



## **PROGRAM SCHEDULE**

**WITH**

## **PROJECT ABSTRACTS AND DESCRIPTIONS**

**APRIL 20, 2009**

**WOODARD CAMPUS CENTER**

FREDERICKSBURG, VIRGINIA



UNIVERSITY OF MARY WASHINGTON  
IS AN INSTITUTIONAL MEMBER OF THE  
COUNCIL ON UNDERGRADUATE RESEARCH  
Learning Through Research



UNIVERSITY OF  
MARY WASHINGTON

**Student Research and Creativity Day, April 20, 2009**

**PRESENTATION SCHEDULE**

<b>10:30 a.m. – 12:00 p.m.</b>	Red Room, Woodard Campus Center	Program Chair: Dr. Susan Matts
Presenters:	<b>Damon Lowery</b> (Biology), "The Study of Vegetation Responses Resulting from Two Dam Removals in a Tidal Wetland System and the Incorporation of Geographic Information Systems (GIS)" – <i>abstract on page 18</i>	
	<b>Katherine Vrobel</b> (Environmental Science), "Impacts On Two Streams Caused By Development in the Celebrate Virginia North Project" – <i>abstract on page 27</i>	
	<b>Rose Salzberg</b> (Biology), "Molecular Characterization of the Human RAI1 Promoter" – <i>abstract on page 24</i>	
	<b>Brittney A. Baker</b> (Environmental Science), "The Effectiveness of Wetland Mitigation Banks in the Lower Rappahannock Watershed Through Mapping and Creation of a Single Database" – <i>abstract on page 6</i>	

<b>10:30 a.m. – 12:00 p.m.</b>	Meeting Room 2, Woodard Campus Center	Program Chair: Dr. Debra Steckler
Presenters:	<b>Hope Bowers, Lauren Fuller, Paul Murray, and Mara Rice</b> (Psychology), "Inhibition and Capacity: The Effect of Negative Priming and Attentional Load on Inattentive Blindness" -- <i>abstract on page 8</i>	
	<b>Ali Coyle</b> (Education), "Leapfrog's FLY Fusion Pentop Computer and Its Effect on ESL Students' Writing Fluency" – <i>abstract on page 10</i>	
	<b>Jesse Hatfield and Roger Lamb</b> (Computer Science), "A Next-Generation Degree Planning System for UMW Students and Advisors " – <i>abstract on page 14</i>	
	<b>Jonathan Morin</b> (Computer Science), "Cinefile: Subjective Category Recognition in Databases" – <i>abstract on page 21</i>	

<b>10:30 a.m. – 12:00 p.m.</b>	Meeting Room 4, Woodard Campus Center	Program Chair: Dr. Liane Houghtalin
Presenters:	<b>Brittany Valint</b> (Education), "Using Stimulating Vocabulary Tasks to Build and Improve Social Studies Content Knowledge" – <i>abstract on page 27</i>	
	<b>Leslie Fannon</b> (Spanish), "The Transfer of Reading Skills from First to Second Language in Bilingual Adults" -- <i>abstract on page 11</i>	
	<b>Susan E. Drummond</b> (Classics), "Tune hinc spoliis indute meorum eripiare mihi?...': Tune, Furor, and Power Reversals in the <i>Aeneid</i> " – <i>abstract on page 11</i>	
	<b>Anne Morris</b> (Sociology), "Comparison of Conventional and Unconventional Families and Child Care Dilemmas" – <i>abstract on page 21</i>	

**Student Research and Creativity Day, April 20, 2009**

**PRESENTATION SCHEDULE**

<b>12:15 – 1:45 p.m.</b>	Red Room, Woodard Campus Center	Program Chair: Dr. Christine McBride
Presenters:	<b>Claire Tuley</b> (Sociology), "The Increasing Role of Women in the Television Industry" – <i>abstract on page 2</i>	
	<b>Erin Bailey, Kerri Buscaglia, Marie Kilby, Melissa Ontko, and Kristynn Sullivan</b> (Psychology), "Mood, Motherhood, and Misconceptions: Reactions toward Women with Postpartum Depression" – <i>Abstract on page 6</i>	
	<b>Cassandra Stewart, Anna Edelman, and Melissa Falkenstern</b> (Psychology), "Overwired Relationships: Do you really want to LOL with your BFF online?" – <i>abstract on page 25</i>	
	<b>Elizabeth Bair-Shomo</b> (Sociology), "Empowering Through Faith, Hope, and Love: Is it Enough?" – <i>abstract on page 7</i>	

<b>12:15 – 1:45 p.m.</b>	Meeting Room 2, Woodard Campus Center	Program Chair: Dr. Marcel Rotter
Presenters:	<b>Kara Holloway</b> (German), "Political Metamorphoses. German Politics and Angela Merkel's Changing Appearances" – <i>abstract on page 14</i>	
	<b>Jesse Kopp</b> (German/Studio Art), "Sprachbilder/Bildersprache: The Imagery of Language and the Language of Images" – <i>abstract on page 17</i>	
	<b>Barbara Ailstock</b> (Business), "Impacts of Globalization in Latin America: Economic Challenges and Poverty" – <i>abstract on page 5</i>	
	<b>Taylor Hall</b> (Spanish), "Chac Mool' and the Mexican Neo-Gothic" – <i>abstract on page 13</i>	

<b>12:15 – 1:45 p.m.</b>	Meeting Room 4, Woodard Campus Center	Program Chair: Dr. Claudine Ferrell
Presenters:	<b>Rebecca L. Claar</b> (Education), "How Does Using Readers' Theater in Science Effect Student Information Recall?" – <i>abstract on page 9</i>	
	<b>Alexandra Zelin</b> (Sociology), "Gender and Class Differences in Day Care Decision-Making on Television" – <i>abstract on page 28</i>	
	<b>Lauren Kobyra</b> (Education), "The Effects of Co-teaching on Student Motivation: An Action Research Project" – <i>abstract on page 16</i>	
	<b>Justin Mattos</b> (History), "The Civil Rights Movement Comes To UMW: James Farmer's Impact on the College" – <i>abstract on page 20</i>	

**Student Research and Creativity Day, April 20, 2009**

**PRESENTATION SCHEDULE**

<b>2:00 – 3:30 p.m.</b>	Red Room, Woodard Campus Center	Program Chair: Dr. Karen Anewalt
Presenters:	<b>Meredith Bojarski, Heather Butler, Emma Clay, Michelle Wenz, and Margaret White</b> (Psychology), "My Attitude is Whose Attitude? A Study of Relationship Influence" – <i>abstract on page 8</i>	
	<b>Sylvia Sierra</b> (Linguistics), "Shifting Regional Identity and /aj/ Variation in Fredericksburg, Virginia" – <i>abstract on page 25</i>	
	<b>Will Boyd and Rebecca Graham</b> (Computer Science), "Collex: The Collaborative Lexicon" – <i>abstract on page 8</i>	
	<b>David Flores, Tais Gomez, Kelley Hardgrove, Sarah Isaac, Hannah Pearson</b> (Psychology), "Can You Handle the Pressor? An Investigation of Self-Control and Motivation" – <i>abstract on page 12</i>	

<b>2:00 – 3:30 p.m.</b>	Meeting Room 2, Woodard Campus Center	Program Chair: Dr. Rosemary Barra
Presenters:	<b>Colby Croft</b> (Biology), "The Expression of CEACAM1 in Zebrafish" – <i>abstract on page 10</i>	
	<b>Matthew C. Johnson</b> (Biology), "Effects of Artificial Sweeteners on Type II Diabetes and Obesity" – <i>abstract on page 15</i>	
	<b>Erika Kamptner</b> (Environmental Science), "Soils and Fill Material at Bridges as Possible Sources of Polychlorinated Biphenyls (PCBs) to Lake Anna Waters and Sediments" – <i>abstract on page 15</i>	
	<b>Anne Longerbeam</b> (Linguistics), "The Effect of Syntax on Attitudes toward Domestic Violence Victims" – <i>abstract on page 17</i>	

<b>2:00 – 3:30 p.m.</b>	Meeting Room 4, Woodard Campus Center	Program Chair: Dr. Thomas Fallace
Presenters:	<b>Gwen Paulson</b> (English), "Body Dysmorphic Disorder: Imagined Ugliness and Plastic Surgery" – <i>abstract on page 23</i>	
	<b>Sarah Marshall</b> (Education), "Immediate Versus Delayed Feedback: Clarifying Misconceptions and Deepening Student Understanding of Probability" – <i>abstract on page 20</i>	
	<b>Amy Sutphin</b> (Education), "Increased Levels of Academic Responses: Through the Use of Classroom Performance System (CPS)" – <i>abstract on page 26</i>	
	<b>Virginia Pharis</b> (Sociology), "I Am Porn: Pornography Consumption in Young Adults and their Subsequent Sexual and Romantic Relationships" – <i>abstract on page 23</i>	

<b>3:30 – 4:45 p.m.</b>	Melchers Hall, room 207	Program Chair: Dr. Marjorie Och
Presenters:	<b>Jesse Busch</b> (Art and Art History/English), "Rubens and the <i>Marie de' Medici Cycle</i> " – <i>abstract on page 29</i>	
	<b>Jessica Dalrymple</b> (Art and Art History/Historic Preservation), "Andrew Fisher Bunner: An American Artist" – <i>abstract on page 29</i>	

**Student Research and Creativity Day, April 20, 2009**

**POSTER SCHEDULE**

<b>12:00 p.m.- 1:45 p.m.</b>	Great Hall, Woodard Campus Center  <i>Please set up the poster before noon if at all possible. The listed time is when someone needs to be by the poster to discuss it. If desired, you may leave the poster on display after the ending time for this session. All posters should be taken down no later than 3 p.m.</i>
Poster Presenters:	<b>Stephanie Andreucci</b> (Environmental Science), "Isotopic and Spatial Watershed Erosion Assessment to Aid in Erosion Management in the Rappahannock River Basin" – <i>abstract on page 5</i>
	<b>Filla Sofia Baliwag and Leslie Wilson</b> (Environmental Science), "Analysis of Long term Effects of Mining on Fluvial Systems: Case study on the fate of old tailings of the Kelley Gold Mines, Virginia" – <i>abstract on page 7</i>
	<b>Grace Boyers</b> (Psychology), "Test Anxiety, Depression, and Irrational Beliefs in College Students" – <i>abstract on page 9</i>
	<b>Caitlin Goldman</b> (Computer Science), "Student Survey Analysis Using Data Mining" – <i>abstract on page 12</i>
	<b>Gretchen Gorecki, Christine Wang, and Natalie Wright</b> (Biology/Environmental Science/Geography), "Building a GIS Database for the Rappahannock and Rapidan Conservation Easement" – <i>abstract on page 13</i>
	<b>Joey Kiker</b> (Environmental Science), "Sea Level and Climate Change In The Chesapeake Bay" – <i>abstract on page 16</i>
	<b>Jessica Lehman and Brandi Rollins</b> (Physics), "Optical Trapping Forces" <i>abstract on page 17</i>
	<b>Chris Lowery</b> (Environmental Science), "Paleoceanography of the Late Cretaceous Greenhorn Sea" – <i>abstract on page 18</i>
	<b>Edward Dirk Lynch</b> (Environmental Science), "Comparative analysis of capsaicin in Chili peppers using HPLC" – <i>abstract on page 19</i>
	<b>Matthew Magruder</b> (Environmental Science), "Application of <sup>210</sup> Pb isotopic fingerprinting to identify potential sources of sediment, contaminants and estimates of erosion rates in local watersheds" – <i>abstract on page 19</i>
	<b>Emily Noordhuizen</b> (Biology), "Studies of the Hepaticae and Anthocerotae along Hazel Run in Alum Spring Park, Fredericksburg, VA – Comparison of Sampling Methods" – <i>abstract on page 22</i>
	<b>Katherine Oldham</b> (Environmental Science), "Monitoring the Stormwater Management Ponds of Central Park and Development of an Off-Site Wetland Mitigation Progress" – <i>abstract on page 22</i>
	<b>Laura Elizabeth Rickard</b> (Physics), "Analyzing Emission from a Nitrogen Discharge using LabVIEW and SignalExpress" – <i>abstract on page 24</i>
	<b>Christopher Triola</b> (Physics), "Diatomic Theory and Application Using LEVEL" – <i>abstract on page 26</i>
	<b>Jonathan S. Williams</b> (Chemistry), "Examining the Role of Oxygen in the Photolysis of Polycyclic Aromatic Hydrocarbons in Nonpolar Solvents" – <i>abstract on page 28</i>

**Barbara Ailstock**

BUSINESS DEPARTMENT and

MODERN FOREIGN LANGUAGE DEPARTMENT -- Spanish (**Oral Presentation**)

*Faculty Mentor: Dr. Carole Ann Creque*

**"Impacts of Globalization in Latin America: Economic Challenges and Poverty"**

Abstract

Latin America is a region plagued historically by poverty, underdevelopment, and exploitation by more developed world powers. As the first world began the rapid process of integration, known as globalization, a new dynamic of conflict, poverty, and world economics was born. Globalization is commonly likened to a double-edged sword, used by the first world to allow for the strategic inclusion and exploitation of certain economic factors throughout Latin America. In many cases it has yielded a paradox that allows simultaneously for the inclusion of certain economic factors which derive greatest benefit for the modern world, while providing for the strategic exclusion of others. While a great deal of the blame for globalization's shortcomings have historically fallen on the developed or first world for exploiting developing markets, one must remember that local and national governments play an integral role in the commitment made to foreign trade agreements. This presentation seeks to examine both internal and international components of globalization, such as economic challenges, poverty, and corruption, as well as seek out solutions for the reversal of their affects. If globalization in Latin America is to become a success, it is necessary that both the developed world powers as well as the regional governments of Latin America reevaluate the use of neo-liberal model, stop the exploitation of markets, reclaim the fulfillment of those promises set forth by countries, such as the U.S, attack internal corruption and shift their focus to the reconstruction of the standard to which globalization policy is held. Until these goals can be met, globalization will continue to chart a course plagued by economic failures, political instability, and social unrest. It is up to the world leaders to develop new standards and policies that will allow this sector of the global economy to be characterized not by exploitation, but rather, by innovation and impact.

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**Stephanie Andreucci**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Poster**)

*Faculty Mentor: Dr. Ben Odhiambo Kisila*

**"Isotopic and Spatial Watershed Erosion Assessment to Aid in Erosion Management in the Rappahannock River Basin"**

Abstract

The Rappahannock River, located in Eastern Virginia, is approximately 184 miles long, and is one of the major tributaries of the Chesapeake Bay. The Rappahannock River contributes the most sediment per unit area into the bay, 329 tons/mi<sup>2</sup>/yr, as quantified by The USGS Chesapeake Bay River Input Monitoring Program. In 2000, the Chesapeake Bay, under the Clean Water Act, was listed as an impaired water body. Excess sediments influx is one of the biggest contributors to the degradation of the water quality in the bay. The progressive increases in deforestation and urbanization and the associated uncovering of soils and increased impermeable surfaces in the watershed has led to increased erosion and runoff into the bay. Currently, there is little information regarding soil erosion, sediment source points and accumulation sites within the Rappahannock River Basin. Comprehensive multi-approach studies like this one are critical in helping to determine the land-uses and geomorphic characteristics associated with sediment dominant source areas within the Rappahannock, as well as predict the best locations for the placement of best management practices (BMP's) for overall sound water and soil conservation. This study uses field-based sediment core sampling at accumulation sites within the basin as well as computer-based models to assess erosion within three sub watersheds of the Rappahannock River Basin. Pb-210 and Cs-137 radioisotopes were used to generate sedimentation rates within the sub watersheds within the past century. Isotopic chronological techniques are often affected by deep mixing within the sediment column, Cs-137 with know peak zones is often used with Pb-210 to date sediments as well as estimate sediment accumulation rates. The sedimentation accumulation rates at our three sites in the upper zones of the watershed ranged from 0.05 to 0.10

g/cm<sup>2</sup>/yr with similar average rates (0.07 g/cm<sup>2</sup>/yr) in the three sub-watersheds. Future work will involve using GIS based RUSLE and WEPP models to estimate soil loss within the three sub-watersheds. The results from isotopic analysis and the computer-based models will be compared with suspended sediment results to verify the effectiveness of these methods as well providing the necessary environmental management and conservation data.

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**Brittney A. Baker**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Oral Presentation**)

*Faculty Mentor: Dr. Michael Bass*

**“The Effectiveness of Wetland Mitigation Banks in the Lower Rappahannock Watershed Through Mapping and Creation of a Single Database”**

Abstract

Wetlands are a precious environmental resource that provide habitat, prevent pollutants and excess sediments from entering large waterways, and control storm surge. Wetlands may be destroyed in the process of commercial, residential and infrastructure development. Federal regulation requires that these wetland losses must be mitigated. Mitigation may take the form of on-site mitigation or alternative off-site wetland mitigation, through wetland mitigation banking. Wetland mitigation banking creates a large area of wetland acreage where portions, measured in credits, are sold to those who have destroyed wetland areas. In the United States Army Corps of Engineer’s Norfolk district, there are several wetland mitigation banks. Information about each of these banks may be obtained on their RIBITS database. On this database, however, it is difficult to compare attributes of different wetland mitigation banks within the same service watershed. The purpose of this study is to explore the effectiveness of the wetland mitigation banks that service the Lower Rappahannock Watershed by creating a single database for easy comparison and visualizations that may drive future wetland mitigation bank development decisions.

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**Erin Bailey, Kerri Buscaglia, Marie Kilby, Melissa Ontko, and Kristynn Sullivan**

PSYCHOLOGY DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Chrsintine McBride*

**“Mood, Motherhood, and Misconceptions: Reactions toward Women with Postpartum Depression”**

Abstract

Postpartum Depression (PPD) can have long-term consequences for both mother and child if left untreated. One possible barrier to treatment is the perceived stigma surrounding this illness. Previous research examines the stigma towards Major Depression, but there is currently no research investigating stigma towards the specific diagnosis of Postpartum Depression. In addition, previous research indicates that increased knowledge can decrease stigma, but there is also no research addressing how much knowledge people have of PPD. To address this lack of research, we conducted a study to identify predictors of stigma toward PPD. Participants included college students, members of childbirth education classes, and women recruited through parenting websites. A multiple regression analysis showed that age was a significant predictor of stigma with older participants tending to stigmatize less. In addition, there was a trend for men to stigmatize PPD sufferers more than women. Finally, participants' perceived level of knowledge about PPD was related to the level of stigma. Participants who reported more knowledge stigmatized less. Overall, participants showed a moderate amount of knowledge, but many tended to confuse PPD with the more severe diagnosis of Postpartum Psychosis.

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**Elizabeth Bair-Shomo**

SOCIOLOGY AND ANTHROPOLOGY DEPARTMENT -- Sociology (**Oral Presentation**)

*Faculty Mentor: Dr. Tracy B. Citeroni*

**"Empowering Through Faith, Hope, and Love: Is it Enough?"**

Abstract

Since the Welfare Reform Acts of the late 1990s, many organizations that serve low-income, minority populations are now turning their attention to missions of empowerment. Their goals no longer encompass helping the poor by giving them prescriptive hand outs that merely place a bandage over their problems for a short amount of time. Organizations such as an area community non-profit called Olde Forge Junction, are seeking to eradicate poverty through increasing self-esteem and confidence, through education, and by highlighting the residents' talents even if those talents include customer service or cleaning. However, is Olde Forge Junction creating empowered families and developing an empowered community that lifts these people out of poverty or, are there too many challenges that seek to undermine the work of Olde Forge Junction? This article seeks to ascertain the ability of the programs of Olde Forge Junction to empower the families in the Olde Forge neighborhood. It will highlight the personal growth and acquisition of skills that occur among youth and their parents who participate in the programs of Olde Forge Junction, and also discuss the problems faced with empowering these families.

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**Filla Sofia Baliwag and Leslie Wilson**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Poster**)

*Faculty Mentor: Dr. Ben Odhiambo Kisila*

**"Analysis of Long term Effects of Mining on Fluvial Systems: Case study on the fate of old tailings of the Kelley Gold Mines, Virginia"**

Abstract

A pyrite and gold belt running parallel to the Blue Ridge Mountains once provided a sizeable entrepreneurial opportunity for gold miners. The gold ore found within the Virginia piedmont made profits over \$10,000 for some of the mines in the late 1800 to early 1900s. Today, old shafts, stamp mills, and ore dump piles are remnants on the premises of previous operations. Although mining provided livelihood, extracting of the ore can have harmful ecological impacts to the immediate ecosystems. Sedimentation from run off is enhanced after the earth is broken into loosely unconsolidated particles and easily picked up by running water. Trace metals from tailings and others associated with the extraction process, like mercury, must be properly disposed to prevent leaching into the groundwater or contaminating nearby rivers. Our work focuses on the environmental impacts of the Kelly gold mine on the surrounding fluvial systems located within the Rappahannock River Basin in Fauquier County, Virginia. Surface sediment grab samples were taken from upstream, mid and downstream of a tributary of the Rappahannock that drains around the Kelly gold mine; surface samples were also taken at sites in the lower Rappahannock. Our preliminary result shows higher concentration near the mine sites and the lower Rappahannock locations. In addition, a sediment core was taken from a downstream depositional zone of the Rappahannock and analyzed for trace metal concentrations and magnetic susceptibility. Cs<sup>137</sup> isotope was used for chronological analysis as well as sediment accumulation rate estimates at the depositional zone. The core provides the historical context to the trace metals transport and deposition in relation to the mining activities in the watershed. Our preliminary trace metals result of the core shows high concentrations prior to 1963, around the mining period, and is also supported by our magnetic susceptibility profile of the core.

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***Student Research and Creativity Day, April 20, 2009***

**Meredith Bojarski, Heather Butler, Emma Clay, Michelle Wenz, and Margaret White**  
PSYCHOLOGY DEPARTMENT (**Oral Presentation**)  
*Faculty Mentor: Dr. David Kolar*

**“My Attitude is Whose Attitude? A Study of Relationship Influence”**

Abstract

Research on social influence has evaluated how partners within a relationship influence each others' attitudes in many different types of interpersonal relationships. However, no research has been conducted that incorporates a wide variety of interpersonal relationships in one study. The current research examined how partners influenced attitude change on common moral dilemmas by looking at married couples, exclusive dating couples, friend pairs, and stranger pairs. Participants completed a survey evaluating their baseline attitudes on each dilemma, discussed several of these dilemmas, and then completed a follow-up survey to determine if their attitudes about the dilemma had changed. While the results indicated that dyads aligned their attitudes toward their partner, relationship type played no significant role in the amount of alignment that occurred. In addition, factors such as closeness within the relationship or the importance of the issue did not have any significant influence on attitude change. Future research should examine the nature of the dilemma and how relevant it is to the relationship type, as well as possible changes in methodology

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**Hope Bowers, Lauren Fuller, Paul Murray, and Mara Rice**  
PSYCHOLOGY DEPARTMENT (**Oral Presentation**)  
*Faculty Mentors: Dr. Dave MacEwen and Dr. Roy Smith*

**“Inhibition and Capacity: The Effect of Negative Priming and Attentional Load on Inattentive Blindness”**

Abstract

Our research involves the phenomenon inattentive blindness. Inattentive blindness is the inability to perceive stimuli when the object is not the focus of attention. The experiment consisted of a combination of a negative priming task and an inattentive blindness task. Cognitive load and inhibition to an object were manipulated. The inhibition group completed a negative priming task which served to inhibit this object. The non-inhibition group performed the same task, except that the inhibited object was unrelated to the inattentive blindness probe. The negative priming task was a replication of part of Anne Treisman's original negative priming work, which involved showing two shapes simultaneously and instructing subjects to ignore one of the shapes. In subsequent trials, subjects were asked whether the originally ignored object was the same or different from another object. The inattentive blindness task involved subjects watching a display of bouncing circles and squares, during which, an unexpected object appeared for five seconds out of the fifteen-second trial. Subjects were then asked to describe anything they saw other than the circles and squares. Attentional load theories have shown that humans have a limited amount of attentional resources. Increasing attentional load will decrease the amount of cognitive resources available and reduce processing of the simulation. This should result in a higher level of inattentive blindness. Additionally, inhibition of the unexpected object should also lead to higher levels of inattentive blindness.

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**Will Boyd and Rebecca Graham**  
COMPUTER SCIENCE DEPARTMENT (**Oral Presentation**)  
*Faculty Mentor: Dr. Stephen Davies*

**“Collex: The Collaborative Lexicon”**

Abstract

According to recent studies, the extinction rate of rare and undocumented languages is higher than that of extinction rates within the animal kingdom. It is projected that by the year 2100, over

40% languages currently spoken will go extinct. The enormous number of languages throughout the world represent unconquered territory for philosophers and linguists in their hopes to understand the limits of the human mind, and a great challenge in documenting such languages before they disappear from active use. "Collex" is an online application with the goal of securing and spreading this knowledge. It is a collaborative, Web-based lexicon that allows linguists and native speakers alike to contribute information about words, forms, definitions, and the ways in which words are used. The tools currently available to linguists for building dictionaries are primitive, not fully cross-referenced, and do not easily permit collaboration. Collex represents a next-generation tool that greatly improves upon the status quo. We present a demonstration of Collex version 1.0, illustrating its major features and comparing it with other dictionary-building tools available today. We walk through the user interface paradigm that makes the application powerful: modeling headwords, word senses, forms, and sample sentences as entities with attributes and user-defined tags, all of which can be interconnected together in a rich and expressive way. We illustrate how Collex can be used to enter and display language information using any character set – not just the Roman alphabet. And we conclude by offering a glimpse of the future: a linguistic database that permits collaborators to disagree with one another, yet still retains the contradictory points of view in a way that they can be simultaneously navigated and compared.

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**Grace Boyers**

PSYCHOLOGY DEPARTMENT (**Poster**)

*Faculty Mentor: Dr. Denis Nissim-Sabat*

**"Test Anxiety, Depression, and Irrational Beliefs in College Students"**

Abstract

This study examines the area of test anxiety, which has long been considered a facet of state anxiety. Test anxiety, referred to in earlier years as "examination stress" or "evaluation anxiety," is a type of state anxiety which occurs in situations involving performance evaluation. Test anxiety has been shown to affect a surprising number of college students; some studies show that as many as 15-20% of college students struggle with test anxiety. Test anxiety has been linked to several irrational beliefs—in particular, anxious overconcern, helplessness, and demand for approval. Irrational beliefs, however, are not limited in application to test anxiety alone; research has been conducted using irrational beliefs as a cognitive basis for other disorders, such as depression. Depression is also a common disorder among college students, and shares some of the same cognitions as test anxiety such as thoughts of helplessness. In fact, depression and test anxiety appear to be highly correlated in many populations. Subjects with a diagnosis of major depressive disorder (MDD) held a pattern of beliefs similar to those in test-anxious students: demand for approval, helplessness, and anxious overconcern. In addition, however, MDD patients were showed significant beliefs in the theme of frustration reactivity. The present study aims, first, to examine how test anxiety and irrational beliefs are related; it is hypothesized that they are positively correlated in college students. Second, this study will examine patterns of irrational beliefs in one population of test-anxious and depressive students, and observe how a subject high in both test anxiety and depressive symptoms may differ in irrational beliefs from a subject high in test anxiety only.

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**Rebecca L. Claar**

EDUCATION DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Jennifer Jakubecy*

**"How Does Using Readers' Theater in Science Effect Student Information Recall?"**

Abstract

Previous research has shown that using Readers' Theater in various content areas is beneficial to students by increasing their comprehension and fluency. Readers' Theater has students read passages repeatedly, but does not focus on memorization. This study examined another possible use of Readers' Theater. It was hypothesized that the repeated readings of Readers' Theater during

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science would increase student information recall. There were two conditions during this study. The first condition was the teaching of weather using no Readers' Theater; science was taught using the direct instruction model. The second condition was the teaching of electricity using Readers' Theater in conjunction with the direct instruction model of teaching during the science block. This study found that using Readers' Theater in science did not increase student information recall. However, student motivation was increased to use Readers' Theater in all subjects. In addition, students' were eager to continue their learning on electricity outside of the science classroom because of Readers' Theater.

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### **Ali Coyle**

EDUCATION DEPARTMENT (**Oral Presentation**)

Faculty Mentor: Dr. George Meadows

### **"Leapfrog's FLY Fusion Pentop Computer and Its Effect on ESL Students' Writing Fluency"**

#### Abstract

Until now, ITs effectiveness in a classroom has not been evaluated. IT poses a great deal of potential, offering programs ranging from writing to algebra. Containing a camera, the Pentop has the ability to digitize handwriting, recognizing the student's handwriting. In doing so, it has the capability to provide academic support. This research focuses on its potential while using the writing software, and the insert for the FLY notebook, which includes A dictionary, thesaurus and An essay coach. The ESL students participating in this research ranged in English proficiency, from level one to level three. Each student was given the opportunity to learn about and implement the pen during class whenever the time presented itself. The use of the pen allowed the students to make connections between the spoken word and the written word, while gaining an appreciation for the use of a dictionary and thesaurus throughout the writing process.

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### **Colby Croft**

BIOLOGICAL SCIENCES DEPARTMENT (**Oral Presentation**)

Faculty Mentor: Dr. Dianne Baker

### **"The Expression of CEACAM1 in Zebrafish"**

#### Abstract

The zebrafish (*Danio rerio*) has recently emerged as a highly appropriate organism for the study of human disease. There is a zebrafish equivalent to most human systems, and the tissues within those systems are highly similar to human tissues. Furthermore, recent research has made it apparent that gene mutations involved in human cancers are also involved in cancer in zebrafish. CEACAM1 is a gene that codes for a tumor suppressor protein that has a newly identified zebrafish homolog. I have been working to characterize the temporal expression of CEACAM1 using real-time polymerase chain reaction (RT-PCR) to determine if the expression pattern of the predicted *D. rerio* CEACAM1 gene is similar to that in humans. In order to develop the RT-PCR assay, I cloned three regions of the CEACAM1 mRNA. First, PCR was performed on complimentary DNA synthesized from zebrafish RNA. PCR products were purified, and then ligated into a plasmid which was transferred to *Escherichia coli*. This has allowed for sequence analysis of the gene in our strain of zebrafish. After the sequence was determined, primers and probes were designed for real-time PCR, which was performed on complimentary DNA synthesized from the RNA of 24, 48, 72 hour and one week post-fertilization embryos and larvae. The results indicate that there is marked increase in CEACAM1 expression during this time period. The next step will be to characterize the spatial expression of CEACAM1 using *in situ* hybridization.

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**Susan E. Drummond**

CLASSICS, PHILOSOPHY, AND RELIGION DEPARTMENT -- Classics (**Oral Presentation**)

Faculty Mentor: Dr. Angela Gosetti-Murrayjohn

**"Tune hinc spoliis indute meorum eripiare mihi?...": Tune, Furor, and Power Reversals in the Aeneid"**

Abstract

The second-person pronoun form *tune* appears exactly four times in Vergil's *Aeneid*. Because the pronoun *tu* is already emphatic, its use at the beginning of a clause and with the particle *-ne* adds a special note of incredulity to its already indignant tone. Although scholarship on the literary use of *tune* is lacking, the special meaning of *tune* is consistent in Latin literature prior to Vergil. For instance, Plautus employs the skeptical and indignant sense of *tune* twice in the *Amphitruo*.(565-8). Cicero employs *tune* in a manner similar to Plautus, albeit for a more serious dramatic effect, in an onslaught of rhetorical questions addressed to Verres (*Actionis in C. Verrem Secundae*, 1.78.1-13). Vergil retains the sense of *tune*, but he reserves the pronoun form for a very particular sort of scenario. Through a close examination of Vergil's apparently deliberate placements of *tune* in the narrative structure of the *Aeneid*, this paper relates the important themes of *furor* and power reversals to the human aspect of the epic. Spoken by Dido to Aeneas (1.617), Euryalus' mother to her son's dead body (9.481-3), Opis to Arruns (11.857), and Aeneas to Turnus (12.947-48), *tune* consistently accompanies situations of injustice and intense emotional pitch. Each instance proves darker than the previous one; the tone of *tune* is indignant in the first, grief-stricken in the second, and derisive in the third and fourth. Despite their differences, all four instances involve the effects of a specific character's *furor*. In a moment of acute awareness, the speaker perceives the results of *furor* and reacts to them with utmost indignation. In each of the four scenarios, the consequence of *furor* is a dramatic role reversal.

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**Leslie Fannon**

MODERN FOREIGN LANGUAGES DEPARTMENT -- Spanish (**Oral Presentation**)

Faculty Mentor: Dr. Marisa Martinez-Mira

**"The Transfer of Reading Skills from First to Second Language in Bilingual Adults"**

Abstract

This study is a look at the reading skills of English Language Learning students (ELL) who did not have access to a bilingual education program. The study focuses on previous literature done on topics including the pros and cons of bilingual education, different theories of literacy, and the transfer of skills from one language to the next. In this study, transfer is considered the ability of a reader to use their (reading) skills that they have achieved in their first language in their second. This study also focuses on native Spanish speakers who have learned English as their second language. Most of the research considering bilingual education and literacy has focused on children, whereas this study focuses on adults who have not had the training needed to fully realize their potential reading skills. The adults, who also volunteered to participate in oral interviews, were given a series of reading comprehension tests to assess both their opinions on reading, the school system in the United States compared to their native country, their reading skills and other aspects of literacy. The result is a case study that looks at both what has been done in literacy and bilingual education research and also the continued effects into adulthood.

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**David Flores, Tais Gomez, Kelley Hardgrove, Sarah Isaac, Hannah Pearson**  
PSYCHOLOGY DEPARTMENT (**Oral Presentation**)  
*Faculty Mentor: Dr. Debra Steckler*

**“Can You Handle the Pressor? An Investigation of Self-Control and Motivation”**

Abstract

The purpose of our study is to investigate how motivation influences self-control. Past research on self-control has revealed that self-control is a limited resource and can be depleted. This depletion negatively affects one’s performance on a subsequent self-control task as there is less of the self-control resource to activate. Recently, researchers have discovered that motivation can help individuals overcome depletion of self-control and perform as though their capacity has been replenished. Our study looked at the interaction between self-control and motivation when performing a self-control task after being depleted. Research participants were divided into low and high self-control groups based on their scores on a self-control survey. Self control was depleted in each participant by requiring them to do the Stroop task for five minutes. Participants in each self control group then received intrinsic, extrinsic, or no motivation when asked to perform a second task - placing their hands in the cold pressor. We hypothesized that individuals with high self-control would perform better on the cold pressor task when motivated either intrinsically or extrinsically, whereas individuals with low-self control would perform better on the cold pressor task when motivated extrinsically. Our results showed that motivation does have an effect on overcoming depletion. Specifically, individuals who were motivated intrinsically performed better on a task than the rest of the participants. Results were discussed in terms of the value of intrinsic and extrinsic motivation and their interaction with self-control.

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**Caitlin Goldman**  
COMPUTER SCIENCE DEPARTMENT (**Poster**)  
*Faculty Mentor: Dr. Stephen Davies*

**“Student Survey Analysis Using Data Mining”**

Abstract

The UMW Computer Science department recently conducted campus-wide surveys about various aspects of UMW student life. The topics included stress levels, the Iraq war, the Honor Code, drug use and videogame use among students. Over 500 students participated in the survey. We recently analyzed this data in an attempt to discover interesting correlations and to build data mining classifiers that could predict student behavior. This poster presents the results of this analysis. We first wrote and compared Naïve Bayes and decision tree classifiers for the stress-level survey. A Naïve Bayes classifier analyzes data using statistical principles while assuming independence of every feature. A decision tree works differently in that the program builds a tree of features and takes dependences between them into consideration. It also uses a smaller number of features. Comparing the two, the Naïve Bayes classifier achieved a 73% correct prediction rate, while the decision tree achieved a 62% rate. This seems to indicate that for this data set, using a broader set of features is critical in prediction, more so than taking into account the possible dependence of features. In addition to writing these two programs, we used a popular data mining application called Weka for further analysis. This poster presents the results of an analysis of each survey, shedding light on other aspects of student life at UMW. It also contains a data mining section that explains basic data mining principles, how algorithms are implemented, and compares and contrasts the different algorithms to provide insight into why some were better predictors than others with this data set.

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**Gretchen Gorecki, Christine Wang, and Natalie Wright**

BIOLOGICAL SCIENCES DEPARTMENT, EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT, and GEOGRAPHY DEPARTMENT (**Poster**)

*Faculty Mentor: Dr. Grant Woodwell*

**“Building a GIS Database for the Rappahannock and Rapidan Conservation Easement”**

Abstract

In 1969 the City of Fredericksburg acquired almost 4800 acres of land that comprised a riparian corridor along the banks of the Rappahannock and Rapidan rivers beginning approximately at the I-95 bridge and continuing upstream over 32 miles. This river corridor has been maintained as a buffer in order to protect the water supply for the City of Fredericksburg. In order to maintain the land for perpetuity, the City entered into a Deed of Easement with the Virginia Outdoors Foundation, Virginia Board of Game and Inland Fisheries and The Nature Conservancy. This agreement took effect in June of 2006 with the goal of preserving a riparian buffer along 65.7 miles of river banks and protecting the habitat of many species including Bald Eagles and the spawning grounds of fish such as the American shad. The City of Fredericksburg, in association with the non-profit organization, Friends of the Rappahannock (FOR), is now engaged in the development of a Watershed Property Management Plan. Goals of the plan include protection of river water quality, historic resources and natural resources, preservation of scenic vistas and a wilderness experience for visitors and providing for balanced recreational use. During the current semester, the Department of Earth and Environmental Sciences has been providing assistance to FOR by constructing a geographic information system (GIS) database of natural and manmade features that fall within the conservation easement area. In this project we have been assembling a diverse set of spatial data from both public domain sources, such as the United States Geological Survey and U.S. Census Bureau, as well as providing original data captured with global positioning system instruments. The data sets occur within the City of Fredericksburg and the counties of Stafford, Spotsylvania, Orange, Culpeper and Fauquier. To date the following data has been acquired and converted to a common projection (Universal Transverse Mercator) and datum (North American Datum of 1983): surface water features, roads, trails, tax map land ownership, elevation contours, historic sites, and natural features (such as waterfalls). The full development of the GIS model for the conservation easement should provide useful tools for the development of a property management plan by helping to identify problem areas, such as excessive erosion and encroachment by adjacent land owners. We envision that the resulting data files will be useful as an enforcement tool by the City of Fredericksburg River Steward.

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**Taylor Hall**

MODERN FOREIGN LANGUAGE DEPARTMENT -- Spanish (**Oral Presentation**)

*Faculty Mentor: Dr. Jessica Locke*

**“Chac Mool’ and the Mexican Neo-Gothic”**

Abstract

Carlos Fuentes’ short story “Chac Mool” is generally considered and analyzed as a text of the fantastic genre. However, if one closely examines many of the various aspects of the story that have been deemed as “fantastic,” it is also possible to note a strong influence of the gothic genre as well. In “Chac Mool,” Fuentes modifies and modernizes many of the traits typical in traditional Gothic narratives by blending them with fantastic elements and pre-Columbian motifs, and by imbuing them with greater ambiguity in terms of the characters’ morality. The result is a story via which nightmare-like surrealism and terror are evoked, as well as the concept of the evil and/or corruption that are inherent to mankind. The interaction of the Fantastic and the Gothic can be observed in several aspects of the story, including: the narration mediated by a third-party “reader,” which creates ambiguity and blurs the line between reality and fiction; the contrast between inner and outer worlds, which itself alludes to the dichotomy between the rational and the irrational; and the duality of order vs. chaos in the lives of the story’s characters, which is reflected, in part, in the setting of the story: a large, abandoned house in Mexico City, in several ways reminiscent of the castles of classic Gothic

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tales, but modernized to have greater validity and relevance for the contemporary reader. In this paper, I will analyze the ways in which "Chac Mool" is influenced by traditional Gothic literature, as well as the ways in which Fuentes modernizes and updates the Gothic elements he uses in order to create a story that is both neo-gothic and fantastic, able to simultaneously attract and repulse the modern reader, as the best Gothic tales do.

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**Jesse Hatfield and Roger Lamb**  
COMPUTER SCIENCE DEPARTMENT (**Oral Presentation**)  
*Faculty Mentor: Dr. Stephen Davies*

### **"A Next-Generation Degree Planning System for UMW Students and Advisors"**

#### Abstract

We introduce an experimental web-based degree planning application designed to help UMW students choose and keep track of which courses to take during any number of future semesters. The system is intended to help students make accurate plans by presenting information about courses offered, requirements for each major, and general degree requirements. The tool allows users to construct a long-term plan by choosing a major, searching for courses, and placing those courses in the appropriate semesters. It evaluates the plan after each change to it, and informs the user of what requirements still remain for graduation. The tool takes into account prerequisites, repeating courses, and typical course availability rotations. It can be used by students and their advisors, allowing advisors to view advisees' plans in order to aid the academic advising process. Advisors in five departments, and 145 advisees, tested a beta version of the tool during this spring's advising period. We present results from qualitative and quantitative feedback received during the testing period, and from anonymous surveys at its conclusion. We also explore the need for a robust degree planning system, describe the design and features of the application, and analyze its potential impact on the UMW advising process.

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**Kara Holloway**  
MODERN FOREIGN LANGUAGES DEPARTMENT -- German (**Oral Presentation**)  
*Faculty Mentor: Dr. Marcel Rotter*

### **"Political Metamorphoses. German Politics and Angela Merkel's Changing Appearances"**

#### Abstract

Throughout the years women in politics has become a more common occurrence, and many times most women politicians seem to adapt the same type of outward appearance. While this occurs quite often in America, the concept of women in politics, specifically those in great roles of power, is somewhat new in Germany. In 2005 Angela Merkel was elected Chancellor of Germany after serving many years in different positions within the Christian Democratic Union (CDU) party. Merkel's story and rise to power is somewhat different than many politicians, considering that she was raised in East Germany and not "groomed" to be a politician. Upon deciding to run for Chancellor, Merkel's outward appearance changed drastically in a matter of weeks. She went from wearing baggy clothes and no make-up to dressing the part of a woman politician. There is very minimal research done, investigating the reason for the change and the implications it had on her career. This presentation seeks to find and present research done on Merkel's change, and it also attempts to apply concepts of studies learned in a Visual History seminar (German 485). Was Merkel's change truly essential in making her one of the most well-known women politicians today?

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**Matthew C. Johnson**

BIOLOGY DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Dianne Baker*

**"Effects of Artificial Sweeteners on Type II Diabetes and Obesity"**

Abstract

Type II diabetes is one of the most pressing medical concerns currently affecting the United States. The high incidence of the disease has led to the development of a number of products to help reduce sugar content of foods to make them more diabetic friendly. One of these products is sucralose, more commonly known as Splenda®. While use of this product is typically considered to be a safe replacement for sugar, some recent studies have found adverse effects on glucose balance, by increasing glucose absorption and altering the insulin response. In this study, I tested the effects of sucralose on the progression of type II diabetes in mice. I hypothesized that the presence of sucralose in the diet of type II diabetic mice will accelerate the progression of the disease, resulting in increased glucose levels and decreased kidney function, compared to diabetic control animals. Secondly, I hypothesized that sucralose in the diet will increase food consumption and therefore increase body mass in type II diabetic mice compared to control-fed type II diabetic animals. To test these hypotheses, I have measured food intake, body mass, and blood glucose levels (both fasting and glucose tolerance test levels) in sucralose-fed and control-fed animals over a 10 week treatment period. Plasma samples were also collected over this same period for measurement of insulin and triglyceride levels, and these assays are currently underway. At the end of the treatment period, tissue samples will be collected for future quantification of glucose transporter proteins.

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**Erika Kamptner**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT -- Geology (**Oral Presentation**)

*Faculty Mentors: Dr. Charles Whipkey and Dr. Charles Sharpless*

**"Soils and Fill Material at Bridges as Possible Sources of Polychlorinated Biphenyls (PCBs) to Lake Anna Waters and Sediments"**

Abstract

Recent studies show that polychlorinated biphenyls (PCBs) have been bioaccumulating in aquatic wildlife tissue in Lake Anna, located in central Virginia. PCBs were first manufactured and distributed in the United States by Monsanto Chemical Company in 1929. Production of PCBs ended in 1977 due to evidence of severe health effects caused by exposure to the chemical. In a Virginia Department of Environmental Quality study in 2006, sample concentrations in fish tissues ranged as high as 5376.8 ng/g (ppb) in gizzard shad fish species located in Terry's Arm of Lake Anna. This value is well above the 54 ng/g health advisory levels for fish consumption issued by the Virginia Department of Health. In 2005, Army Corps of Engineers and University of Mary Washington research identified elevated levels of PCBs in sediment samples which ranged from 1.08 ng/g to 40.9 ng/g. PCB "hot spots" in this study area correlated with bridges that crossed arms of the lake. In an effort to identify the source of PCBs into Lake Anna, PCB concentrations were quantified in soil samples taken along roads and bridges using EPA Method 8080A with a PCB standard made up of 7 of the 209 congeners for analysis. Results from this study showed that high concentrations of PCBs do not directly correlate with all roads and bridges, but only a select number of bridges. Soil samples taken in ditches adjacent to roads have concentrations of 1.655 ng/g to 29.63 ng/g. Soil samples taken from bridges have PCB concentrations ranging from 124.9 ng/g to 3875 ng/g. Samples taken from the fill material had even higher concentrations of PCBs, indicating that the fill materials used to construct the bridges are a possible source of PCBs into Lake Anna waters and sediments.



**Joey Kiker**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Geology (**Poster**)

Faculty Mentor: Dr. Neil E. Tibert

**“Sea Level and Climate Change In The Chesapeake Bay”**

Abstract

The Chesapeake Bay contains a continuous record of sedimentation for the Holocene, yet the thickness of the sedimentary cover is highly variable between the north and southern side of the Potomac River. The Northern Neck region contains exceptionally thick marsh deposits which may record the combined effects of sea level rise and differential compaction. The microfossil and physical stratigraphy of sediments yield evidence for both fluvial process and compaction (autogenic) and sea level and climate (allogenic). A 7 meter Livingston core was recovered from Potomac Creek, tributary to the Potomac River, located in the central estuarine zone near Stafford, VA. The lowermost sediments (7.85-7.45 m) comprise alternating organic-rich mud and sand, relatively intense magnetic susceptibility values, and relatively abundant *Miliammina*, *Ammoastuta*, and *Thecamoebians*. The central facies (7.44-3.26 m) comprises grey clay, highly variable magnetic susceptibility values, and high percentages of both *Ammobaculites* and *Trochammina*. The uppermost facies (3.25-1.01 m) comprises organic rich mud and peat and relatively high abundances of *Ammoastuta* and *Haplophragmoides*, giving way to freshwater *Thecamoebians* and *Phragmites* at the top of the core (1.00-0.00 m). We interpret four stages of marsh evolution: Stage 1 (7.85-7.45 m) a high energy shallow marsh; Stage 2 (7.44-3.26 m) a low energy relatively deep central estuary; Stage 3 (3.25-1.01 m) a high stable marsh; and stage 4 (1.00-0.00 m) a low salinity anthropogenically influenced marsh. The overall trend in sea level is transgressive-regressive and it is likely that climate cooling-warming cycles influenced sedimentation patterns that include the onset of enhanced peat production at the approximate time of the Medieval Warm Period.

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**Lauren Kobyra**

EDUCATION DEPARTMENT (**Oral Presentation**)

Faculty Mentor: Dr. Jennifer Jakubecy

**“The Effects of Co-teaching on Student Motivation: An Action Research Project”**

Abstract

Most students are fervent about their learning at the beginning of their schooling, and it is important for teachers to continue this enthusiasm throughout the students' academic career. Nonetheless, motivating students to participate in academic activities can be difficult, especially if the student has no initial desire to learn. However, this study will examine the effects of a particular teaching strategy on students' motivation to engage in academic activities. By utilizing co-teaching (i.e., the utilization of two teachers in one classroom environment in which both teachers are involved in teaching the content), the researcher will investigate students' motivation and successes compared to that of a non-co-teaching environment. The investigation will take place in a kindergarten classroom for six consecutive weeks. During this time, the researcher will teach students in both a whole-group lesson format, as well as a co-taught lesson format for math and science. Although all the students in the kindergarten class will be taught the lessons, the researcher will focus primarily on five particular students. It is expected that when taught in a co-taught environment, students' motivation to engage in academic activities will increase.

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**Jesse Kopp**

ART AND ART HISTORY DEPARTMENT and  
MODERN FOREIGN LANGUAGES DEPARTMENT -- German (**Oral Presentation**)  
*Faculty Mentors: Ms. Carole Garmon and Dr. Marcel Rotter*

**"Sprachbilder/Bildersprache: The Imagery of Language and the Language of Images"**

Abstract

"Sprachbilder/Bildersprache: The Imagery of Language and the Language of Images" analyzes the intertextual relationships between the poem "Todesfuge", by German poet Paul Celan, and various works of art produced in response to it by Anselm Kiefer and Laszlo Lakner. These artists use Celan's words to create independent afterimages that explore themes of loss, mourning and memory within the context of the problematic issue of Holocaust representation. Quotation is identified as a working method for both artists, whose appropriations from Celan's texts invite his voice to join in a polyphonic resonance of meaning and associations within their visual statements which question the role of art and literature as mutually exclusive modes of expression.

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**Jessica Lehman and Brandi Rollins**

PHYSICS DEPARTMENT (**Poster**)  
*Faculty Mentor: Dr. George King, III*

**"Optical Trapping Forces"**

Abstract

Forces produced by light can be used to trap and manipulate microscopic objects such as viruses, bacteria, living cells, and DNA. A highly focused laser beam produces the trapping forces. The optical system is referred to as an optical tweezer and the forces it generates are dependent on the laser beam's power, sharpness and gaussian profile. The research discussed in this presentation incorporates a Helium-neon laser beam for the construction of the tweezer. Replacement of the He-Ne laser with an IR laser allows the tweezer to be used for manipulation of objects that are easily destroyed by the laser power, like cells. The detailed results of this research project will be presented.

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**Anne Longerbeam**

ENGLISH, LINGUISTICS, AND COMMUNICATION DEPARTMENT -- Linguistics (**Oral Presentation**)  
*Faculty Mentor: Dr. Judith Parker*

**"The Effect of Syntax on Attitudes toward Domestic Violence Victims"**

Abstract

This project seeks to raise awareness about the effects of syntax in everyday reading materials, such as newspapers, on people's attitudes toward domestic violence victims. Earlier research has indicated that passive syntax that does not explicitly include an agent affects readers' responses to sexual assault crimes (Henley 1995). Research has also shown that attitudes toward sexual assault victims can be measured through a specific scale constructed by Ward (1988). The present study examines how a higher level of negativity in attitudes is held toward domestic violence victims when sentences take the format of the passive, especially the agentless passive, compared to active sentences. Based on responses by psychology students and women's studies students, I will test the hypothesis that students from the women's studies class will demonstrate increased awareness in women's issues, such as domestic violence. The aim of this initial study is to provide a basis for further research into why subjects hold a higher level of negativity in their attitudes toward domestic violence victims in syntax-specific situations.

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**Chris Lowery**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Geology (**Poster**)

Faculty Mentor: Dr. Neil E. Tibert

**“Paleoceanography of the Late Cretaceous Greenhorn Sea”**

Abstract

During the Late Cretaceous Period, the Greenhorn Sea in western Iowa recorded complex mixing between cold boreal waters and warm, tropical Tethyan waters. Section K-18 (Witzke and Ludvigson, 1994 GSA Spec. Pub. 287 43-78) includes the Graneros Shale and Bridge Creek Limestone that are assigned to the *Sciponoceras gracile* and *Neocardioceras juddi* ammonite biozones. The calcareous shales and marlstones contain abundant foraminifera that include *Heterohelix*, *Hedbergella*, *Guembelitria* and *Whiteinella*. Specimens were extracted for geochemical analysis, carefully cleaned with DI water, and a visual clarity index scale of one to five, one being the most clear and pristine, was applied to each specimen. Scanning Electron Microscopy revealed secondary calcite overgrowths and trace elements that include Al, K, Si and Fe, suggestive of secondary clay authigenesis. Relative abundance acmes of *Heterohelix* are coincident with rich accumulations of crimson cryptocrystalline coprolites with elemental traces of P and Ca, indicative of the mineral Collophane. Our preliminary results indicate that these observed fluctuations in the *Heterohelix* may reflect changes in the paleoceanographic ventilation during the second global oceanic anoxic event (OAE II). Stable isotope analysis and trace element geochemistry provided an independent test to the viability of foraminifera as isotopic proxies for oceanic anoxia during the Late Cretaceous.

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**Damon Lowery**

BIOLOGICAL SCIENCES DEPARTMENT (**Oral Presentation**)

Faculty Mentor: Dr. Alan Griffith

**“The Study of Vegetation Responses Resulting from Two Dam Removals in a Tidal Wetland System and the Incorporation of Geographic Information Systems (GIS)”**

Abstract

As dam removals have increased in frequency due to dam deterioration and interest in ecosystem restoration, there is a growing need to determine the ecological effects of dam removal. Few studies have been conducted on dam removals and pre-dam removal data is particularly limited. Our interdisciplinary study aims to measure impacts of dam removal on stream physical characteristics, vegetation, aquatic invertebrates, and fish along Holts Creek, a tributary to the Pamunkey River in New Kent County, VA. This research reports pre-dam removal plant distribution and abundances. To assess distribution and abundance of vegetation, eight transects were constructed along the entire drainage between the two dams involved in our study. The presence of tree, sapling, vine, and herbaceous species were systematically sampled at each transect in fall 2007, and herbaceous species were sampled again in spring 2008. Among all transects, a total of 37 herbaceous species were sampled in fall 2007, and a total of 45 herbaceous species were sampled in spring 2008. Out of all the herbaceous species, the most prevalent species were *Microstegium vimineum* and *Murdannia keisak*, which are invasive species. Both species were present at the majority of transects sampled and were also present in high abundances. High relative abundance of these invasive species poses a potential problem when dam removal occurs, due to their ability to effectively disperse and quickly colonize newly barren sediments. As dam removal proceeds, it will be essential to monitor the establishment of these species and to determine their effects on other plant species. Furthermore, we are in the beginning stages of incorporating GIS into our study. Our goal is to utilize the spatial and temporal analysis tools of a GIS to document the environmental changes caused by dam removal and make direct comparisons between pre-dam removal conditions and post-dam removal conditions.

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**Edward Dirk Lynch**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Poster**)

*Faculty Mentor: Dr. Charles Sharpless*

**“Comparative analysis of capsaicin in Chili peppers using HPLC”**

Abstract

Most of us are familiar with chili peppers however fewer know that capsaicinoids are the class of compounds responsible for the chili peppers characteristic attributes. Capsaicin is the hottest of these capsaicinoids and its chemical structure is similar to piperine (found in black pepper) and zingerone (from the under-ground stem of a ginger plant) both of which produce a similar, if milder, hot taste. For this experiment, we have been quantifying capsaicin in several hot peppers by chemical analysis. We will be comparing these results to the peppers' Scoville scale ratings. Six varieties of hot peppers are being tested: Habanero, Red Pearl, Kung Pao, Jalapeno, Cherry and Banana peppers. We expect that the Scoville rating will decrease in the order listed here. To date, we have developed a successful sample preparation method using mechanical homogenization and filtering. We have also calibrated the HPLC with known standards of capsaicin and analyzed some preliminary samples. The capsaicin analysis using HPLC has turned out to be fairly simple, and we expect all the analyses and taste test results to be completed in the next few weeks.

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**Matthew Magruder**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Poster**)

*Faculty Mentor: Dr. Ben Odhiambo Kisila*

**“Application of <sup>210</sup>Pb isotopic fingerprinting to identify potential sources of sediment, contaminants and estimates of erosion rates in local watersheds”**

Abstract

Excessive amounts of sediments in surface runoff are known for their harmful effects on aquatic ecosystems because it reduces the oxygen concentration in the water, reduces light transmitted through the water, and carries nutrients, such as nitrogen and phosphorous, that disrupts the natural nutrient balance of the aquatic ecosystem. Many studies have been conducted on the Chesapeake Bay, and problems associated with excess sediment and nutrients have been known since the implementation of the Chesapeake Bay Plan in 1983. Because the Rappahannock River Basin contributes the greatest amount of sediments in tons/mi<sup>2</sup> to the Chesapeake Bay, Claiborne Run, Little Falls Run, and Horsepen Run, three sub-watersheds of the Rappahannock have been selected for this study because they are in close proximity of each other, possessing relatively similar soil types, identical climate, but vary in topography and land use and land cover (LULC). To identify critical runoff and sediment contributing areas, <sup>210</sup>Pb was used as a tracer to fingerprint stream bank soils and soils in various land-use/land-cover areas in the watershed. The corresponding fingerprint values were then compared with that of each stream's suspended sediments. The fingerprinting result shows that in Claiborne Run and Horsepen Run suspended sediment loads were characteristic of disturbed environments 10.71 dpm/g and 10.81 dpm/g respectively, values closely matching those of farmlands within the Claiborne Run watershed and ATV trails in the Horsepen Run watershed. In addition, 30 cm soil cores are being taken from the various land use and land cover sites in the three watersheds to be used in isotopic erosion models as part of our comprehensive erosion analysis. Our previous published studies of the area show that sediment fluxes (based on spatial analysis, RUSLE and SDR models) from Claiborne Run and Horsepen Run were 123.2 tons/yr. and 165.3 tons/yr. respectively

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**Sarah Marshall**

EDUCATION DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Marie Sheckels*

**“Immediate Versus Delayed Feedback: Clarifying Misconceptions and Deepening Student Understanding of Probability”**

Abstract

The study is about how immediate and delayed feedback deepened fifth grade students’ conceptual understanding and clarified misconceptions in probability. The study took eight weeks to complete in a suburban public elementary school in Virginia. The fifth grade class was comprised of thirteen boys and eight girls, with 14 Caucasian students, five African American students, one Asian student, and one Hispanic student. The academic abilities of the students ranged greatly. During the study, the class was split into two heterogeneous groups (A and B). The probability unit was then divided into eight key concepts. Both groups received the same instruction for each concept, followed by a quiz the next day. I tested both groups using student response systems. For the first four concepts, Group A received delayed feedback, while Group B received immediate feedback. For the last four concepts, Group A received immediate feedback and Group B received delayed feedback. Using the results from the quizzes, along with a pretest, midtest, post-test, and retest, it was found that students did better when receiving immediate feedback compared to delayed feedback. It was also found that students retained the concepts taught when receiving immediate feedback better than the concepts they learned when receiving delayed feedback. At the end of the unit, all students were given a short survey and some were interviewed. Through the surveys and interviews, I found that most students preferred receiving the immediate feedback compared to the delayed feedback because they liked knowing what they got wrong right away so that they could correct their misconceptions before moving on. In conclusion, I found that students preferred and did better when receiving immediate feedback to delayed feedback. Immediate feedback deepened fifth grade students’ conceptual understanding and clarified misconceptions in probability.

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**Justin Mattos**

HISTORY AND AMERICAN STUDIES DEPARTMENT (**Oral Presentation**)

*Faculty Mentors: Dr. Claudine Ferrell*

**“The Civil Rights Movement Comes To UMW: James Farmer’s Impact on the College”**

Abstract

While teaching at then Mary Washington College from 1985-1998, Dr. James Farmer had a huge impact on the college. Newspaper articles, correspondence and other printed primary source documents as well as a few interviews indicate that he greatly impacted community members, students, faculty, and staff. At the University of Mary Washington, Farmer got as involved in the campus life as his deteriorating health would allow despite a very stringent speaking schedule that often took him to other parts of the nation. He participated in efforts to increase the African American student population, taught at least 200-300 students each year, was a featured participant in numerous forums on race relations, and was the local and on-campus source for informed reactions to then current issues affecting the black community. In the Fredericksburg community, he not only gave speeches, but also reached out to local children through the James Farmer Scholars Program. Moreover, he constantly gave interviews to scholars and film documentary crews, and community members regularly audited his classes and attended his speeches at the college. At Farmer’s insistence, many civil rights and prominent African American leaders visited and spoke at the campus. As apparent from the accolades the university and the community bestowed upon Farmer during the later stages of his teaching career, Farmer’s presence and work at the college greatly raised its level of instruction and reputation to the outside world.

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**Jonathan Morin**

COMPUTER SCIENCE DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Stephen Davies*

**“Cinefile: Subjective Category Recognition in Databases”**

Abstract

Database query systems involve simple call-and-response architectures to extract meaningful information from the data one fact at a time. Often, however, users have goals that go beyond this piecemeal approach: they want to discover larger trends and patterns within a voluminous data repository. Today's databases cannot infer these patterns by themselves since their capabilities beyond storage are limited to reporting on data that they have already been explicitly given. Moreover, the particular relationships and associations that one user may perceive between entities in a database may be different than those a different user perceives. For this reason, users are left to draw their own conclusions about the data through a tedious process of posing isolated queries. The Cinefile project aims to aid users with data interpretation by allowing them to create abstract categories that go beyond the concrete facts recorded in the database. The database can then use these user-defined categories to help the user navigate the data and gain a broader understanding of what the database contains. Cinefile interacts directly with the Internet Movie Database ([www.imdb.com](http://www.imdb.com)) to analyze data about popular films (like plot keywords and free text from user reviews.) It uses this data to create categories of films after soliciting a small number of examples and counter-examples from the user. After a user's category has been defined in this way, the application is able to make predictions about whether other movies will also belong to that category. These categories may possibly be used for recommender systems, database queries of other databases, semantic web applications, or even research on human organizational habits. We present a demonstration of the Cinefile system, and results from user testing which sheds light on how successful it is in helping users work with categories.

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**Anne Morris**

SOCIOLOGY AND ANTHROPOLOGY DEPARTMENT -- Sociology (**Oral Presentation**)

*Faculty Mentor: Dr. Debra Schleef*

**“Comparison of Conventional and Unconventional Families and Child Care Dilemmas”**

Abstract

Because of the repeated and widespread storylines, people believe that the situations portrayed characterize most real life situations. I set out to look at television families from 1965 – 2005 and the way they handle diverse child care situations. There are two basic hypotheses for this study. The first predicts a difference between conventional and unconventional families and the type of childcare chosen. The second predicts a difference between conventional and unconventional families and who makes the ultimate childcare decision. Conventional families are defined as married couples living in the same household with their children; families of all other forms are categorized as unconventional. I expect to find that unconventional and conventional families will resolve situations differently and that it will closely mirror that of actual reality.

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**Emily Noordhuizen**

BIOLOGY DEPARTMENT (**Poster**)

Faculty Mentor: Dr. Stephen Fuller

**"Studies of the Hepaticae and Anthocerotae along Hazel Run in Alum Spring Park, Fredericksburg, VA – Comparison of Sampling Methods"**

Abstract

The phylum name for the Liverworts, Hepatophyta, comes from the Latin word hepaticus, meaning liver. There are two main types of liverworts based on their structure: leafy liverworts and thalloid liverworts. Hornworts, phylum Anthocerotophyta, were also investigated. This study compared complete and stratified random sampling methods used in locating liverworts along Hazel Run in Alum Spring Park in Fredericksburg, VA. The stream flows through a wooded area and the banks include large rocks and soil. Liverworts and mosses are found on the rocks, soil, and tree bases. Many are found on the small cliffs along the stream. Some areas do not have any mosses or liverworts. A portion of Hazel Run in the park was divided into 12 sections using local environmental markings. These sections were delineated in the fall of 2008 when this stream segment was surveyed twice along its entire length foot-by-foot in search of liverworts. In the spring of 2009, the stream sections were measured along each side of the stream. The measurements of each section were used with a random numbers table to pick six sampling locations, three on each bank. The liverworts found were collected and brought to the laboratory in the Jepson Science Center at the University of Mary Washington, and were then studied and identified using the *Guide to the Liverworts of North Carolina*. In the fall of 2008, 13.5 man-hours were spent collecting samples during each survey, and 12 species of liverworts were found. In the spring of 2009, when the random sampling sites were examined, 8 man-hours were spent measuring the sections, and 20 man-hours were spent collecting samples. The random sampling technique revealed 8 species of liverworts. The stratified random sampling protocol proved to be less complete and just as time consuming as the complete sampling method.

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**Katherine Oldham**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Poster**)

Faculty Mentor: Dr. Michael Bass

**"Monitoring the Stormwater Management Ponds of Central Park and Development of an Off-Site Wetland Mitigation Progress"**

Abstract

When Silver Company built the commercial complex of Central Park in the 1990's, 6.9 acres of wetlands were destroyed. The EPA requires that the equivalent area of destroyed wetland has to be reconstructed. In compliance with the Clean Water Act, wetlands were constructed in two areas: benches around the storm water management ponds located within Central Park, and an off-site constructed wetland in Spotsylvania County. The off-site wetland was constructed in order to replace forested wetland that was removed during construction. Both sites are impacted by nearby developments. The storm water management ponds receive runoff from Central Park while the off-site wetland receives runoff from a new housing development. Water chemistry tests were performed on both sites, testing for nitrate, phosphate, total alkalinity, total hardness and pH levels. Temperature, dissolved oxygen, and conductivity were measured with a YSI multi meter. The nitrate, phosphate, total alkalinity and total hardness were performed in the lab using LaMotte testing kits. Samples were taken before major rainfall as well as after storm events in order to examine the impact of runoff from the development. Identical water chemistry tests were performed on the off-site constructed wetland as well as a nearby natural wetland. In addition to water chemistry tests, a survey of woody stems was done on the off-site wetland in order to determine the number of woody stems per acre. The wetland was divided into two sections, and each section was marked off in 100 foot increments with string. 20 foot squares were constructed on either side of the 100 foot markers to create a grid. Within each square the number of woody stems over one foot in height were counted and classified. In addition, wetland professional Bill Sipple aided in identifying herbaceous plant species and creating a list of those species. Soil cores were taken along the 100 foot markers in order to assess the

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development of hydric soils, a wetland indicator. In addition to the two sections of the off-site wetland, an additional section that was originally supposed to be a third section of the wetland was also cored where a seep developed over the past several years. With increased runoff from the housing development, a small stream also flows down into the constructed wetland and is also developing wetland characteristics. Hydric soils were found in the seep and the two sections of the constructed wetland, and are starting to develop in the region where the small stream is located. The water chemistry levels tested after major storm events demonstrated distinct spikes compared to the pre storm water samples in the storm water management ponds as well as the wetland, however even the highest spikes were still within required limits. The off-site wetland experienced particularly high phosphate and nitrate levels in areas where it receives direct runoff from the housing development. The woody stem count was particularly high in comparison to past years at 1891 trees per acre. Such high levels could be attributed to a particularly wet growing season. The expanded herbaceous plant list and developing hydric soils indicate that the wetland is progressing successfully.

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### **Gwen Paulson**

ENGLISH, LINGUISTICS, AND COMMUNICATION DEPARTMENT -- English (**Oral Presentation**)

*Faculty Mentor: Ms. Connie Smith*

### **"Body Dismorphic Disorder: Imagined Ugliness and Plastic Surgery"**

#### Abstract

Almost all adolescents struggle with body image and appearance satisfaction. Therefore, it is difficult to identify what is normal self conscious behavior at an age of development or puberty and what is an inhibiting disorder. Katharine Phillips, of Brown University, describes body dysmorphic disorder as the disease of "imagined ugliness," or a debilitating obsession with one or more body parts (Teens and Cosmetic Surgery). Body dysmorphic disorder (BDD) affects a mere 1 to 2% of the general population (Crandall, Franklin, and Sarwer, Body Dysmorphic Disorder and Cosmetic Surgery). It is common for BDD to co-occur with depression, anxiety and social phobias. However, the disorder is found among 5-15% of plastic surgery patients (Mulkens and Jansen, Changing Appearances). It is important for plastic surgeons to be aware of BDD and BDD symptoms among their patients as the age of onset is in young adulthood, the age of plastic surgery patients is decreasing and the number of plastic surgery procedures is on the rise.

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### **Virginia Pharis**

SOCIOLOGY AND ANTHROPOLOGY DEPARTMENT -- Sociology (**Oral Presentation**)

*Faculty Mentor: Dr. Tracy Citeroni*

### **"I Am Porn: Pornography Consumption in Young Adults and their Subsequent Sexual and Romantic Relationships"**

#### Abstract

In this research we conducted interviews to better define the many ways in which young adults use pornography, and what their subsequent sexual and romantic behavior was. We conducted individual interviews and focus groups at three different learning institutions: one exclusively male and technical-based, one predominately female and academically based, and one predominately male and socially based. While these changes in setting affected superficial aspects of our interviewee's responses, most of the underlying facts were the same. In general men use porn with greater reliance and greater frequency than women. Men are generally introduced to this material at a young age by their peers, older males or relatives. Most of the young adults involved in our study were raised in households where their mothers and grandmothers discouraged sexuality and the use of pornography while their fathers and grandfathers encouraged it. Nearly all of the men involved in the study saw pornography as a teaching tool and used it to influence and shape aspects of their own sexual and romantic behavior, often to the dismay of their female partners. We see also that nearly all of these men have a dual idea of femininity in which certain women are seen as ideal sexual partners (women who are uninhibited, have had multiple sexual partners, and enjoy sex) while other women are seen



as ideal wives (women who will be faithful to their husbands, keep their sexual appetites in check, and have not had many sexual partners) however a woman is rarely seen as both. While we can not prove or even truly suggest a causal link between pornography consumption and these views and attributes, it is certain that the persons who possess them are products of a culture saturated in pornography.

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**Laura Elizabeth Rickard**  
PHYSICS DEPARTMENT (**Poster**)  
Faculty Mentor: Dr. Robert Ekey

**“Analyzing Emission from a Nitrogen Discharge using LabVIEW and SignalExpress”**

Abstract

A molecule in an excited state can transition to a lower state by releasing its excess energy as light. We can obtain a greater understanding of this phenomenon by studying the emission of molecular nitrogen excited in a laboratory environment. In a  $10^{-6}$  Torr vacuum chamber, 300  $\mu$ s bursts of 20-60 PSI nitrogen gas are bombarded with electrons from a discharge source, creating excited states of  $N_2$ . As the  $N_2$  expands into the chamber the molecules transition to lower states creating a reddish-purple emission which is attributed to the  $C^3\Pi_u \rightarrow B^3\Pi_g$  and  $B^3\Pi_g \rightarrow A^3\Pi_u$  transitions in  $N_2$ . To disperse the nitrogen emission into its component wavelengths a diffraction grating spectrometer with a photomultiplier tube (PMT) is used. As the grating angle is scanned, the PMT signal is recorded as a function of the wavelength using a customized LabVIEW program, which enables control of the spectrometer via the computer. Recent additions to the program included real-time graphing, continuous monitoring of the wavelength, and scanning with either an increase or decrease in wavelength. LabVIEW Signal Express Tektronix Edition was also interfaced with the oscilloscope to graph the voltage and current strength of the discharge and monitor the PMT signal throughout the scan. An exploration of the parameters in the environment, discharge, and spectrometer necessary to maximize the clarity and accuracy of the spectra was conducted. These included background light sources, backing pressure, jaw width, applied high voltage, discharge resistance, spectrometer entrance/exit slits, scan direction, and scan increment. To determine the optimum settings, the data was graphed in Excel and evaluated for presence of theoretically calculated peaks and comparison between the peak heights among spectra. With these optimum conditions, further exploration of the emission spectra is possible, which will increase understanding of the fundamental structure and dynamics of diatomic molecules.

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**Rose Salzberg**  
BIOLOGICAL SCIENCES DEPARTMENT (**Oral Presentation**)  
Faculty Mentor: Dr. Deborah Zies

**“Molecular Characterization of the Human RAI1 Promoter”**

Abstract

Smith-Magenis syndrome (SMS) is a type of mental retardation disorder associated with a deletion of DNA from chromosome 17p11.2. It affects approximately 18,000 individuals in the US alone, but a higher incidence rate is suspected due to both under-diagnosis and misdiagnosis of SMS. Major phenotypes are associated with a mutation in the Retinoic Acid-Inducible gene-1 (*RAI1*) and include: developmental delay, repetitive behaviors, short stature, and hoarse voice. Studying the molecular mechanisms that lead to SMS will help promote earlier detection of the disorder and will help develop a better treatment plan for patients. The purpose of this project is to characterize the promoter of *RAI1*. Studying the promoter of *RAI1* will help determine the normal expression of the gene providing clues to its normal function and providing insight into why the lack of *RAI1* leads to SMS. The method used for characterizing promoter activity was the reporter gene assay. The goal of this assay was to determine if previously cloned putative promoter fragments contained any promoter activity. The putative *RAI1* promoter was cloned in front of the firefly luciferase reporter gene in the pGL3 plasmid and transiently transfected into the mammalian cell line HEK293. The results we obtained suggest that the putative promoter fragments did not contain any promoter activity. In order to identify new

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putative promoter fragments, 5'RLM-RACE protocol was used on RNA isolated from HEK293 cells. This procedure will identify the 5' end of the *RAI1* transcript. If successfully cloned, the sequence of this fragment could be used to align with the human genome sequence and locate potential promoter elements. These studies are currently underway.

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### **Sylvia Sierra**

ENGLISH, LINGUISTICS, AND COMMUNICATION DEPARTMENT -- Linguistics (**Oral Presentation**)

*Faculty Mentor: Dr. Paul Fallon*

### **"Shifting Regional Identity and /aj/ Variation in Fredericksburg, Virginia"**

#### Abstract

The Fredericksburg English Regional Dialect Survey (FREDS) was conducted by linguistics students at the University of Mary Washington in Dr. Paul Fallon's American Accents seminar. Fredericksburg is on the cusp of the isoglosses of the South (Labov, Ash & Boberg 2006), halfway between Washington, DC and Richmond, making it a location that is frequently overlooked by previous dialect surveys. Similar to Labov's findings in Martha's Vineyard (1973), the accent of speakers in Fredericksburg seems to be not only related to their age, but also to their regional identity. Speakers' ties to Fredericksburg as a small southern town appear to be related to Southern monophthongization of the diphthong /aj/, whereas ambivalent or positive attitudes towards the growth and integration with the Washington Metropolitan area are linked to the Standard American English pronunciation of /aj/ as a diphthong. This study provides insights into sound change in Fredericksburg as it transitions from a small Southern town to a growing city. The findings demonstrate that if similar vowel shifts are taking place in other areas in the U.S. that were once rural but are becoming more suburban or urban, these shifts are possibly related to the shifting regional identity of speakers.

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### **Cassandra Stewart, Anna Edelman, and Melissa Falkenstern**

PSYCHOLOGY DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Holly Schiffrin*

### **"Overwired Relationships: Do you really want to LOL with your BFF online?"**

#### Abstract

This study examines internet use and the paradoxical relationship between the increased need for connectivity by use of computer mediated communication (i.e., e-mail, instant messaging, and social networking sites) as a primary means of contact in comparison to face-to-face methods. In order to examine the relationship among the types of communication and internet use, ninety-nine psychology undergraduate students, 75 females and 24 males, completed a survey examining the extent to which communication is being used with regard to purpose, duration, communication partners (e.g., family and friends), perceived amounts of social support, willingness to self disclose, and usefulness for items such as exchanging information and making future plans. On average participants used the internet 7 days a week for 2 hours each day. Twelve percent of participants reported spending time gathering information or using the internet for entertainment purposes, while twenty-two percent reported using the internet to communicate with others, and the majority (66%) reported doing each about the same. Participants reported using social networking sites more often than instant messaging and e-mail when communicating with family and friends close by and far away. Participants also indicated, when communicating with acquaintances that they used e-mail and social networking sites more than instant messaging. When communicating with strangers, participants reported using instant messaging and social networking sites at a greater amount than e-mail. Overall, participants reported that they are more apt to self disclose information about items such as personal habits, fears, and relationships face to face than online and felt that face to face communication was more beneficial for exchanging information and receiving greater social support.

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**Amy Sutphin**

EDUCATION DEPARTMENT (**Oral Presentation**)

*Faculty Mentor: Dr. Jennifer Jakubecy*

**“Increased Levels of Academic Responses: Through the Use of Classroom Performance System (CPS)”**

Abstract

This study will use the Classroom Performance System (CPS) to increase academic responses to research documented target levels. The research question is “Will Classroom Performance System (CPS) Increase Levels of Academic Responses?” CPS is system that allows students to respond in active learning, get immediate feedback to responses, encourages student discussion with peers, and provides teachers with misunderstandings and formative assessment (Hendrickson, 2008). The following research is important because it supports the importance of increasing academic responses to provide students the opportunity for academic achievement. Heward (1994), suggest that students will have an increase in academic achievement with the increase of active student responses (ASR) or academic responses. Academic responses will show an increase in active student responses, which can increase correct responses and engagement of all students (Greenwood, Delquadri, and Hall, 1984). According to Johnson and Layng (1994), 10 choral responses per minute are appropriate to determine academic achievement (Gunter, 2004). Providing frequent responses from students allows the teacher to adjust the lesson based on student feedback, increase the quality of the lesson, and increase the attentiveness of students (Sutherland and Wehby, 2001). This study will add to the knowledge on academic responses because CPS will be a tool that can be used to increase academic responses. It will also be helpful because the questions and the number of questions that will be asked will be pre-planned by the researcher. The time that will be set for each question will help the researcher increase academic responses to a higher level that is closer to research documented target levels.

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**Christopher Triola**

PHYSICS DEPARTMENT (**Poster**)

*Faculty Mentor: Dr. Robert Ekey*

**“Diatomic Theory and Application Using LEVEL”**

Abstract

Quantum mechanics tells us that the energy levels of electrons “orbiting” the nucleus of an atom are quantized. These quantized energy levels are in fact unique to each element. By understanding the energy levels associated with a given element and its allowed transitions, that element may be identified based solely on its observed spectrum. This allows the determination of the composition of distant stars based on the observed light. The same quantization of energy levels applies to molecules. In molecules energy may be stored not only in the “orbiting” electrons but also in vibrational motion between the constituent atoms and rotational motion of the molecule about an axis. Understanding the structure of a diatomic molecule involves solving two second order linear differential equations; the electronic Schrödinger wave equation for the states that the electron may occupy around the two nuclei and the nuclear wave equation for the vibrational and rotational states. In both cases, this involves inserting an appropriate expression for the potential energy and then solving the differential equation. These equations generally result in infinite series preventing us from solving the equations analytically. However, computational methods can yield excellent results. For this project we employ a program written by Robert J. LeRoy of the University of Waterloo called LEVEL to solve the wave equations for vibrational and rotational energy levels for simple diatomic molecules.

**Claire Tuley**

HISTORY AND AMERICAN STUDIES DEPARTMENT and  
SOCIOLOGY AND ANTHROPOLOGY DEPARTMENT -- Sociology (**Oral Presentation**)  
*Faculty Mentor: Dr. Debra Schleef*

**"The Increasing Role of Women in the Television Industry"**

Abstract

My paper explores the employment of women in high-level positions in the television industry. Women have long been underrepresented as creators, producers, writers, and directors. When women are employed in these positions, it is often in more family-oriented shows. As the popularity of family shows has declined, it is my belief that women are finding more work on dramatic and action-oriented shows. In order to prove this, I examined the top three Nielsen-rated family and non-family programs from the 1984-1985 television season until the 2004-2005 season. Using internet websites such as the Internet Movie Database and TV.com, I recorded how many women work as writers, directors, creators, and producers on the shows, and what percentage they make of the overall staff. Statistical analysis shows that the number of women working on non-family shows has increased over time.

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**Brittany Valint**

EDUCATION DEPARTMENT (**Oral Presentation**)  
*Faculty Mentor: Dr. Thomas Fallace*

**"Using Stimulating Vocabulary Tasks to Build and Improve Social Studies Content Knowledge"**

Abstract

Although vocabulary is usually taught in school beginning in the younger grades, it is not always taught effectively. Through research, a number of vocabulary-learning strategies have been tested and proven more effective. These particular strategies stray from the traditional rote method of word and definition memorization testing and, instead, credit their success to more active and stimulated tasks. An action research project implementing such vocabulary methods and ideas was conducted within a fifth grade elementary school class in order to determine the effectiveness of these vocabulary-learning strategies when integrated with the social studies content. The research project was completed over the duration of a two week long social studies unit on Westward Expansion and looked to teach students content knowledge as well as the skills necessary to learn words, make deeper connections between words and content, and demonstrate and apply their understanding of vocabulary both within and outside of the social studies discipline. This study found that by using these vocabulary tasks, the integration of vocabulary and social studies succeeded in helping students to build and improve their vocabulary as well as their content knowledge and comprehension skills.

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**Katherine Vrobel**

EARTH AND ENVIRONMENTAL SCIENCES DEPARTMENT – Environmental Science (**Oral Presentation**)  
*Faculty Mentor: Dr. Michael Bass*

**"Impacts On Two Streams Caused By Development in the Celebrate Virginia North Project"**

Abstract

This study observed and assessed damage to streams located within the Celebrate Virginia North development in Stafford County, Virginia. Research was conducted at seven stations located on England Run and the Unnamed Tributary streams. Assessments were made based on the study of the macrobenthic communities, water chemistry comparisons (such as nutrients, dissolved oxygen, conductivity, alkalinity, and water hardness) before and after rainfall, suspended load in the stream water, and grain size analysis in the water column and sediment. This study consisted of a number of methods: Water quality was assessed by determining the abundance and diversity of macrobenthic

organisms, which included the Hilsenhoff Family Biotic Index ( HBI ) and the total percent of insect orders Ephemeroptera, Plecoptera, and Trichoptera ( %EPT ) in the biotic community. Water chemistry data, such as dissolved oxygen, conductivity, and temperature, were determined using the YSI Model 85 multimeter. Samples of stream water were collected to determine nutrient levels, alkalinity, hardness, and particle size; particle size was ascertained with a Coulter counter, and water quality was assessed using LaMotte chemistry kits. Total dissolved solids and total suspended solids were determined by filtering samples from each stream before and after rain, and a grain size analysis was conducted on sand that had accumulated in Stream 5's bed. Results indicate that stream quality is declining rapidly due to the large influx of sediment from the nearby development, which is adversely affecting water quality and smothering macrobenthic communities. A negative relationship is present between the embeddness in the macrobenthic habitat caused by sediment erosion from the development activities and the health of the streams' macrobenthic communities.

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**Jonathan S. Williams**

CHEMISTRY DEPARTMENT (**Poster**)

*Faculty Mentor: Dr. Charles Sharpless*

**"Examining the Role of Oxygen in the Photolysis of Polycyclic Aromatic Hydrocarbons in Nonpolar Solvents"**

Abstract

Polycyclic aromatic hydrocarbons (PAHs) are toxic components of oil spills whose fate is often controlled through photochemical reactions. The photodegradation pathways for PAHs in water and other aqueous media have been extensively studied and several rates have been published for these reactions. However, photodegradation mechanisms of PAHs in hydrophobic media are not fully characterized, hampering efforts to predict PAH removal rates from oil in the event of a spill. Previous research suggests that direct photolysis cannot account for rates of PAH loss in oil and that other reactions are contributing to PAH disappearance. One hypothesis is that singlet oxygen ( $^1\text{O}_2$ ) generated by excited state PAHs is an important intermediate that leads to PAH photodegradation. In order to test this hypothesis, we are studying the PAH direct photolysis mechanism in hydrophobic solvents. We employ a  $^1\text{O}_2$  scavenger,  $\alpha$ -terpinene to determine whether the hypothetical self-sensitized reaction with  $^1\text{O}_2$  is observed with four PAHs: benzo[e]pyrene, benzo[a]pyrene, benz[a]anthracene, and chrysene. Photolysis rates of benzo[a]pyrene (BAP) and benz[a]anthracene (BAA) at 365 nm were unaffected by 1 mM  $\alpha$ -terpinene, suggesting that PAH reaction with  $^1\text{O}_2$  is negligible. Furthermore,  $\alpha$ -terpinene degradation rates during BAP photolysis indicate a  $^1\text{O}_2$  quantum yield of at least  $0.04 \text{ mol Es}^{-1}$ . Further experiments will employ the  $^1\text{O}_2$  scavenger dibutyl sulfide to determine photolysis rates and more precise  $^1\text{O}_2$  quantum yields for self-sensitized PAH photodegradation with  $^1\text{O}_2$ .

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**Alexandra Zelin**

SOCIOLOGY AND ANTHROPOLOGY DEPARTMENT -- Sociology (**Oral Presentation**)

*Faculty Mentor: Dr. Debra Schleef*

**"Gender and Class Differences in Day Care Decision-Making on Television"**

Abstract

American television portrays very different, sticky situations in that it both reproduces reality onto the television screen as well as stretches it in some cases for a distortion of reality. Television rarely sets the stage of what is considered to be the "norm" in society while portraying family life. Instead, producers tend to write their shows based on what is happening in the popular culture and very rarely against the current trends. I set up this study to discover if there was a connection between the primary day care decision and the gender of the parent who makes the decision, as well as the day care decision and the class status of the parent within television shows from 1965-2005. The data comes from watching prime-time television shows from 1965-2005 through re-runs and by season

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DVD rentals. I found there is a difference in child-care decisions based on family income and who in the family makes the care decision.

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### **Jesse Busch**

ART AND ART HISTORY DEPARTMENT – Art History (**Oral Presentation**)

Faculty Mentor: Dr. Marjorie Och

#### **“Rubens and the Marie de’ Medici Cycle”**

##### Abstract

Throughout the course of the Spring 2009 semester, I am completing an Art History Individual Study project entitled, “Rubens and the Marie de’ Medici Cycle.” My project centers on the series of twenty-four paintings by Flemish artist Peter Paul Rubens commissioned in 1621 by Marie de’ Medici, wife of King Henri IV of France and mother (and regent) of King Louis XIII. Originally displayed in her newly built home, the Luxembourg Palace in Paris, the series is now located in a single gallery in the Louvre. My research includes the investigation of the rich biography of Marie de Medici, including: her connections to the Medici history of art patronage in Florence, her role as art collector, her marriage to King Henri IV, her role as regent, and her problematic and ever-changing relationship to her son King Louis XIII. As a revolutionary female patron of the arts, Marie herself had direct influence in the production of the series that would depict her extraordinary life’s biography in paint. Through a vast correspondence, Marie instructed Rubens as he created allegories, chose the points of narrative, and portrayed her likeness in the paintings. In many ways, the series is representative of artistic propaganda involving a politically astute and culturally aware female ruler. One aspect of my research is the focus on this artist-patron relationship and Marie’s role as an involved female patron, a rarity in early modern art. In addition, the biography of Marie’s life as represented in the paintings and Rubens’s artistic techniques and iconography are other areas of my research. The *Life Cycle of Marie de’ Medici* clearly stands as a flawlessly executed painting series that is expressive both of the authority of a female ruler and the unsurpassed talent of a painter.

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### **Jessica Dalrymple**

ART AND ART HISTORY DEPARTMENT – Art History (**Oral Presentation**)

Faculty Mentor: Dr. Marjorie Och

#### **“Andrew Fisher Bunner: An American Artist”**

##### Abstract

Andrew Fisher Bunner (1841-1897) was a well-regarded artist in his time, a time of political change and technological innovations. Unfortunately, he is all but unknown today. My project is to create as complete a monographic work as possible on Bunner and to place him in the context of his time. A monograph is a biographical study of an artist and a study of his career and works. In addition to creating a monograph, I aim to place Bunner and his paintings in relation to his time, commonly called the Gilded Age. This project is the first major research conducted on Andrew Fisher Bunner since his death in 1897. Bunner was a second-generation artist in the Hudson River School, an art movement in the 19<sup>th</sup> century that worked along the Hudson River in upstate New York. My paper examines how Bunner’s American landscape paintings are a reaction to the growing industrial nature of America during the 19<sup>th</sup> century. Bunner was especially known for his works on Venice and part of my project researches Americans’ fascination with Venice in the last half of the 19<sup>th</sup> century. The paper explores in more detail the relationship between Americans and the city of Venice and how Americans in the late 19<sup>th</sup> century viewed America as a new Venetian Republic. Bunner wasn’t the only artist creating works about Venice in the late 19<sup>th</sup> century; other artists, including J.M.W. Turner, James Abbot McNeil Whistler and John Singer Sargent, were working in Venice and their works are examined in relation to Bunner’s.

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