit is a device utilized for lifting moderately heavy loads and transporting these around a shop or laboratory environment. Geometrical parameters of the transmission have been provided which contains 6 gears of given geometry, supported with flanged bearings. Analysis includes output speed and torque of the transmission, stress analysis for the transmission housing itself. The analysis of the transmission have been done theoretically and validated through Finite Element Analysis (FEA) software simulation. Completion of this project has provided the company with insight into the reliability and efficiency of the winch-crane transmission.

Constructing and Modelling a Small Horizontal Axis Wind Turbine

With the increasing interest in green technologies, privately owned small scale wind turbines are becoming more and more popular. According to the American Wind Energy Association, the domestic market saw a 78% increase in sales from 2008 to 2009. This presentation documents the construction, modeling, and testing of a small horizontal axis wind turbine based on the following design variables: headwind speed, tip speed ratio, blade angle, rotor diameter, and airfoil shape of the blades. The main focus in construction was the design and fabrication of the blades and hub connections. The fabricated blades used a double airfoil design to maximize start-up in low winds and regulate rotation speeds in high winds. They were manufactured using polyurethane foam injection molding and reinforced with fiberglass. A second set of commercially available blades which used a single airfoil design and had known performance specifications were tested for comparison to the fabricated blades. Models of the various components of the wind turbine were created in a computer aided design package (Solidworks). Mechanical and fluid behavior of the system was predicted using computer analyses (Algor and Fluent) to ensure structural stability and fluid flow. Computer predictions of the wind turbine system using both sets of blades were compared with real world test data from the constructed wind turbine system.
Mistovich, Laura
English
Humphrey Room 13:30 - 13:45

Going up?: A Sociolinguistic Study of Verbal Interaction in Elevators
This study will examine, from a sociolinguistic perspective, the nature and occurrence of verbal interactions between passengers involved in elevator encounters. The examination will attempt to define and predict which factors, if any, precipitate, predict, and limit acts of greeting and leave-taking between strangers who find themselves in unavoidably close proximity with other strangers in an elevator setting. In addition to incorporating live recorded data samples collected during actual elevator rides, the study will collect and analyze questionnaires regarding elevator behavior, distributed among members of the YSU student body. The results of these questionnaires will be compared to the results of the live data for the purposes of distinguishing between perceived and actual speech behavior. Our predictions are threefold: that greetings will reliably predict leave-taking; that the presence of fewer passengers will engender a greater likelihood of interaction, and the inverse; and that the occurrence of interaction is the exception rather than the norm.

Moy, Jennifer
Chemical Engineering
Ohio Room 10:30 - 12:00

The Use of Mathematics to Examine the Operation of an Electrochemical Cell
The basics of an electrochemical cell were explored. In order to evaluate and understand the current distribution across an electrochemical cell, mathematical equations were investigated. These equations are expressed through upper-level calculus and differential equations. An objective of the project was to gain a better understanding of these equations.

Moy, Stephen
Electrical & Computer Engineering
Ohio Room 08:30 - 10:00

Triaxial Method Resonant Chamber for Low Frequency Electromagnetic Testing
Design and Construction of a Low Cost Tube-in-Tube Triaxial Device
The tube-in-tube test method is utilized for measuring the transfer impedance and the shielding and screening attenuation of the coupling of electromagnetic interference. It is a triaxial method for testing Electromagnetic Compatibility (EMC) of data communication transmission line structures (cable assembly and connection system). It provides an efficient and accurate way to test electromagnetic leakage at low frequencies. The network analyzer is used to measure the attenuation characteristics at the output of the tube-in-tube with test samples. Frequency sweep by the network analyzer will generate information on attenuation provided by the sample (cable assembly and/or connectors) at various test frequencies. The tube-in-tube test apparatus acts as a coaxial cable, allowing the measurement of voltage drop at the outside of the tube. This device is designed to allow for a cost improvement over a commercially available apparatus with similar functions. The device is also constructed to allow for better test flexibility to decrease test time and test cost. This is accomplished by incorporating a custom built lid and base assembly create a sealed chamber that is easy to open and close, making it more user-friendly. An adjustable end connector allows one to test different lengths of wire samples. Test results comparable to the commercially available device are verified.

Moyer, Deborah
Ohio Room 13:30 - 15:00

The Impact of Shift Work on Hospital Employees
Shift work is a necessary component of healthcare. Effective twenty-four hour healthcare coverage must be maintained at all times with attention to safe staffing levels. The purpose of this study is to examine the behaviors and attitudes of shift work employees in an urban hospital setting. Frequent issues related to shift work include fatigue, problems with sleep, and the consumption of junk food. This study examines the impact of shift work on such issues and the health, wellness, and the job satisfaction of shift employees. A non-experimental design was utilized to compare the habits of individuals working steady shifts to individuals working rotation shifts. The survey instrument includes items with a Likert type response format. It was distributed to employees from various nursing units at a local hospital in northeast Ohio. A stratified random selection process was utilized inviting 60 employees to participate in the study with 54 surveys returned yielding a 90% response rate. Over 50% of employees rotate shifts. The participants were predominantly female, over 41 years old, with 16 years or more in their current position. The results confirmed that employees that rotate shifts exhibit signs of stress and dissatisfaction with their positions to a greater degree than employees on a permanent shift work schedule. This study also revealed the rotation shift employees have a greater amount of problems with rest and sleep and a higher level of fatigue. The consumption of junk food during work hours was most often seen by the rotation shift employees. Information from this study and others like it may be useful in planning shift assignments and policies.

Neiheisel, James
Mechanical & Industrial Engineering
James Gallery 10:30 - 10:45

Analysis of Shaft and Gear Transmission for a Small Winch-Crane Unit
A transmission assembly constructed of steel spur gears has been analyzed for use in a small winch-crane unit operating at 95% efficiency. A winch-crane unit is a device utilized for lifting moderately heavy loads and transporting these around a shop or laboratory environment. Geometrical parameters of the transmission have been provided which contains 6 gears of given geometry, supported with flanged bearings. Analysis includes output speed and torque of the transmission, stress analysis performed on each gear and supporting shaft as well as stress analysis for the transmission housing itself. The analysis of the transmission have been done theoretically and validated through Finite Element Analysis (FEA) software simulation. Completion of this project has provided the company with insight into the reliability and efficiency of the winch-crane transmission.

Nemer gut, Daniel
Astronomy / Physics
Ohio Room 08:30 - 10:00

Calibration of OIII Spectrophotometric Standard Stars
In observational astronomy, the brightness of stars is calibrated with observations of standard stars. There are many such stars for broad-band filters, but many fewer in narrow-band filters, such as the filter that transmits the doubly-ionized emission line of Oxygen (O III)]. This makes it difficult for calibrating images taken using this filter. The goal for this project was to carefully measure the magnitudes and positions of potential narrow-band standard stars around the galaxy M87 in the Virgo Cluster. The data was taken with the Kitt Peak WYIN 0.9-m telescope. The results of this project will be compared to an independent study that is being conducted using the same method, but with a different telescope. If the stars prove to be constant and easy to locate, then they will be published as being candidates for calibration in future studies.
Newman, Jason  
English  
Room 2068  10:30 - 12:00  

**Literature and Politics**

In case I Have to Return Some Video Tapes: The Carnival Paradox and the Politics of the Grotesque, I link Russian critic/philosopher Mikhail Bakhtin's theory of the carnivalesque to Bret Easton Ellis's novel American Psycho. In addition, I discuss how conformity to the politics of consumer capitalism eliminates the carnival spirit within the novel and how Ellis's message is resistant to consumer-capitalist ideology and therefore carnivalesque. The Grotesque then acts as a vehicle for Ellis's display of resistance to consumer capitalism. Along with my analysis, I will discuss the complex process of the paper's preparation: a semi-weekly blog documenting progress, a proposal explaining the intentions of the paper, a critical review essay discussing ongoing research of the topic and novel, a detailed outline of the paper, an in-class presentation on the paper and the research involved, a revised draft that was reviewed by both my professor and a critical friend who made suggestions for improvement, and finally the finished paper.

Nezdoba, Jesse  
Electrical & Computer Engineering  
Coffelt Room  13:45 - 14:00  

**Encrypted Wireless Network for Vibration Data Acquisition**

The structural integrity of U.S. bridges is to be monitored via wireless sensor networks to determine and monitor the structural health of a highway bridge. An algorithm will determine bridge health based on vibration data collected from a wireless network of SunSPOTs. This health index will further the efforts to save human lives, avoid costly repairs, prevent unnecessary reconstructions, and provide timely restorations. The basis for the hardware design is the Sun Small Programmable Object Technology, or SunSPOT. These devices contain a Squawk based Java VM and an IEEE 802.15.4 radio (Zigbee). The SunSPOT has digital IOs on board to which a daughter card can be attached. An attached daughter PCB houses an adjustable gain op amp and a single axis vibration sensor. The vibration sensor measures continuous and impulsive vibrations produced from automobile traffic. A network consisting of three SunSPOTs and their individual vibration sensors complete the mesh network. The network of sensors is integrated with a host computer to collect and organize the vibration data.

Ngo, Lorna  
Chemistry  
Ohio Room  10:30 - 12:00  

**Elucidation of the Function of the Glutathionylspermidine in E. coli**

Tripeptide glutathione (GSH) is the primary thiol found in most organisms including humans. It functions to protect organisms from oxidants and other harmful electrophiles. In E. coli, GSH partakes in a reaction with polyamine spermidine to form the conjugate, glutathionylspermidine (G-Sp). The physiological role of G-Sp is still unclear, although it was shown that in the late phase of bacterial growth as well as under anaerobic conditions a significant part of GSH is bound to spermidine. Two approaches were undertaken in order to elucidate the role of GSp. One is the analysis of the effect of the elimination of the genes responsible for the synthesis of GSp from the E. coli genome. Second is the creation of the affinity matrix with immobilized GSp to capture the proteins that could use GSp as a ligand or cofactor.

Nguyen, David  
Biological Sciences  
Ohio Room  10:30 - 12:00  

**Gels to Resolve the Large Molecular Protein Titin**

Although it is a widely used laboratory technique for separating most proteins by size, sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) is inadequate for resolving proteins of relatively high molecular weight. To address this issue, large molecular weight proteins can be electrophoresed through gels of a different composition. These gels usually contain agarose or specific ratios of agarose to acrylamide. Agarose, which is used for gels that resolve DNA fragments, allows for a larger molecular pore size while retaining physical integrity. In this project, two previously published techniques were adapted for use in titin studies conducted in Dr. Gary Walker’s laboratory. The first technique described a 1% agarose gel which was later doubled for a 2% gel. The second technique called for a composite polyacrylamide-agarose gel (2% and 0.5% respectively). The techniques were compared to each other for their resolution of large molecular weight proteins and transferability to membranes for Western blotting. Of the two techniques, the composite polyacrylamide-agarose gel was able to resolve large proteins with clearer, sharper bands. The technique has implications for use in resolving titin in its native form for studies on rippling muscle diseased associated with myasthenia gravis.

Norge, Matt  
Mechanical & Industrial Engineering  
James Gallery  14:15 - 14:30  

**Permanent Magnet Motor: Generating Electricity from Water Waves**

The continuous expansion of industrialization and new technologies dependence upon electricity has caused an increasing burden on the available resources. This shortage of available energy sources has caused a dramatic increase in research in the field of alternative energy sources. Several new concepts have been developed due to the push for new alternative energy methods. One alternative energy method is the generation of electricity by utilizing the power of ocean waves; in particular, the use of a permanent magnet motor to harness the energy from water waves. The permanent magnet motor is a device that converts reciprocating motion into rotational motion without direct contact. The sinusoidal like form of a wave creates the reciprocating motion of the motor, which in turn is transferred into rotational motion that can be used to run a generator. For every wave, there is one rotation, and each rotation can be geared to produce several rotations of a rotor to effectively generate electricity.

The main challenge of this concept was developing a design to capture as much power from each wave as possible. Considerations included properly mounting magnets to achieve the optimal generating force, high quality machining and easy assembly to reduce unnecessary energy losses. The utilization of SolidWorks was key to fabricating an effective design. The software allowed for several designs to be developed without the expense of materials.
Alkyl and acyl azides are important intermediates in the synthesis of various organic functional groups and heterocycles, however their use is often hampered by inherent instability and the use of metallic azides for their preparation. We have now found that readily handled arylsulfonyl azides are convenient reagents for azidation reactions of alkyl and acyl halides, as well as alcohols. Microwave heating speeds up conversions and the formation of azide products is easily monitored by IR analysis of reaction mixtures.
**O'Rell, James**  Computer Science & Information Systems  Humphrey Room  08:45 - 09:00

*Individualized Asynchronous Distance Learning for Less Commonly Taught Foreign Languages*

As a graduate research assistant to Dr. Melissa Smith on a project about the YSU Department of Foreign Languages participation in a recently-inaugurated Northeast Ohio consortium on distance learning in foreign languages, my duties became both student and observer of the Beginning Japanese class, which was taught by Sharley Chang at the University of Akron. The observer end of these duties were far more successful than the student end of things. Therefore, Dr. Smith suggested I readjust my work as her research assistant to create an ideal method distance instruction, using my technical background. The goal was to create a user-friendly, asynchronous method for someone such as myself, a typical YSU student. My work is a comparative case study of existing methods. Therefore, I have been designing my own ideal course and the delivery of the curriculum. Of course, being a technical person by nature, my primary focus will be the delivery system. I have been interested in studying Japanese language because of its relevance to my field, which is game design. My major did not have a foreign language requirement. Due to my experience with Japanese 101, I have a decent concept of what works and what doesn't. My experience with the Japanese class is that current technology is not ready for synchronous foreign language distance learning. Dr. Smith's expertise in language teaching methodology had already suggested that current classroom teaching methods are not appropriate for this kind of learning. I used this experience as a base to start creating the ideal, asynchronous distance-learning course.

**O'Rourke, Patrick**  Electrical & Computer Engineering  Coffelt Room  13:30 - 13:45

*Design and Programming of an LED Cube*

As part of a research project for Electrical and Computer Engineering 3712, our group designed and constructed a four-by-four-by-four LED cube to display various three-dimensional patterns. An Altera Cyclone II FPGA programmed with VHDL code written in Quartus II software was used to control the cube. This presentation will detail our design and findings from simple LED functionality to complex microprocessor control.

**Oyler, Callie**  Human Ecology  Ohio Room  13:30 - 15:00

*Perceptions of Food Labels*

A standard food label on most packaged foods in the US, in accordance with the Nutrition Labeling and Education Act of 1990, highlights caloric and nutrient content per serving including carbohydrates, fiber, protein, total fat, saturated fat, cholesterol, and sodium (USDA, 2009). There is evidence that reading food labels can help individuals to change their eating patterns; however, the food label can be intimidating to those not familiar with the terminology or interpretation of the dietary information listed. The objective of this study is to define the scope of knowledge regarding food labels and their use among the undergrad student population at Youngstown State University. Students (n=200), male and female, will be recruited from the YSU campus common areas and once the protocols are explained, will be asked to sign the Informed Consent form if they wish to participate. Participants will self-administer the 27-item survey. It is anticipated that significantly more female participants (p < 0.05) will read food labels than males and that there will be gender differences in the nutritional content values used by participants. It is also expected that participants who have taken a nutrition or health education course will use food labels for selecting foods significantly more frequently than those who have not.

**Palumbo, Adam**  Mechanical & Industrial Engineering  James Gallery  11:00 - 11:15

*Design of a Conveyor Machine*

Conveyor machines are widely used in various applications to transport heavy loads. In this specific analysis, a dumpster with a load of 38,000 Newtons is transported by a conveyor machine that can be modeled as two parallel four-bar mechanisms. The conveyor machine is driven by a flywheel which transmits torque to the rods. The flywheel is driven by an electric motor connected by a belt. The purpose of this analysis is to design the shaft holding the flywheel as well as the connecting pins using the provided conveyor machine dimensions and material properties. This is accomplished by calculating forces in the entire conveyor machine and performing a fatigue analysis to find the appropriate shaft/pin dimensions to coincide with the given factor of safety. Engineering techniques such as stress analysis, machine optimization, dynamics, and kinematics were utilized to ensure a safe design. All analytical methods were verified by cross referencing computational results with theoretical calculations.

**Pant, Santosh**  Civil / Environmental & Chemical Engineering  Jones Room  11:00 - 11:15

*Geomorphic Characterization of Restored Streams*

Research was performed on two stream restoration projects a) Austintown Township Park and b) Pine Hollow Run Tributary Stream Restoration Project in Hermitage, PA. The main goals of the research were to: 1. Determine the physical condition of two restored streams including longitudinal profile, cross-section, sinuosity, and substrate, through field surveys; 2. Perform Level II Stream classification based on Rosgen (1996); and 3. Evaluate the success of the stream restoration projects in meeting the objectives and goals of the client and designer. Field surveys were done on both projects to determine longitudinal profile, cross-section and channel materials. Rosgen (1996) Level I and Level II assessments were used to classify the streams. The essential morphological parameters that were determined from the field survey were bankfull width, mean bankfull depth, maximum bankfull depth, width of flood prone area, width/depth ratio, entrenchment ratio, channel materials and sinuosity. From those parameters the Rosgen Level II classification is being done. The Rosgen classification showed the unnamed tributary to Meander Creek running through Austintown Township Park as a ä1efB4eB6 type stream. The classification for Pine Hollow Run tributary stream is in progress.

**Parise, Robert**  Biological Sciences  Ohio Room  08:30 - 10:00

*The Effect of NK3 Activation on the Dynamics of Layer V Pyramidal Neurons of the Prefrontal Cortex*

Senktide is a drug that increases firing activity in prefrontal cortex layer V pyramidal neurons. This hyperactivity may be associated with psychological disorders such as schizophrenia and addictive behaviors. In order to investigate this response, we developed a biophysically based model incorporating the multiple currents affecting the firing activity of these neurons. This model was compared to our experimental data, obtained from whole cell patch recordings of the neurons in vitro, in order to determine the currents sensitive to senktide. Additionally, the model was analyzed using dynamical systems techniques to determine the mechanisms of the senktide response.
Spatially and temporally discrete episodes of plant recruitment occur when relaxation of the resources that limit establishment and growth coincides with propagules. There are many ecological factors that affect below- and aboveground resource availability in a community and this research integrates important spatially and temporally varying components. In a managed grassland at the Pymatuning Laboratory of Ecology, we used a balanced split-plot factorial design to measure the interactive effects of grazing intensity (GI), soil resource availability (SRA) and soil disturbance patch size (DPS) on the invasion success of the annual smooth pigweed Amaranthus hybridus (L.) and velvetleaf Abutilon theophrasti (L.). Importantly, we considered two life history stages of each focal invader (i.e., emerged and established seedlings) because their invasion success probability can help reduce or eliminate problem behaviors students with autism often exhibit in the classroom. This poster explores each of those in more depth. These interventions can help reduce or eliminate problem behaviors students with autism often exhibit in the classroom.

**The Effects of NK3 Activation on the Dynamics of Layer V Pyramidal Neurons of the Prefrontal Cortex**

Senktide is a drug that increases firing activity in prefrontal cortex layer V pyramidal neurons. This hyperactivity may be associated with psychological disorders such as schizophrenia and addictive behaviors. In order to investigate this response, we developed a biophysically based model incorporating the multiple currents affecting the firing activity of these neurons. This model was compared to our experimental data, obtained from whole cell patch recordings of the neurons in vitro, in order to determine the currents sensitive to senktide. Additionally, the model was analyzed using dynamical systems techniques to determine the mechanisms of the senktide response.
Effectiveness of the Stream Restoration Projects

Poudel, Rajesh
Mechanical & Industrial Engineering

A small flow visualization wind tunnel was designed and built to study the pattern of flow around bluff and streamlined models. The visualization is created by injecting thin filaments of white smoke at the inlet of a small low-turbulence wind-tunnel. The wind-tunnel is a draw-through type and the flow is initiated by a small radial blower fan mounted near the exit of the tunnel. Air is drawn in through the inlet and exhausted at the tunnel exit. Part of the air exhausted can be forced into a smoke generating reservoir. The smoke, generated by vaporizing propylene glycol, is forced through the supply pipe into small nozzles and then emerges out of the nozzles as fine filaments. Models were placed in the test section for the study of flow patterns. The heater element and the blower fan are instrumented and controlled using computer software as well as manual controls. The machine has controls for starting the fan and the heating element along with a safety feature to turn off the heater and the fan if the temperature inside the smoke reservoir exceeds a certain threshold temperature. The flow patterns observed corroborated the concepts learned in fluid dynamics. In addition, flow visualization is used in many industries concerned with aerodynamics.

Cloning of Beta-Glucosidase from Escherichia coli

Pierson, Kristopher
Mechanical & Industrial Engineering

β-glucosidase is an enzyme that catalyzes the hydrolysis of glucose polymers containing 1-4 bonds, such as cellulose. Microorganisms such as Escherichia coli utilize the action of this enzyme to degrade polysaccharides containing these bonds as a fuel source. Humans, and more generally eukaryotes, do not make β-glucosidase. Due to the lack of this enzyme in humans and the necessity of this enzyme in E. coli, the enzyme can be a target for drug therapy. Inhibition of the enzyme will cease the vital breakdown of cellulose for energy in the bacteria, leading to its death. The patient would remain unaffected since humans do not use β-glucosidase. The gene encoding for β-glucosidase is amplified by polymerase chain reaction (PCR) using E. coli genomic DNA. The gene will be then incorporated into an expression vector and used to produce large amounts of the enzyme in the active site.

Permanent Magnet Motor: Generating Electricity from Water Waves

Pietromonaco, Joseph
Mechanical & Industrial Engineering

The continuous expansion of industrialization and new technologies dependence upon electricity has caused an increasing burden on the available resources. This shortage of available energy sources has caused a dramatic increase in research in the field of alternative energy sources. Several new concepts have been developed due to the push for new alternative energy methods. One alternative energy method is the generation of electricity by utilizing the power of ocean waves; in particular, the use of a permanent magnet motor to harness the energy from water waves. The permanent magnet motor is a device that converts reciprocating motion into rotational motion without direct contact. The sinusoidal like form of a wave creates the reciprocating motion of the motor, which in turn is transferred into rotational motion that can be used to run a generator. For every wave, there is one rotation, and each rotation can be geared to produce several rotations of a rotor to effectively generate electricity.

A Heat Transfer Model for Industrial Food Processes

Piirigy, Andrew
Mechanical & Industrial Engineering

During the pasteurization process of jarred solid-liquid foods, conduction and convection occur simultaneously. Current literature lacks a complete model of which trend the heat transfer model follows when analyzing the contents of the jar as a whole. The objectives of this study were to compare specific heat capacities and time temperature profiles of different solid-liquid foods and create a physical model that will mimic the thermal properties of these foods. For experiments, various canned foods were heated in a 16 oz jar using a research and development pasteurizing machine. Temperature changes were taken using thermocouple wiring, and their specific heat was taken using a calorimeter. This study will be used as a benchmark to compare foods of different heat capacity and their container size to improve the industrial process time and quality of the final product.

Flow Visualization Wind Tunnel

Pitcairn, Carol
Chemistry

β-glucosidase is an enzyme that catalyzes the hydrolysis of glucose polymers containing 1-4 bonds, such as cellulose. Microorganisms such as Escherichia coli utilize the action of this enzyme to degrade polysaccharides containing these bonds as a fuel source. Humans, and more generally eukaryotes, do not make β-glucosidase. Due to the lack of this enzyme in humans and the necessity of this enzyme in E. coli, the enzyme can be a target for drug therapy. Inhibition of the enzyme will cease the vital breakdown of cellulose for energy in the bacteria, leading to its death. The patient would remain unaffected since humans do not use β-glucosidase. The gene encoding for β-glucosidase is amplified by polymerase chain reaction (PCR) using E. coli genomic DNA. The gene will be then incorporated into an expression vector and used to produce large amounts of the enzyme in the active site.

The physical structure of the stream corridor is formed by the movement of water, materials, energy, and organisms within a multidimensional (lateral, longitudinal, vertical and temporal) framework. As movement affects structure, so too does structure affect movement. This natural feedback loop helps to create a state of balance within the stream corridor known as dynamic equilibrium, which allows the corridor to accommodate limited change while maintaining its essential structure and functions. Disturbances that affect stream corridors can be natural or human-induced. If they are severe enough, they can alter the structure and functions of a stream corridor to a point that dynamic equilibrium is disrupted. Restoration can then be employed to reestablish structure and functions so natural dynamic equilibrium can once again occur. My primary research area is the assessment of the stream condition and departure from its potential following restoration by quantifying the existing physical character of the stream channel using Rosgen™ Stream Classification method. Research was performed on two stream restoration projects: a) Austintown Township Park and b) Pine Hollow Run Tributary in Hermitage, PA. The objectives of this research were to: 1) delineate stream type for two restored streams by calculating geomorphologic characteristics like bankfull stage, entrenchedment, width/depth ratio, sinuosity, channel materials, and slope; 2) evaluate stability of the restored streams using the Level III analysis proposed by Rosgen (1996); and 3) evaluate the success of the stream restoration projects in meeting the goals of the designer.
price, eric  biological sciences  ohio room 15:30 - 17:00

characterization of mutants of wangiella dermatitis generated by agrobacterium tumefaciens mediated transformation

characterization of mutants of wangiella dermatitisis generated by agrobacterium tumefaciens mediated transformation eric price, chester r. cooper jr. the polymorphic fungus wangiella dermatidis is a pathogen of humans and it is unique in that it displays three morphotypes. these three morphotypes are budding yeast, sclerotic bodies, and hyphae. the control for the switch into each of these morphotypes is pH dependent. relatively few genetic studies have been conducted on this organism regarding the relationship of pathogenicity and polymorphism. agrobacterium-mediated transformation was employed to generate random insertion events in w. dermatidis genome and select morphological mutants. PCR analysis of these mutants was used to confirm A. tumefaciens DNA insertion. the specific gene mutated by this insertion event was subsequently identified by sequencing flanking regions and comparing the resulting DNA sequence to other known genes in genome databases, thereby suggesting the gene’s possible function.

proch, matthew  technology  james gallery 16:30 - 16:45

research in engine efficiency: the 100mpg diesel motorcycle

several claims have been made on the internet boasting that diesel-powered motorcycles can achieve fuel economy in excess of 100 mpg. the YSU Mechanical Engineering Technology (MET) Department is converting an existing gasoline motorcycle to one powered by a diesel engine and then verifying these calculations. the MET department has duplicated the mpg calculations, and estimates that fuel economy in excess of 100 mpg is indeed possible. the solution involves a low horsepower engine that has a high torque value, allowing satisfactory operation in most local commutes. the design will further incorporate a Continually Variable Transmission (CVT) to allow the engine to operate at the most efficient speed most of the time.

proctor, lisa  human ecology  ohio room 13:30 - 15:00

perceptions of causes and consequences of childhood obesity among YSU students

The problem of childhood obesity in the United States has grown considerably in recent years with approximately 15 percent of children between the ages of 2-19 years being classified as obese (CDC, 2007). Obesity is among the easiest medical conditions to recognize, but one of the most difficult to treat. This study will examine the perceptions of the causes and consequences of childhood obesity among college students at Youngstown State University. Students 18 years or older will be recruited from the YSU campus common student areas. The study protocols will be explained to eligible participants and upon signed informed consent, participants will self-administer one of two surveys (one for students who have children and another for those without). Data will be analyzed using SPSS 15.0 to determine if overweight or obese children will be reported in significantly (p< 0.05) more Single-parented households than in Two-parented households; participants who are overweight/obese are significantly (p<0.05) less likely to perceive overweight or obesity in their own children than non-overweight/obese parents; and parents of obese children will report a significantly (p< 0.05) lower daily intake of fruit and vegetables than those of non-obese children.

protain, kristy  criminal justice  ohio room 13:30 - 15:00

raise a hand raise a voice raise a killer...what are some external factors related to serial killers?

We want to believe that serial killers are infinitely complex, with millions of motivations, varieties of behaviors, and kill without warning. Yet, are they? In reality, every human being is a potential murder weapon: a gun. Genetics load the gun, psychology aims the gun and the environment and life experiences pull the trigger. This study is a content analysis based on a sample of thirty (n=30) convicted serial killers that describes a connection between childhood abuse, past criminal activity, ineffectiveness in the criminal justice system and serial killers' crimes. Future use of this research could assist professionals in the social work as well as the criminal justice system to identify early indicators of a destined serial killer.

Ragan, Robert  electrical & computer engineering  ohio room 08:30 - 10:00

time-domain transient equations for charging voltage and current of a RC circuit utilizing Differential & Integral Calculus, Differential Equations, Laplace Transform and Computer Simulations

Derivations of time domain transients of charging voltage and current of series RC (Resistor & Capacitor) circuit can be obtained utilizing various mathematical and simulation techniques. In this research project, the time-domain differential equations will be derived by using integration techniques and differential equation solutions. The differential equation will also be solved by applying Laplace Transform (transformation into complex frequency domain). The solutions (amplitude vs. time) will be shown in a graphic form using Microsoft Excel. This graph will be compared to the results obtained from RC circuit simulations utilizing Electronic Work Bench (EWB) Circuit Design Suite Multisim 10.1.

Ramdin, Lindsey  English  Room 2068 10:30 - 12:00

literature and politics

In my project for the English Senior Seminar, I argue that literature can be used as a platform to set public agenda, and in my thesis I argue that Henry David Thoreau’s environmental philosophy helped join him in political conversation. His philosophy has evolved into a call to action; one that many literary critics argue is imperative to the survival of the environment. Because literature is more accessible to the public than other political mediums, Thoreau’s wisdom has endured for decades. The eco-philosophy of Thoreau is present in modern nature writing, and it differs only as modern nature writing is influenced by the rapid destruction of natural resources, and therefore includes a more urgent, progressive message.
Rameezuddin, Mohammad  Mechanical & Industrial Engineering

Constructing and Modelling a Small Horizontal Axis Wind Turbine

With the increasing interest in green technologies, privately owned small scale wind turbines are becoming more and more popular. According to the American Wind Energy Association, the domestic market saw a 78% increase in sales from 2008 to 2009. This presentation documents the construction, modeling, and testing of a small horizontal axis wind turbine based on the following design variables: headwind speed, tip speed ratio, blade angle, rotor diameter, and airfoil shape of the blades. The main focus in construction was the design and fabrication of the blades and hub connections. The fabricated blades used a double airfoil design to maximize start-up in low winds and regulate rotation speeds in high winds. They were manufactured using polyurethane foam injection molding and reinforced with fiberglass. A second set of commercially available blades which used a single airfoil design and had known performance specifications were tested for comparison to the fabricated blades. Models of the various components of the wind turbine were created in a computer aided design package (Solidworks). Mechanical and fluid behavior of the system was predicted using computer analyses (Algor and Fluent) to ensure structural stability and fluid flow. Computer predictions of the wind turbine system using both sets of blades were compared with real world test data from the constructed wind turbine system.

Reed, William  Chemistry

Novel Synthesis of Copper Chloride Quantum Dots in a Sodium Chloride Matrix

We present a novel synthesis of non-toxic copper chloride nanocrystals in a sodium chloride matrix. Unlike other methods, this synthesis requires only simple materials such as common sodium chloride, common copper wire, standard ceramic crucibles, and standard lab heat sources, without the need for sophisticated crystal growth apparatus or control of atmosphere. The product is readily synthesized from the molten phase in as little as 30 minutes. The copper and cool the product. The product exhibits high fluorescence quantum yield and potential bi-exciton and exciton-phonon coupling under illumination with sources as mild 400nm. We also present compelling evidence of thermal dependence in both fluorescence efficiency and lambda max. This rapid, straightforward and non-toxic synthesis is easily performed on the bench top and harvests potential for many applications including undergraduate instruction in Physical Chemistry.

Reid, Natasha  Mechanical & Industrial Engineering

Supercharger Pulley: Stress Distribution and Analysis

An automobile supercharger ultimately increases the power output of the engine and is driven by a belt pulley system. As rotational speed increases on a pulley, the driving force or applied torque will decrease because they are inversely proportional. When the driving belt force decreases it causes the inertial load to increase making the internal stress in the pulley higher. A continuation of last year’s™ supercharger pulley research, this project is a computational approach to determining the stress distributions in the pulley for various input RPM’s. Two pulleys are to be examined; one with a carbide coating and one without a carbide coating. Assuming that power at the rotating shaft remains constant; the acting forces on the pulley are calculated and then simulated on the pulley using Finite Element Analysis (F.E.A.) software. The location of the maximum Von Mises equivalent stress will be determined. Also a plot of the Von Mises stress for the various rotational speed inputs will be created for different positions on the pulley. By knowing the power input, angle of contact of the belt on the pulley, and the pulley disk dimensions we will conduct a complete stress analysis of the two pulleys.

Ridzon, Timothy  Mechanical & Industrial Engineering

Design of a Conveyor Machine

Conveyor machines are widely used in various applications to transport heavy loads. In this specific analysis, a dumpster with a load of 38,000 Newtons is transported by a conveyor machine that can be modeled as two parallel four-bar mechanisms. The conveyor machine is driven by a flywheel which transmits torque to the rods. The flywheel is driven by an electric motor connected by a belt. The purpose of this analysis is to design the shaft holding the flywheel as well as the connecting pins using the provided conveyor machine dimensions and material properties. This is accomplished by calculating forces in the entire conveyor machine and performing a fatigue analysis to find the appropriate shaft/pin dimensions to coincide with the given factor of safety. Engineering techniques such as stress analysis, machine optimization, dynamics, and kinematics were utilized to ensure a safe design. All analytical methods were verified by cross referencing computational results with theoretical calculations.

Rife, Trixie  Civil / Environmental & Chemical Engineering

Modeling the Impact of Development on the Value of Environmental Services in Allegheny County, Pennsylvania

Ecosystem services are beneficial functions provided by the environment, such as water filtration, flood management, erosion control, and wildlife habitat. Land cover change and pollution loading are major factors that have altered the earth’s terrestrial and aquatic ecosystems, degrading 60% of environmental services worldwide. Putting a price on environmental services could encourage sustainable development and make conservation more appealing. However, one of the difficulties in conservation is being able to quantify the cost of environmental services. The Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) modeling tool, created by the National Capital Project and Stanford University, will be used to determine the impacts of different development approaches, conservation, planning, and development, on environmental services in Allegheny County, Pennsylvania. The model works as a toolbox in Geographic Imaging Systems (ArcGIS). The maps for soils, slope, watersheds, and basins were provided by Pennsylvania Spatial Data Access (PASDA), the digital elevation maps, and the land use, land cover maps were provided by the EPA. The Allegheny, Ohio and Monongahela Rivers all receive runoff from the surrounding area and have been negatively impacted by an increase in development. A better development planning strategy would help improve the storm water runoff quality and decrease the quantity, thereby improving environmental services in the area.
Purification and Characterization of Staphylococcus aureus Type 5 Capsular Polysaccharide

Staphylococcus aureus (S. aureus) infections are notoriously difficult to treat due to antibiotic resistance and virulence. One virulence factor employed by S. aureus is a protective polysaccharide coating called a capsule. This structural component plays a significant role in immune response evasion. Drugs that target bacterial capsule circumvent the mechanisms utilized by traditional antibiotics and create a novel way to treat S. aureus infections. A systematic purification and characterization of the capsule was achieved by implementing both ion-exchange and size exclusion chromatography. The relative efficacy of purification was validated through teichoic acid, reducing sugar and protein tests. Finally, we seek to characterize the purified capsular polysaccharide through nuclear magnetic resonance spectroscopy.
**Russo, Anthony**  
**Human Performance & Exercise Science**  
**Assessment of Workers Compensation Claims Among North Carolina Firefighters**

The job of a firefighter is very physically demanding, especially due to the fact they operate under extreme temperatures. The risk of injury is high on every emergency call, and the threat of danger is inevitable. This study examined data collected from the Charlotte, North Carolina fire departments workers compensation claims. Injuries were recorded from 99 firefighters for the year of 2006. Most of the injuries occurred during a work related exercise. Also, most of the injuries occurred in the firefighter’s wrists, hands, and the back regions of the body. By evaluating the data, the researchers were able to place the injuries into a numbered system that represented different areas of the body. By presenting this data, future researchers will be able to study new methods for fire departments to implement in order to prevent injuries.

**Sabo, Stephanie**  
**Dana School of Music**  
**Laughter and Tears in Mozart's Opera Buffa**

Mozart's Le Nozze di Figaro, Così Fan Tutte, and The Magic Flute are examples of opera buffa, or comic opera. Yet, Mozart undercuts the comic genre with insertions of tragedy, especially in the portrayal of his key characters. For instance, the tragic Countess Almaviva’s aria Porgi Amor in Le Nozze is a reminder of the complexity of human relationships. Also intriguing is the complete disintegration of comedy in the second act of Così Fan Tutti when a trivial lovers’ jest becomes convoluted competition. In The Magic Flute, the audience is treated to buffoonery and the customary laughs of a Schikaneder libretto. However, the plot also shows multiple threats of suicide from the heartbroken Pamina and Papageno and bears the influence of the occult that, again, undercut the comedy. In my paper, I argue that Mozart did not compose in a traditional opera buffa style. Rather, by inserting elements of opera seria in his comic operas, he paved a way for composers such as Rossini, who hybridized these styles and crossed the gap between the genres.

**Saborse, Jacob**  
**Human Ecology**  
**Perceptions of Causes and Consequences of Childhood Obesity Among YSU Students**

The problem of childhood obesity in the United States has grown considerably in recent years with approximately 15 percent of children between the ages of 2-19 years being classified as obese (CDC, 2007). Obesity is among the easiest medical conditions to recognize, but one of the most difficult to treat. This study will examine the perceptions of the causes and consequences of childhood obesity among college students at Youngstown State University. Students 18 years or older will be recruited from the YSU campus common student areas. The study protocols will be explained to eligible participants and upon signed informed consent, participants will self-administer one of two surveys (one for students who have children and another for those without). Data will be analyzed using SPSS 15.0 to determine if overweight or obese children will be reported in significantly (p< 0.05) more Single-parented households than in Two-parented households; participants who are overweight/obese are significantly (p<0.05) less likely to perceive overweight or obesity in their own children than non-overweight/obese parents; and parents of obese children will report a significantly (p< 0.05) lower daily intake of fruit and vegetables than those of non-obese children.

**Saborse, Jacob**  
**Jones Room 14:45 - 15:00**  
**Cultural Breakdown of Avian Mobbing Responses to Interspecific Alarm Calls: Implications to Management and Conservation**

Mobbing is a common response of prey birds to aggressively displace potential predatory birds. This response transcends lineages and empirical evidence indicates that auditory cues from one species elicit mobbing responses in the same and different species. The Black-capped Chickadee (BCCH) varies the number and amplitude of notes in the “chick-a-dee-dee” mobbing call to denote information to other songbirds about the level of threat a potential predator poses. However, culturally transmitted vocalizations are known to quickly diminish in songbird populations that become isolated or are small is size due to habitat fragmentation, potentially exacerbating their decline. Whereas the BCCH and associated mixed flock members are common, we use this system as a model to study the cultural transmission of information important to prey survivorship and assess whether cultural breakdown occurs in isolated populations. This project will be replicated in areas containing persistent populations of Eastern Screech Owls (ESOW) and in those historically lacking them to assess whether BCCH alarm calls have a learned cultural component. Regional dialects are not hard-wired but learned in many songbirds, and locale-specific calls may uniquely convey information to members of the same mixed flock. If this is the case, mobbing responses to alarm calls should differ among locales, depending on whether they co-occur with ESOWs. If a high learned component to alarm calls emerges, this suggests management which increases the connectivity of otherwise isolated populations could be of strong conservation value to many songbirds in decline.

**Saborse, Jacob**  
**Jones Room 14:30 - 14:45**  
**Spatiotemporal-dependent Shifts in Grassland Invasibility**

Spatially and temporally discrete episodes of plant recruitment occur when relaxation of the resources that limit establishment and growth coincides with propagules. There are many ecological factors that affect below- and aboveground resource availability in a community and this research integrates important spatially and temporally varying components. In a managed grassland at the Pymatuning Laboratory of Ecology, we used a balanced split-plot factorial design to measure the interactive effects of grazing intensity (GI), soil resource availability (SRA) and soil disturbance patch size (DPS) on the invasion success of the annual smooth pigweed Amaranthus hybridus (L.) and velvetleaf Abutilon theophrasti (L.). Importantly, we considered two life history stages of each focal invader (i.e., emerged and established seedlings) because their invasion success probability (ISP; measured as biomass accumulation) may depend on when resource shifts coincide with particular life history stages. Based on models developed by Renne and Tracy (unpublished), we tested the following hypotheses: 1) thresholds in ISP exist across DPS, the magnitude of which increases with higher SRA levels, 2) as DPS declines, the interactive effects of invader life history stage, SRA and GI on ISP increase and 3) in the absence of grazing, SRA within a given DPS can have opposing effects on ISP. Based on quantile regression analysis, our empirical data generally corroborate models of grassland invasibility, where the interactive effects of timing and/or intensity of GI, SRA and DPS on invader life history stage largely dictate whether establishment and subsequent growth occurs.
Sakacs, Leah

Criminal Justice

Ohio Room 13:30 - 15:00

Studying Abroad at the University of Winchester

We studied abroad at the University of Winchester to gain a broader understanding of the various cultures in the world. We studied at the university and traveled to other countries in Europe during break. While we were there, we grew as individuals and learned how people in other countries interact. We experienced the English educational system that increased our knowledge of their learning techniques and their beliefs. This poster will give a detailed outline of the application process and a brief review of our experience at the University of Winchester.

Sara, Sara

Biological Sciences

Ohio Room 10:30 - 12:00

Targeting Staphylococcus aureus, Type 8 Capsule, by Using a Carbohydrate Mimetic: TC-I-045

Staphylococcus aureus is a serious hospital acquired infection due to increased antibiotic resistance. Type 5 and type 8 S. aureus cause 70 percent of S. aureus infections in hospitals. Capsular polysaccharides of Staphylococcus aureus (S. aureus) are virulence factors especially in type 5 and type 8 of S. aureus. In this study, a carbohydrate mimetic competes with the enzymes that produce the capsules, thus inhibiting the production of the capsule structure. If the mimetic decreases capsule production, it would elicit an immune response to fight the bacteria. Samples of T8 (49525) S. aureus were incubated with different amounts of the chemical TC-I-045 or ethanol, where ethanol acted as the control. The presence of capsular carbohydrate was tested for via an indirect enzyme-linked immunosorbent assay (ELISA). Results indicate that TC-I-045 does not prevent the synthesis of the bacterial capsule independent of the concentration of the chemical in the samples.

Scacchetti, Jarrett

Electrical & Computer Engineering

IEEE MicroMouse

Ohio Room 08:30 - 10:00

Micromouse is a robotics competition in which a team builds a relatively small autonomous robot, which movements resemble a mouse, that can not only navigate through a maze, but it also calculates on it's own, without human involvement, the most optimal route to take to get to the middle of the maze. By using digital infrared sensors on our robot we can track where a wall is located at and designate the programming code to either go left, right, or froward. Additionally by using analog infrared sensors on the left and right sides of the robot and encoder feedback, we can program a 'checks and balance' routine so that our robot will stay approximately in the middle of the walls so that it will not sidetrack and cut any corners decreasing the overall performance. We are using the Orangutan X2 Robotic controller made by Pololu that has 20+ I/O ports and an attachable LCD screen. The robot will be programmed with C language using a Freeware software product called AVR Studio. Our code will involve Recursive algorithms, flood and fill, and back fill. The competition is being held at the PAC, Professional Activities Conference, hosted by IEEE in Philadelphia, PA.

Scacchetti, Jarrett

Electrical & Computer Engineering

Coffelt Room 14:00 - 14:15

Micromouse is a robotics competition in which a team builds a relatively small autonomous robot, which movements resemble a mouse, that can not only navigate through a maze, but it also calculates on it's own, without human involvement, the most optimal route to take to get to the middle of the maze. By using digital infrared sensors on our robot we can track where a wall is located at and designate the programming code to either go left, right, or froward. Additionally by using analog infrared sensors on the left and right sides of the robot and encoder feedback, we can program a 'checks and balance' routine so that our robot will stay approximately in the middle of the walls so that it will not sidetrack and cut any corners decreasing the overall performance. We are using the Orangutan X2 Robotic controller made by Pololu that has 20+ I/O ports and an attachable LCD screen. The robot will be programmed with C language using a Freeware software product called AVR Studio. Our code will involve Recursive algorithms, flood and fill, and back fill. The competition is being held at the PAC, Professional Activities Conference, hosted by IEEE in Philadelphia, PA.

Scacchetti, Jennifer

Human Ecology

Perceptions of Food Labels

Ohio Room 13:30 - 15:00

A standard food label on most packaged foods in the US, in accordance with the Nutrition Labeling and Education Act of 1990, highlights caloric and nutrient content per serving including, carbohydrates, fiber, protein, total fat, saturated fat, cholesterol, and sodium (USDA, 2009). There is evidence that reading food labels can help individuals to change their eating patterns; however, the food label can be intimidating to those not familiar with the terminology or interpretation of the dietary information listed. The objective of this study is to define the scope of knowledge regarding food labels and their use among the undergrad student population at Youngstown State University. Students (n = 200), male and female, will be recruited from the YSU campus common areas and once the protocols are explained, will be asked to sign the Informed Consent form if they wish to participate. Participants will self-administer the 27-item survey. It is anticipated that significantly more female participants (p < 0.05) will read food labels than males and that there will be gender differences in the nutritional content values used by participants. It is also expected that participants who have taken a nutrition or health education course will use food labels for selecting foods significantly more frequently than those who have not.
Supercharger Pulley: Stress Distribution and Analysis

An automobile supercharger ultimately increases the power output of the engine and is driven by a belt pulley system. As rotational speed increases on a pulley, the driving force or applied torque will decrease because they are inversely proportional. When the driving belt force decreases it in turn causes the inertial load to increase making the internal stress in the pulley higher. A continuation of last year’s supercharger pulley research, this project is a computational approach to determining the stress distributions in the pulley for various input RPMs. Two pulleys are to be examined; one with a carbide coating and one without a carbide coating. Assuming that power at the rotating shaft remains constant; the acting forces on the pulley are calculated and then simulated on the pulley using Finite Element Analysis (F.E.A.) software. The location of the maximum Von Mises stress will be determined by the F.E.A. software. Also a plot of the Von Mises stress for the various rotational speed inputs will be created for different positions on the pulley. By knowing the power input, angle of contact of the belt on the pulley, and the pulley disk dimensions we conducted a complete stress analysis of the two pulleys.

Honey is for Bees: A Look at the Use of Endearments in the Service Industry

The three student investigators will study the use of endearments in service encounters. We believe our research and field data will reveal a trend that is related to age and gender. We also hope to measure attitudes concerning the use of endearments in the service industry. The data we collect will allow us to measure not only what specifics endearments are used by strangers in these settings, but the attitudes and connotative meanings behind these terms. We will gather our data with the use of short surveys (five fictional scenarios) to be completed by volunteer students at Youngstown State University, with the approval of each instructor in the classroom. The survey is completely anonymous and the information used is to be kept confidential, to be viewed by Mary Anne, Adam and Steve. There will no names used, nor will it be necessary for respondents to reveal campus location. (See attached for sample survey) The anonymous nature of the surveys will be clearly noted at the beginning of the survey. Potential respondents are not obligated to begin nor continue a survey. They may opt out at any time. We believe our data will reflect our hypothesis that older men use endearments more often toward younger females in service related jobs. We believe the attitude is more permissive when age is a factor. We believe our data will reveal trends in acceptance and attitude of these common terms used among strangers.

The Effect of TC-1-045 on Capsule Formation in Staphylococcus Aureus, Type 5

Despite many medical advancements, Staphylococcus aureus is still a prevalent pathogen due to its resistance to antibiotics. The bacterial™s unique polysaccharide capsule is composed of acidic polymers of uronic acid, which contributes to the virulence of this bacterium. Type 5 and type 8 S. aureus are the virulent strains of the bacteria; therefore, investigation of a chemical to disrupt capsule formation was performed in attempt to find a more effective treatment for S. aureus type 5 and type 8 S. aureus. Currently, a superfamily of species were mixed with the chemical TC-1-045. In order to measure the effectiveness of the chemical, hybridoma cell antibodies were prepared and an ELISA was performed to determine the amount of bacterial type 5 capsule produced. A positive result (inhibition of capsule synthesis) would show decreased binding of the antibody to the bacterial capsule as the concentration of TC-1-045 increased. This trend was not present in the results, indicating the chemical may be ineffective. However, experimental errors may have also contributed to these results and further experiments should be performed.

Phylogenomic Analysis of the Chitin Synthetic Pathway in Fungi

The enzymes of the essential metabolic pathway for chitin synthesis in fungi has been known for some time, however, the specific roles of the various chitin synthase enzymes of fungi have yet to be elucidated and characterized. The goal of this research is to apply phylogenomic techniques in the analysis of the chitin synthetic pathway of fungi with fully annotated and high quality draft sequences in order to determine the rates of mutation in genomic DNA and the evolution of protein sequences involved in the pathway responsible for chitin synthesis. The first committed step in the production of substrate for chitin synthase enzymes is performed by the enzyme glucosamine-6-phosphate synthase. Phylogenomic analysis of this enzyme and the subsequent enzymes involved in the production of chitin were carried out in order to better understand the evolution of the pathway with particular attention paid to the fungi that are capable of dimorphic growth.

The Use of Mathematics to Examine the Operation of an Electrochemical Cell

The basics of an electrochemical cell were explored. In order to evaluate and understand the current distribution across an electrochemical cell, mathematical equations were investigated. These equations are expressed through upper-level calculus and differential equations. An objective of the project was to gain a better understanding of these equations.
Sefton, Edward  
Mechanical & Industrial Engineering  
Ohio Room  08:30 - 10:00  

*Machining and Process Improvement Verification using Work Measurement Analysis Techniques*  
The authors, method engineering students from Industrial and Systems Engineering at Youngstown State University, performed work measurement analysis at Treeman Industries both before and after improvements were made in the processing of an injection molded part critical to one of Treeman's customers. The process under study involved machining of the molded part and packaging of the finished product. The original process failed to optimize the work efficiency of the main machine operator. The improved process showed a possible 50 percent improvement, and a more efficient way to optimize their resources. The analysis was completed using video-based Time Pro software along with classic time and motion analysis techniques. Detailed motion analysis was used to assess ergonomic factors and work sampling analysis was used to establish machine and labor allowances. Ultimately, Treeman Industries was aided in the implementation of a new process while the authors were able to experience developing a relationship with a local engineering company and applying their skills there.

Sethi, Sumedha  
Biological Sciences  
Ohio Room  10:30 - 12:00  

*Analysis of Specific Cell Division Genes Using Bioinformatics Tools in Penicillium marneffei*  
*Penicillium marneffei* is the only thermally dimorphic Penicillium species. It grows as a filamentous mold at room temperature 25°C producing a red pigment when grown for longer than 24 hours. When grown at 37°C, the fungus grows as unicellular yeasts. The dimorphism could be depending on the turning on or off of the cell division genes. Cell growth is highly regulated depending on the nutrition availability, temperature, stress situation and cell proliferation. Growth refers to increase in cell mass, which requires the positive regulation of anabolic processes and negative regulation of catabolic processes. The chief cell growth gene which is the focus of this study is TOR and other genes related to cell proliferation and growth, like CDK1 and YAK1. TOR, also called Target Of Rapamycin is a cell growth, proliferation and metotility regulator. It is a serine/threonine protein kinase. The TOR signaling pathway is unconventional, non-linear, and has a nutrient sensing checkpoint capacity. TOR signal mRNA encodes the proteins necessary for cell growth and autophagy inhibition. We use bioinformatics tools to analyze the proteins coded by these genes. Bioinformatics softwares and database tools allow us access the genome of this fungus and to find the protein domains, design phylogenetic trees and find structures of the these specific cell division proteins.

Shadle, Jason  
Physical Therapy  
Room 2068  09:00 - 09:15  

*Using a Diagnostic Algorithm to Direct Treatment in Two Patients With Shoulder Impingement Symptoms: a Case Report*  
Design: A case report. Background and Purpose: Shoulder impingement is the most common pathology of the shoulder. Clinicians utilize numerous orthopedic special tests for diagnosis but, due to poor sensitivity and specificity, interpretation may be difficult. Utilized in this study is a diagnostic algorithm to control the order of orthopedic special tests performed in the examination and thereby direct intervention based on impingement etiology. Case Description: Two patients with classic shoulder impingement symptoms (described by Neer) were examined using a diagnostic algorithm and sequential special tests. Both patients were identified as having rotator cuff pathology or mechanical dysfunction of the infraspinatus and teres minor. Design: A case report. Background and Purpose: Shoulder impingement is the most common pathology of the shoulder. Clinicians utilize numerous orthopedic special tests for diagnosis but, due to poor sensitivity and specificity, interpretation may be difficult. Utilized in this study is a diagnostic algorithm to control the order of orthopedic special tests performed in the examination and thereby direct intervention based on impingement etiology. Case Description: Two patients with classic shoulder impingement symptoms (described by Neer) were examined using a diagnostic algorithm and sequential special tests. Both patients were identified as having rotator cuff pathology or mechanical dysfunction of the infraspinatus and teres minor. Based on the algorithmic process, intervention included exercises specifically targeting the infraspinatus and teres minor. Outcomes: Both patients A and B demonstrated improvements in pain, range of motion, strength, and self-reported level of disability (DASH). Both self-discharged from treatment after 12 and 18 sessions, respectively, with the latter expressing no further need to continue. Discussion: Currently no classification approach to treating the shoulder exists. Evidenced by the success of treatment by the low back pain classification, a diagnostic shoulder algorithm has potential to reach good outcomes in a decreased number of treatment sessions.

Shakya, Bijayandra  
Electrical & Computer Engineering  
Coffelt Room  11:45 - 12:00  

*Magneto Optics, Multilayer Polymers, and Photonic Band Edge Enhancement*  
Faraday rotation is commonly used in optical isolators to prevent unwanted back reflections and can also be used to understand the susceptibility of materials and measure small transient magnetic fields. In our work in magneto optics at YSU, we have theorized that an enhancement of Faraday rotation in a multi-layered polymer film should exist due to the increased path length of light passing near, or on the #eedge of, an interference band. What multilayer interference is, what Faraday rotation is, what we have predicted, and why it is justified will be covered in this part of the presentation.

Sherokee, Angela  
Biological Sciences  
Ohio Room  10:30 - 12:00  

*Construction and Characterization of a Green Fluorescent Protein (gfp)/Titin ARMD Immunogenic Domain Fusion Protein.*  
The aim of this study is to understand the role of specific titin domains in muscle development and function. This lab has been studying a specific titin domain RMMG6. Ultimately we want to transfect mouse muscle stem cells with an Autoimmune Rippling Muscle Disease (ARMD) immunogenic titin domain, RMMG6, and determine its effects of over expression of the RMMG6 on the cell's activity and development. The work presented here describes the construction of a fluorescent green protein/ ARMD immunogenic titin domain fusion protein (gfp/RMMG6). The plasmid chosen as the fusion vector is pAcGFP-PB RMMG6 is derived from a plasmid originally constructed in this lab containing the rmmg6 gene (Gen Bank accession # EU428784). DNA sequence and restriction enzyme analysis of the resulting plasmids, indicate that we achieved construction of the correct plasmid. The expressed fusion gene should be a composite protein consisting of the fluorescent tag gfp and RMMG6. This will allow use to trace the RMMG6 within the muscle cells and thus define what part of the cell RMMG6 localizes to and what potential role it may play in structure/ function of the developing myocytes.
Spurr, Charles

Geology: A New Approach to Geoscience Education

Field Investigations in Geology is an upper division geology course designed to develop basic field mapping skills and to provide a framework for understanding geologic history and the natural processes responsible for geologic change. The course involves a one-week field experience on the tiny remote island of San Salvador, Bahamas. Students are introduced to orienteering, GPS navigation, aerial photo and topographic map interpretation techniques, as well as concepts related to global sea level change, coastal change, and interpretation of ancient marine and shoreline environments. The course participants consisted of twenty students from a wide variety of academic disciplines; Biology (1), Chemistry (2), Education (9), Geology (3), Information Technology (1), Psychology (3), Undecided (1). The teaching methods were assessed using five separate evaluation instruments: a pre-field experience and post-field experience fifty question general topic survey, a pre and post orienteering ten question survey, a pre-field experience and post-field experience orienteering exercise, eight field book exercises dealing with individual and related topics, and one comprehensive field exercise conducted at the end of the field experience. The preliminary findings of the research are presented.
Weight-loss Outcomes after Laparoscopic Bariatric Surgery are Affected by Emotional Eating

Disparate outcomes after bariatric surgery may be attributed to differences in psychosocial characteristics of patients. We sought to estimate the construct of emotional eating (assessed preoperatively) and its effects on weight loss over time, in a cohort of 118 bariatric surgery patients. Data were analyzed using the mixed procedure in SAS 9.1, where effects on percent of excess weight lost (%EWL) were tested in mixed models with surgical method, emotional eating (using the Emotional Eating Scale, EES), time, and all possible interactions of the three, entered as factors. We then used the general linear model to further explore the effects of ethnicity and sex on emotional eating. A two-way interaction of emotional eating status and time was found for %EWL. Main effects of ethnicity and sex were found for total EES score, as well as for the EES depression subscale.

Main effects of ethnicity and sex were found for total EES score, as well as for the EES depression subscale.

A Mathematical Analysis of Peg Solitaire

In this project we use the structure of the Klein 4 Group and tessellation to analyze the solvability of various peg solitaire games, including Central Solitaire, French Solitaire, and Triangular Solitaire. We have concluded based on our research that excess weight lost (%EWL) were tested in mixed models with surgical method, emotional eating (using the Emotional Eating Scale, EES), time, and all possible interactions of the three, entered as factors. We then used the general linear model to further explore the effects of ethnicity and sex on emotional eating. A two-way interaction of emotional eating status and time was found for %EWL. Main effects of ethnicity and sex were found for total EES score, as well as for the EES depression subscale. Main effects of sex and type of surgery selected were found for the EES anxiety subscale. Our results demonstrate that emotional eating exerts effects on postoperative weight loss after bariatric surgery. Furthermore, emotional eating may be modulated by external factors such as ethnicity and sex of the patient. Consideration of EES status may allow mental health practitioners to more appropriately specify recommendations for perioperative counseling/other intervention with regard to detrimental eating behavior.
Sumner, Rebecca

Language Motivation in International Students

The purpose of this study was to deduce whether international students are more or less motivated to learn additional languages, and what their motivations are for learning additional languages. Information was collected via questionnaire. The questionnaire was based on a survey first developed by Bishop and Cannon (2009) and included multiple choice questions, a Leichhardt scale, and constructed response questions. The responses were collected in person, at the Center for International Studies coffee hour, at the English Language Institute, and in the English for non-native speakers class. We also collected surveys online with the help of the Center for International Studies and Programs. We projected that international students would be more likely to learn a foreign language than American students and for different, more productive reasons. We found that 56% of international students surveyed are learning English simply because it would be useful in their future profession, and 41% are studying English because it was required in school. When asked what additional language they would learn, 33% responded French; however 62% had no preference as to which language they would prefer their (future) children to learn.

Suter Jr., Robert

Taking the Hint: A Cross Sectional Survey of Perception Regarding Requests and Directness

The title of this project is Taking the Hint: A cross sectional survey of perception regarding requests and directness. The main question we are addressing in our research is: Who do respondents believe will use higher levels of directness when making requests and who do respondents expect to be more indirect in request making? We initially suspected that we would find that respondents expect older women to offer more indirect requests but do not expect younger people or older men to be as likely to follow that practice. Our data gathering methods returned a sample of about 75-100 (analysis continues and some may be discounted) of scenario questionnaires. These questionnaires are multiple choice scenarios that have 4 possible responses. The responses have been secretly coded according to speech direction and according to directness. Our survey was completely voluntary and anonymous. Further levels of analysis will identify patterns of opinion with regard to gender and age groups within the scenarios and among the respondents. We have identified our subjects of data collection as YSU students taking Beginning and Intermediate Spanish classes and National College students. At this time, final results and conclusions are forthcoming. Possible applications for our research: Why do people have these socially-constructed expectations? Are these stereotypes? If so, what qualifies them as stereotypes? Have our findings indicated any change from the body of literature and research that the group consulted?

Swickard, Aaron

Comparisons of Ethnic Centers in the U.S.

Ethnic centers such as Chinatown, San Fransisco and Little Italy, Chicago are compared to contrasted to one another. Marking differences in culture and reasons for their beginnings. The Harlem area is discussed as well, showing its major differences in cultural heritage and development. Concluding that cultural centers developed and evolved into their current forms due to the culture brought from parent countries or, in the case of Harlem, created as a cultural refuge for the continued existence of their ways.

Taşkık, Nate

Supermileage Vehicle

With the current economy recovering from a recession, high fuel economy is used more often than it has in the past. One of the areas includes the use of gasoline. Fuel economy is used often in today’s car industry as the basis of marketing. The ability of a lightweight vehicle to obtain the most fuel economy possible was tested. The vehicle was built to specifications provided by the Supermileage Vehicle Competition rulebook, which is sponsored by the Society of Automotive Engineers (SAE). A lightweight frame, aerodynamics, and a modified engine were the basis for achieving maximum fuel economy. The overall goal was to achieve a high miles-per-gallon rating, while following the standards of the competition. The overall design met the specifications mentioned in the SAE rulebook. Some of these included weight, brakes, and safety issues. All were taken into consideration in the design, while also maintaining an operative, fuel efficient vehicle.
Tarajcak, Pamela


The study of women's education during the first half of the nineteenth century is important because of how the society trained women to adopt certain causes or viewpoints such as the antislavery movement in the North, the patriarchal mood in the South, and the national temperance movement. Many scholars maintain that there were major differences between how the education of southern women was conducted and how the education of Northern women was conducted. This in turn explained why the northern women were principle leaders in the Antislavery movement and the southern women were convinced that slavery was good. There obviously had to be some great differences in these women's early training to make them think and do such. However, in the nineteenth century, women's education was nationally uniform. This was the case in the curricula, philosophies, institutes, and alumnae's postgraduate life. There were two differences, though. Northern women received a more advanced education about a decade before southern women and were a little more vociferous and had a higher level of social involvement in post-educational life than their southern counterparts.

Tatebe, Caleb

Chemistry

The Use of Mathematics to Examine the Operation of an Electrochemical Cell

The basics of an electrochemical cell were explored. In order to evaluate and understand the current distribution across an electrochemical cell, mathematical equations were investigated. These equations are expressed through upper-level calculus and differential equations. An objective of the project was to gain a better understanding of these equations.

Terzak, John

Mechanical & Industrial Engineering

Design of a Conveyor Machine

Conveyor machines are widely used in various applications to transport heavy loads. In this specific analysis, a dumpster with a load of 38,000 Newtons is transported by a conveyor machine that can be modeled as two parallel four-bar mechanisms. The conveyor machine is driven by a flywheel which transmits torque to the rods. The flywheel is driven by an electric motor connected by a belt. The purpose of this analysis is to design the shaft holding the flywheel as well as the connecting pins using the provided conveyor machine dimensions and material properties. This is accomplished by calculating forces in the entire conveyor machine and performing a fatigue analysis to find the appropriate shaft/pin dimensions to coincide with the given factor of safety. Engineering techniques such as stress analysis, machine optimization, dynamics, and kinematics were utilized to ensure a safe design. All analytical methods were verified by cross referencing computational results with theoretical calculations.

Thomas, Dylan

Chemistry

Lung Function on a Daily Basis

Our experiment is designed to compare and contrast the human lung capacity and breath period in differing physical situations of the body. The members of our group, five subjects total, will be studied while performing four differing breathing situations; standing, sitting, laying down, and after exercise. Breathing data will be collected using a spirometer and the accompanying equipment. Data will then be analyzed by hand using varying degrees of mathematics and using the SPSS 12.0.1 system, doing two-way ANOVA and SNK values. We hypothesize that when your lungs are more open and have more room to expand, you will then inhale and exhale a much larger lung volume. We suspect the breathing forms investigated, from greatest lung capacity to least, will be in the following order: standing, sitting, lying, and post exercise.

Thompson, Jessica

Foreign Languages & Literature

Study Abroad in Buenos Aires, Argentina

This presentation will summarize the experiences of two YSU Spanish majors who had the opportunity to study abroad at la Universidad de Belgrano in Buenos Aires, Argentina during the summer of 2009. Topics to be discussed are the benefits of studying a foreign language abroad, the homestay experience, and the adjustment to everyday life in Argentina. Also to be discussed are the rewards of the cultural experiences of studying abroad, as well as the trips made to different sites within Buenos Aires and Iguazu Falls.

Tingler, Jason

History

Posse Comitatus in the 21st Century

This work describes the increasing role that the United States military plays in domestic affairs. I analyze the history of domestic military use in the American colonies, how the founding fathers reacted against it, and the laws that were established in the name of posse comitatus. The paper then jumps to the modern day reliance on the military for numerous domestic catastrophes, ranging from natural disasters to public disorder, and the effects that its domestic deployment has. Finally, the paper forecasts some domestic events from the growing trend of the American reliance on the military.

Tofil, Lisa

Biological Sciences

Quantitation of Ventricular Collagen in Male and Female Spontaneously Hypertensive Rats using Hydroxyproline Analysis

Hypertension, or chronically elevated blood pressure, can result in altered cardiac function and structure. The key structural alteration associated with hypertension is left ventricular hypertrophy. This increase in myocardial mass is based upon an increase in myocyte size and collagen deposition in the heart. Hydroxyproline, a nonessential amino acid, is found primarily in collagen. As a result, measurement of the hydroxyproline content in tissues has been measured to determine collagen content using a modification of Reddy and Enwemeka's hydroxyproline assay (1996). We tested the hypothesis that the ventricular collagen content in the hypertrophied ventricles of males is greater than in females. Preliminary studies suggest that there is a difference in the amount of cardiac collagen content between male and female spontaneously hypertensive rats (SHRs). The cardiac collagen content in males was found to be 96.09 ± 55.48 µg collagen/mg protein (N= 2) versus 129.85 ± 50.28 µg collagen/mg protein (N=2) in females.
Twyford, Molly  Sociology & Anthropology  Bresnahan I and II  10:30 - 10:45

A Preliminary Study of Human Skeletal Remains on the Island of San Salvador

The island of San Salvador was once home to the Lucayan Indians and is purported to have been the first place Christopher Columbus reached in the New World. Youngstown State University has had ongoing excavations at North Storrs Lake site on San Salvador, Commonwealth of the Bahamas under the direction of Thomas Delvaux, the project’s Principal Investigator. Excavations since the project’s inception in 1995 have yielded palmetto wear pottery, beads made of shell, and pottery of Maya origin, suggesting the people of the Bahamas in the time of the Lucayan were engaged in trans-oceanic trade. In December of 2009, a preliminary, descriptive study, the focus of this presentation, was done to examine an assemblage of human skeletal remains housed at the Gerace Research Centre. The remains comprise of a skull missing the mandible, one occipital bone, two mastoid processes, one unidentified skull fragment, one left-side clavicle, one right-side scapula, one right-side ulna, one radial fragment, one thoracic vertebra, one sacrum, and one right-side tibia. Of particular interest is the skull, which shows signs of cradle-boarding on the frontal bone and suggests that it is of Lucayan ancestry. These are the only known remains on the island purported to belong to an individual of Lucayan ancestry. The skeletal remains are in many cases fragmentary; all are fragile and in need of basic conservation work. Additional research scheduled for December of 2010 is a more thorough study and includes: an estimated Minimum Number of Individuals in the inventory, biological profiles for the individual(s), metric and non-metric analysis, and an inventory of skeletal pathology and trauma.

Troy, Jessica  English  Humphrey Room  16:15 - 16:30

Little Red Cap and Hansel and Gretel: Conspiracies in Children's Literature

Children are not the only ones who benefit from fairy tales. Adults use fairy tales for many reasons and in many ways. They may teach lessons to their children or themselves. The tales are also culturally and socially significant, and they may represent the writers’ reactions to societal trends. Fairy tales are expected to teach about the stereotypical characters in the stories. Roles of women are one of the biggest subjects in the tales. Based on interpretation, female characters are the epitome of the battle between good and evil. Loving grandmothers and innocent little girls represent good while the evil step-mothers and diabolical witches represent evil; but this may only be one interpretation. It could be possible that the evil women simply represent freedom and liberation for the women reading the tales because these women are acting how they desire instead of how the rest of the world wants them to act. In my project, I explore the roles of women in fairy tales along with their collaborations with other characters in the fairy tales. Two of the tales that I focus on are Hansel and Gretel and Little Red Cap. Each of these stories has a suspicious union where characters seem to be conniving against others in order to fulfill a nasty desire. I prove that because of the odd plot holes there is room for discussion as to the extent of characters’ collaborations.

Truitt, Chris  Mechanical & Industrial Engineering  James Gallery  11:00 - 11:15

Design of a Conveyor Machine

Conveyor machines are widely used in various applications to transport heavy loads. In this specific analysis, a dumpster with a load of 38,000 Newtons is transported by a conveyor machine that can be modeled as two parallel four-bar mechanisms. The conveyor machine is driven by a flywheel which transmits torque to the rods. The flywheel is driven by an electric motor connected by a belt. The purpose of this analysis is to design the shaft holding the flywheel as well as the connecting pins using the provided conveyor machine dimensions and material properties. This is accomplished by calculating forces in the entire conveyor machine and performing a fatigue analysis to find the appropriate shaft/pin dimensions to coincide with the given factor of safety. Engineering techniques such as stress analysis, machine optimization, dynamics, and kinematics were utilized to ensure a safe design. All analytical methods were verified by cross referencing computational results with theoretical calculations.

Tsarnas, Tracilyn  English  Humphrey Room  15:30 - 15:45

Evolution of the International Phonetic Alphabet

One of the building blocks of linguistic thought is the concept of phonetics. An essential part of the study of phonetics is phonetic transcription. Phonetic transcription is an integral part of linguistic study and research. This process utilizes a writing system that contains one symbol for every sound the human vocal system can make. This writing system was developed by the International Phonetic Association and is called the International Phonetic Alphabet (IPA). The objective of this research was to trace the evolution of the IPA from its conception to through its modern form, including its symbols, concepts, and important people. As the result of thorough research and reading, a brief history has been compiled and is ready to be presented.

Twyford, Abbie  Political Science  Pugsley Room  13:45 - 14:00

Assessing the Assessors: Institutional Research on Bureaucracy and Youngstown State University

Be it public or private, the university plays an essential role in a person’s life, and the life of the community. The years spent at an institute of higher education can have the most direct effect on a young scholar’s future out of any bureaucratic structure they will encounter. Along the way, these men and women in pursuit of knowledge will encounter academics or professors who will challenge them to expand their scope of intelligence and interest, and to think creatively through course work or involvement in extracurricular activities. However, there is a group of professionals that a student may never encounter, but perhaps without even realizing it, more or less play a part in each and every aspect of their quest for higher education. The administration of a university, university system, or college, from the chancellor of the board of regents to the administrative assistant, has a hand in every single program, project, initiative, or decision made on a university campus. This research analyzes the bureaucratic nature of higher education, using Youngstown State University as a case study. The ultimate question of whom the university operates for will be discussed, as well as the history of higher education, higher education in the Youngstown area, and the bureaucratic structure of a university.
Vadjinia, Tracy
Chemistry
Safe Alkyl and Aeryl azide Synthesis Using Arylsulfonyl Azides
Alkyl and aeryl azides are important intermediates in the synthesis of various organic functional groups and heterocycles, however their use is often hampered by inherent instability and the use of metallic azides for their preparation. We have now found that readily handled arylsulfonyl azides are convenient reagents for azidation reactions of alkyl and aeryl halides, as well as alcohols. Microwave heating speeds up conversions and the formation of azide products is easily monitored by IR analysis of reaction mixtures.

Vaillancourt, Brett
Electrical & Computer Engineering
A Mathematical Analysis of Peg Solitaire
In this project we use the structure of the Klein 4 Group and tessellation to analyze the solvability of various peg solitaire games, including Central Solitaire, French Solitaire, and Triangular Solitaire. We have concluded based on our research that any board that can be successfully tessellated and can maintain a constant signature throughout game play is potentially solvable based on if the player moves the pegs correctly.

Vavlas, Belinda
Chemistry
Study Abroad in Buenos Aires, Argentina
This presentation will summarize the experiences of two YSU Spanish majors who had the opportunity to study abroad at la Universidad de Belgrano in Buenos Aires, Argentina during the summer of 2009. Topics to be discussed are the benefits of studying a foreign language abroad, the homestay experience, and the adjustment to everyday life in Argentina. Also to be discussed are the rewards of the cultural experiences of studying abroad, as well as the trips made to different sites within Buenos Aires and Iguazu Falls.

Veeramachaneni, Rathna
Chemistry
Quantitation of mRNA levels in I*S strain of Neurospora crassa
Neurospora crassa belongs to the kingdom of fungi, phylum ascomycota and is eukaryotic. Neurospora has the ability to adapt and grow in environments with a variety of carbon sources. Gene systems involved in this adaption in N.cassa such as the quinic acid (qa) gene cluster have been studied for many years. We are utilizing a strain of Neurospora which has the qa-1S repressor gene deleted (I*S) in it, is used for the study of carbon repression of qa gene cluster. In order to determine the levels of qa gene expression, RNA is isolated from the Neurospora (I*S) tissue grown in dextrose and quinic acid and one step RT-PCR is carried out. Preliminary results have shown that the mRNAs of the quinic acid gene cluster can be detected into the I*S strain using this technique. Qa-x- strain which has qa-x gene deleted in it, is grown in dextrose and quinic acid and a combination of both, a brown substance is separated and is being analyzed by NMR technique.

Vesy, Rikki
Foreign Languages & Literature
Study Abroad in Buenos Aires, Argentina
This presentation will summarize the experiences of two YSU Spanish majors who had the opportunity to study abroad at la Universidad de Belgrano in Buenos Aires, Argentina during the summer of 2009. Topics to be discussed are the benefits of studying a foreign language abroad, the homestay experience, and the adjustment to everyday life in Argentina. Also to be discussed are the rewards of the cultural experiences of studying abroad, as well as the trips made to different sites within Buenos Aires and Iguazu Falls.

Villone, Edward
Criminal Justice
Officers Armed with Degrees: Does Higher Education in Law Enforcement Reduce Police Officer Liability?
Officers Armed with Degrees: Does Higher Education in Law Enforcement Reduce Police Officer Liability? Edward J. Villone, Youngstown State University This poster presentation depicts the exploration of whether higher education positively impacts police officer liability in law enforcement. Do officers with baccalaureate degrees and beyond experience lower than their less educated counterparts when compared to those with only high school diplomas or GED’s? In particular, this research examines criminal, civil, and administrative proceedings against degreed and non-degreed officers acting in their official capacities in a Mahoning County, Ohio police department. The results of the proceedings are then compared to determine whether the degreed officers have a reduced risk of criminal, civil, and administrative liability. As expected, higher education does have a positive impact on police officer liability. However, future researchers may want to explore whether this impact remains consistent over a larger population.

Vinayak, Anubhav
Chemistry
Preliminary Characterization of HIV-1 protein Vpr
Human immunodeficiency virus type 1 (HIV-1) is a retrovirus that is well known to be the causative agent for acquired immunodeficiency syndrome (AIDS). HIV-1 contains many proteins such as Vpr, Tat, Rev, Vif, Vpu and Nef that help regulate its function. Viral protein R (Vpr) is an accessory protein that is involved in virus replication and plays a key role in the function of HIV-1. Vpr has the ability to arrest the cell cycle of infected cells in the G2 phase which leads to the immunopathogenicity of HIV-1. There are 96 amino acid residues in Vpr and is well conserved in HIV-1, HIV-2 and simian immunodeficiency virus (SIV). Structure determination and analysis of Vpr (1-96) molecule is anticipated to reveal more insights into its biological function and the role played by this protein during the virus life cycle. Our ongoing study involves the relationship between the structure and function of Vpr as it plays a significant role in HIV biology and in the pathogenesis of AIDS.
Vitullo, Tyler  Electrical & Computer Engineering  Ohio Room  08:30 - 10:00
A Mathematical Analysis of Peg Solitaire
In this project we use the structure of the Klein 4 Group and tessellation to analyze the solvability of various peg solitaire games, including Central Solitaire, French Solitaire, and Triangular Solitaire. We have concluded based on our research that any board that can be successfully tessellated and can maintain a constant signature throughout game play is potentially solvable based on if the player moves the pegs correctly.

Waldinger, Sarah  Biological Sciences  Ohio Room  10:30 - 12:00
Lung Function on a Daily Basis
Our experiment is designed to compare and contrast the human lung capacity and breath period in differing physical situations of the body. The members of our group, five subjects total, will be studied while performing four differing breathing situations; standing, sitting, laying down, and after exercise. Breathing data will be collected using a spirometer and the accompanying equipment. Data will then be analyzed by hand using varying degrees of mathematics and using the SPSS 12.0.1 system, doing two-way ANOVA and SNK values. We hypothesize that when your lungs are more open and have more room to expand, you will then inhale and exhale a much larger lung volume. We suspect the breathing forms investigated, from greatest lung capacity to least, will be in the following order; standing, sitting, lying, and post exercise.

Walker, Michael  Computer Science & Information Systems  Ohio Room  08:30 - 10:00
Privacy Scrubber: A Program To Secure Private Data On Windows Computers
A wide range of personal information is distributed over the Internet by what appear to be benign software applications, such as Concentrate on Coffee's printing software. All applications have access to the information stored on the computer. This information can be used for tracking or profiling purposes. These applications can and do send such private information to not only the software developers, but also to marketing and tracking services. The goal of this project is to demonstrate that it is possible to protect personal information without altering the execution of these applications. To do this, a software program called Privacy Scrubber intercepts a leaking program's attempts to access personal data. After interception, a fake value will be returned to the requesting application. The information that is faked by Privacy Scrubber has to return a value conforming to the format of the requested data, but randomized to protect the execution of the software. This is done to prevent any issues with execution of the software, and to allow the user to continue to operate the program. This project has two benefits. First, it identifies some of the most commonly leaked information by software applications. Second, it proposes techniques to intercept and replace the leaked information, without altering the protection of privacy. This initial project is not meant to be complete in its protection of personal information, nor is it meant to defend against all the software applications that exist. This Privacy Scrubber is a starting point for a scalable and extensible framework to start protecting a person's private information from unintended software leakage.

Wells, Joelle  Chemistry  Ohio Room  10:30 - 12:00
Analysis of Isolated and Purified Staphylococcus aureus Type 5 Capsular Polysaccharide via Monoclonal Antibodies and Nuclear Magnetic Resonance Spectroscopy.
Staphylococcus aureus is an opportunistic bacterial pathogen responsible for causing a variety of human diseases including foreign body infection, bacteremia, abscesses, and wound infections. Eleven antigenically distinct capsular polysaccharides, which have been shown to enhance virulence, are recognized for Staphylococcus aureus. Of these eleven, two types (type 5 and type 8) comprise about 70% of the isolates from patients with S. aureus disease. The type 5 capsule (Lowenstein) of S. aureus is isolated by killing the bacteria and removing DNA, RNA, and teichoic acid. The sample is then applied to a DEAE column, heavily sonicated, treated with lysozyme, and finally put through a Sephacryl S-300 column for further purification. After each column the sample is tested for presence of carbohydrates (red tetrazolium test) and teichoic acid (phosphate test). Monoclonal antibodies specific for capsule are then used in an ELISA as a final step to identify the purified capsular polysaccharides. Samples can then be analyzed by nuclear magnetic resonance spectroscopy to confirm the structure of the capsule. Confirmation of the capsule structure will be used in the development of several treatments for S. aureus.

Werkmeister, Lora  Human Ecology  Coffelt Room  09:30 - 09:45
The Effectiveness of an Educational Brochure designed to Promote an Emphasis for an Accredited Dietetic Program
Youngstown State University (YSU) recently declared a concentration in Community Wellness for its Coordinated Program in Dietetics (CPD); it is essential to inform supervised practice preceptors, administrative professionals, and students of this change. The American Dietetic Association does not currently provide a brochure or materials to help higher education institutions promote the concentration area(s) of their dietetic program(s), and there are few studies related to the effectiveness of an educational brochure on administrative and supervised practice/internship preceptor knowledge. The objectives of this study are to (1) evaluate the effectiveness of an educational brochure and (2) to communicate YSU’s newly declared concentration of Community Wellness for its CPD. RD and DTR subjects, professionals from the departments of Human Ecology and Career and Counseling Services at YSU, and students currently enrolled in Normal Nutrition general education classes will be conveniently selected. An electronic message will be sent to each subject; it will contain an invitation to participate in the survey and a unique link to the online survey. A Likert-type scale will be used to better assess perception changes as a result of receiving the brochure. The survey will be designed and analyzed with the assistance of SurveyMonkey, an online tool used to create web surveys. Results are pending. Results from this study will allow us to understand community awareness of a newly declared dietetic program emphasis. Furthermore, they will enable the University (or dietetics faculty) to ascertain optimal marketing strategies for both the program and the profession.
Patterns of Strain in the Femur of the Opossum (Didelphis virginiana) During Terrestrial Locomotion

Previous studies have found that limb bones from upright, cursorial species of eutherian mammals experience high bending loads with minimal torsion, whereas the limb bones of non-avian reptiles exhibit considerable torsion in addition to bending. To help determine the evolutionary timing of this divergence in bone loading patterns, we measured in vivo terrestrial locomotor strains in the femur of the Virginia opossum (Didelphis virginiana). This species not only uses more crouched limb posture than cursorial mammals but, as a marsupial, belongs to a clade phylogenetically between reptiles and the eutherian mammals studied previously. The presence of substantial torsion in the femur of opossums, similar to non-avian reptiles, would suggest that this loading regime likely reflects an ancestral condition for tetrapod limb bone design. Strain recordings indicate the presence of both bending and moderate torsion in the opossum femur. Shear strains appear similar in magnitude to peak compressive axial strains, with opossum femora experiencing lower bending loads but higher levels of torsion compared with most previously studied mammals. Thus, loading patterns of opossum limb bones appear intermediate in some respects between those of non-avian reptiles and mammals. Supported by NSF I0B-0517340.

Determining the Role of MGT1 in the Biased Inheritance of Mutant mtDNA in the Yeast Saccharomyces cerevisiae

Mitochondria produce much of the cell’s energy through aerobic metabolism which depends on proteins encoded in both the nuclear and mitochondrial genome. The yeast S. cerevisiae is a facultative anaerobe, which survives by fermentation if it has mutant mitochondrial DNA (p- mtDNA) which has large deletions with the remaining DNA amplified in many head to tail repeats. HS p- genomes display an overwhelmingly biased inheritance pattern in favor of p- when mated to a wild type strain (p+). In the presence of MGT1, the p- strain’s replication or segregation controls. The machine has controls for starting the fan and the heating element along with a safety feature to turn off the heater if the temperature inside the smoke reservoir exceeds a certain threshold temperature. The visualization is created by injecting thin filaments of white smoke at the inlet of a small low-turbulence wind-tunnel. A small flow visualization wind tunnel was designed and built to study the pattern of flow around bluff and streamlined models. The visualization is created by injecting thin filaments of white smoke at the inlet of a small low-turbulence wind-tunnel. The wind-tunnel is a draw-through type and the flow is initiated by a small radial blower fan mounted near the exit of the tunnel. Air is drawn in through the inlet and exhausted at the tunnel exit. Part of the air exhausted can be forced into a smoke reservoir for additional smoke. The machine has controls for starting the fan and the heating element along with a safety feature to turn off the heater if the temperature inside the smoke reservoir exceeds a certain threshold temperature. The flow patterns observed corroborated the concepts learned in fluid dynamics. In addition, flow visualization is used in many industries concerned with aerodynamics.

Economic Impact of the Gerace Research Centre on the Economy of San Salvador Island

The Gerace Research Centre is located on San Salvador Island in the Bahamas and operates as a research and educational facility in collaboration with The College of The Bahamas. In the 2008-2009 season, over 1,300 students and faculty visited the Gerace Research Centre constituting over 13,000 nights in residence at the centre. These excess of 13,000 nights generated over $650,000 for room-and-board fees. In addition to this, students and faculty spend money on various items around the island leading to even greater expenses impacting the economy of San Salvador. My research analyzed expenditures of a group of 25 Youngstown State University students and faculty; this group consisted of two different classes that traveled to the Gerace Research Centre in December 2009. The faculty and students were all given a log to track their daily expenditures on, and this log consisted of five different areas: food/drink and social club/restaurant, souvenirs (manufactured), souvenirs (local handicrafts), incidentals, and other. One purpose of this research was to provide the Gerace Research Centre with an estimate of the overall monetary expenditures that the visiting students, faculty, and researchers bring to the island of San Salvador. The other purpose of this research was to provide Youngstown State University faculty with an estimate of the student and faculty spending patterns so they can make recommendations to oncoming students about estimated spending money that may be brought on the trip.

Study Abroad in Winchester, England

This poster presentation will focus on a forty page book we wrote detailing our experiences while studying abroad in Winchester, England. Our goal with this book/project is to provide advice to students at Youngstown State who would like to study abroad. This project describes in detail our personal, cultural and academic experiences in the United Kingdom. This book primarily explains the detailed preparation process. Overall, this project provides information from a student’s perspective to future study abroad students.
data of shoreline and transect surveys were plotted on the topographic map of the island (1971) using ArcGIS. Shoreline change, the beach transects show dramatic change in the overall morphology of the sand deposit. In an effort to better understand the processes responsible for the observed changes and document the magnitude of change, a detailed study of Sandy Point was initiated in June 2009. The data included shoreline GPS surveys, shoreline to back-beach transects (GPS and total station), and sand textural analyses. A second set of measurements and analyses was completed in March 2010.

An Exploration of Parent-Child Relationship Communication: Motives, Climate, Openness and Age

Communication between parents and their children evolves and changes over time. In most cases, the parent-child relationship continues into the child's adulthood. However, what is unknown are the factors that change parent-child communication patterns over time. Four factors that may contribute to the change in parent-child communication are: a) the motives parents and children have to communicate, b) climate in the parent-child relationship at various stages of that relationship, c) the degree of openness in the parent-child relationship, and d) the age of the parent and child. To understand parent-child communication patterns, it was important to look at why parents and children continue to communicate. The purpose of this study was to examine some of the barriers to improving communication in parent-child relationships.

Work Measurement Techniques Applied to the Improvement of a Material Handling Process in the Fastener Manufacturing Industry

The author, a member of the methods engineering class in the Industrial and Systems Engineering program at Youngstown State University, applied work measurement analysis techniques at a fastener manufacturing company in Girard, Ohio. The complete process of converting bulk inventory to packaged and palletized product was observed. This process was captured as digital video and analyzed with motion and time analysis software. Using this modern approach together with classic work measurement methods inefficient steps in the process were isolated. Improvements toward safety and productivity were then proposed and verified using pre-determined times analysis tools. This research activity provided the author with industrial experience and showcased an important industrial engineering capability to a local industrial partner.

Perceptions of Causes and Consequences of Childhood Obesity Among YSU Students

The problem of childhood obesity in the United States has grown considerably in recent years with approximately 15 percent of children between the ages of 2-19 years being classified as obese (CDC, 2007). Obesity is among the easiest medical conditions to recognize, but one of the most difficult to treat. This study will examine the perceptions of the causes and consequences of childhood obesity among college students at Youngstown State University. Students 18 years or older will be recruited from the YSU campus common student areas. The study protocols will be explained to eligible participants and upon signed informed consent, participants will self-administer one of two surveys (one for students who have children and another for those without). Data will be analyzed using SPSS 15.0 to determine if overweight or obese children will be reported in significantly (p<0.05) more Single-parented households than in Two-parented households; participants who are overweight/obese are significantly (p<0.05) less likely to perceive overweight or obesity in their own children than non-overweight/obese parents; and parents of obese children will report a significantly (p< 0.05) lower daily intake of fruit and vegetables than those of non-obese children.

The Use of Mathematics to Examine the Operation of an Electrochemical Cell

The basics of an electrochemical cell were explored. In order to evaluate and understand the current distribution across an electrochemical cell, mathematical equations were investigated. These equations are expressed through upper-level calculus and differential equations. An objective of the project was to gain a better understanding of these equations.

An automobile supercharger ultimately increases the power output of the engine and is driven by a belt pulley system. As rotational speed increases on a pulley, the driving force or applied torque will decrease because they are inversely proportional. When the driving belt force decreases it in turn causes the inertial load to increase making the internal stress in the pulley higher. A continuation of last year’s supercharger pulley research, this project is a computational approach to determining the stress distributions in the pulley for various input RPMs. Two pulleys are to be examined; one with a carbide coating and one without a carbide coating. Assuming that power at the rotating shaft remains constant; the acting forces on the pulley are calculated and then simulated on the pulley using Finite Element Analysis (F.E.A.) software. The location of the maximum Von Mises equivalent stress will be determined by the F.E.A. software. Also a plot of the Von Mises stress for the various rotational speed inputs will be created for different positions on the pulley. By knowing the power input, angle of contact of the belt on the pulley, and the pulley disk dimensions we conducted a complete stress analysis of the two pulleys.

Changes in Shoreline Sedimentation at Sandy Point, San Salvador

Sandy Point is a prominent landform located at the southwestern corner of San Salvador, Bahamas. It is a massive peninsula-shaped sand deposit created by the combination of long-shore drift along the southern and western shores of the island and intensive wave refraction at the point. GPS surveys of the shoreline conducted in March for the years 2005 â€“ 2009 demonstrate regular and non-predictable change of the shoreline position from year to year. Visual observations and crude line-level transects for the same years indicate equally dramatic change in the overall morphology of the deposit. In an effort to better understand the processes responsible for the observed changes and document the magnitude of change, a detailed study of Sandy Point was initiated in June 2009. The data included shoreline GPS surveys, shoreline to back-beach transects (GPS and total station), and sand textural analyses. A second set of measurements and analyses was completed in March 2010. Preliminary results demonstrate a dramatic change in shoreline position from June 2009 to March 2010. In accordance with shoreline change, the beach transects show dramatic change in the overall morphology of the sand deposit. Over all, the sediment can be characterized as poorly sorted coarse sand composed of primarily carbonate shell fragments. The resulting data of shoreline and transect surveys were plotted on the topographic map of the island (1971) using ArcGIS.
Zahran, Michael  Electrical & Computer Engineering  Ohio Room  08:30 - 10:00

**Triaxial Method Resonant Chamber for Low Frequency Electromagnetic Testing**

Design and Construction of a Low Cost Tube-in-tube Triaxial Device The tube-in-tube test method is utilized for measuring the transfer impedance and the shielding and screening attenuation of the coupling of electromagnetic interference. It is a triaxial method for testing Electromagnetic Compatibility (EMC) of data communication transmission line structures (cable assembly and connection system). It provides an efficient and accurate way to test electromagnetic leakage at low frequencies. The network analyzer is used to measure the attenuation characteristics at the output of the tube-in-tube with test samples. Frequency sweep by the network analyzer will generate information on attenuation provided by the sample (cable assembly and/or connectors) at various test frequencies. The tube-in-tube test apparatus acts as a coaxial cable, allowing the measurement of voltage drop at the outside of the tube. This device is designed to allow for a cost improvement over a commercially available apparatus with similar functions. The device is also constructed to allow for better test flexibility to decrease test time and test cost. This is accomplished by incorporating a custom built lid and base assembly create a sealed chamber that is easy to open and close, making it more user-friendly. An adjustable end connector allows one to test different lengths of wire samples. Test results comparable to the commercially available device are verified.

Zame, Kenneth  Geological & Environmental Science  Jones Room  13:30 - 13:45

**Carbon Dioxide Capture Using The Micro-algae Chlorella Vulgaris.**

As an option for handling the large quantities of carbon dioxide (CO2) released into the atmosphere, fossil-fired utilities are pursuing deep geological sequestration in response to the pressure to reduce emissions. Though not fully known, liability issues for deep sequestration are potentially significant. Flue gas separation is expensive, and for smaller emitters of carbon dioxide, access to geological sequestration is limited and costly. Algae, which represents about 0.5% of global biomass produces about 70% of the net oxygen on earth. In the process CO2 is sequested in large quantities by photosynthetic means producing algae biomass rich in lipid which is usable for biofuels. Algae thus offers alternative and sustainable solution in two main ways; 1) value-added sequestration of CO2 through conversion to biomass and 2) biomass which can be used to produce renewable fuels. This research would be focused on the use of the fresh water microalgae, Chlorella vulgaris for photosynthetic mitigation of point source carbon dioxide emissions in a vertical packed bubble column photobioreactor. It is expected that the rate of mass transfer of carbon CO2 into the Chlorella vulgaris alga culture phase and subsequently into biomass using the vertical packed bubble column photobioreactor in conditions aerated with 2 to 10% carbon dioxide (by volume) would be significantly high.

Zeljak, Alaina  Criminal Justice  Ohio Room  15:30 - 17:00

**Analysis of Genetic Variations of cpDNA in Elm species**

Chloroplasts are the membranous organelles found in plant and algae cells that produce energy through the process of photosynthesis. Chloroplasts have their own separate genome which is often and maternally inherited, known as chloroplast DNA (cpDNA). Chloroplast DNA can be used in research to examine genetic diversity within plant genus and species, as well as evolutionary relationships. The American elm, Ulmus americana, is a deciduous tree found primarily in bottomlands and floodplains, but also naturally thrives near streams along and throughout the Appalachian Mountains. The resilience of the American elm allowed for the species to be cultivated and widely planted outside of its natural hardiness zone. Unfortunately much of the cultivated American elm tree population was destroyed by Dutch elm disease, caused by the fungus ascomycete microfungi. The vector by which the disease is transferred is the Elm Bark Beetle. This research is investigating the cpDNA genetic diversity between two particular Elm species, Ulmus americana and Ulmus rubra. DNA was isolated from healthy tissues in the old growth forest in Zoor Valley, New York, and from cultivated trees in the vicinity of YSU. CpDNA has been amplified through polymerase chain reaction conserved primers that flank more variable regions. These products are cloned, isolated and then quantitated before being sequenced for analysis. The goal of this research is to analyze the genetic differences within the cpDNA to see if there is a difference between Healthy wild trees and cultivated susceptible Elms.

Zell, Elizabeth  Chemistry  Ohio Room  10:30 - 12:00

**Novel Synthesis of Copper Chloride Quantum Dots in a Sodium Chloride Matrix**

We present a novel synthesis of non-toxic copper chloride nanocrystals in a sodium chloride matrix. Unlike other methods, this synthesis requires only simple materials such as common sodium chloride, common copper wire, standard ceramic crucibles, and standard lab heat sources, without the need for sophisticated crystal growth apparatus or control of atmosphere. The product is readily synthesized from the molten phase in as little time as is required to melt the sodium chloride, introduce the copper and cool the product. The product exhibits high fluorescence quantum yield and potential bi-exciton and exciton-phonon coupling under illumination with sources as mild as 400nm. We also present compelling evidence of thermal dependence in fluorescence efficiency and lambda max. This rapid, straightforward and non-toxic synthesis is easily performed on the bench top and harvests potential for many applications including undergraduate instruction in Physical Chemistry.

Zordich, Joseph  Geography  Bresnahan I and II  11:00 - 11:15

**Muang Thai: The Growth of the People that Have Inhabited the Area in South East Asia Known as Thailand and How They Became the Beautiful Country they are Today**

All people on this planet have their own story of how they became what they are today. This presentation explores the historical transformation of the people who have occupied the region formerly known as Siam. Better known now to the inhabitants literally as “free nation” and to us outside of the country as the “land of smiles” or simply Thailand. Today the area is a democratic monarchy that has relatively recently broke free from its military monarchical roots which gave birth to the name which united these people. Thailand occupies part of Southeast Asia, having a significant mountainous region which are foothills to the Himalayan mountain range of the southern Asian area, a fertile plateau, and important river systems that produce a fertile central plane with a prosperous set of tributaries running to the gulf of Thailand. Due to its North South orientation, Thailand experiences a variety of climatic difference which produces much variability in the vegetative landscape and land use. Thailand’s history is explored in this presentation through the occupying and adjacent kingdoms as a function of these landscapes over the past thousand years of history.