14th Annual
Celebrating Student Achievement

Program of Events
Tuesday, April 12, 2016

UNDERGRADUATE RESEARCH CONFERENCE
ANNUAL ACADEMIC AND LEADERSHIP AWARDS CEREMONY
SPECIAL EVENTS HIGHLIGHTING STUDENTS’ ACCOMPLISHMENTS
Welcome

Welcome to 2016 CSA Day!

One of the joys of Meredith’s teaching and research culture is witnessing the engagement between our faculty and students. Working together to tease out a good question, working through the methodological options of addressing that question, and then settling on a plan of inquiry involve content knowledge and critical thinking skills that truly test the learning at hand.

Other students are engaged in creative productions of their learning: dance, design, art. In these formats, they may not be applying principles of scientific method to good questions, but they are asking good questions nonetheless. How can I convey the impact of this emotion in this medium? What would happen if I integrate this pattern and that texture? Would this addition to my work increase the sense of flow and direction or communicate closure and darkness?

The mind at its most creative—whether engaged in asking a question in research or asking a question about form and impact—is an extraordinary thing. We are so blessed to work in a culture and environment that not only highlight that activity but celebrate it.

And for all of us, great joy is found in witnessing the relationships between faculty and students grow as students learn the finer aspects of good research and true art—and as faculty learn the finer aspects of their students’ strengths and intellectual and creative prowess.

No wonder our students tell us year after year, in survey after survey, and in story after story, how incredibly grateful they are for their faculty’s challenging and supporting them throughout their time at Meredith. And no wonder that our alumnae not only reaffirm that appreciation through the years, but honor their faculty mentors in ways great and small—from making gifts in their honor to telling incoming students they absolutely must take a class from this particular professor.

Whether students intend to pursue a career in research or the arts or anything in between and beyond, at Meredith they know they have been encouraged to explore, to question, to try. In doing so, they have unlocked mysteries, brought new ideas into the world, and expanded their confidence in being able to achieve and succeed over and over again.

That is the strength of what we do at Meredith, and CSA Day is the day to celebrate that incredible ability to wonder….and find out.

Jo Allen, ’80, President

Acknowledgements

The commitment and dedication of Meredith students, faculty and staff make this day of celebrating student achievement possible. Special thanks go to —

Jo Allen, ’80, President
Matthew Poslusny, Senior Vice President and Provost
Jean Jackson, ’75, Vice President for College Programs
Paul Winterhoff, Director of Undergraduate Research
Cheryl Jenkins, Director, Office of Student Leadership and Service
Ashley Whaley, Administrative Assistant for Academic Special Programs
Pat Clements, Office of the Vice President for College Programs
Karina van Wakeren-Shields, Associate Director of Operations for Admissions
Miranda Ameen, Student Assistant, Undergraduate Research Program
The Undergraduate Advisory Research Committee, Julie Schrock, Chair
Scott Lamond, Phil Smith and Oak Leaf Catering
Department of Marketing
Copy Services and Printing
Carlyle Campbell Library

Media Services: Brian Thornburg, Rick McBane, Courtney Hewitt, and Megan Otto
Meredith College Athletics Department
Technology Services
Meredith Events: William Brown, Jim Frick, Brian Hunt, Natalie Herrmann, Stephen McAdams, and Kelsey Riner
Patty Blackwell and Facilities Services
Jim Waddelow and the Meredith Sinfonietta
Carol Finley and the students of the Meredith Dance Program
Eunyoung Yang and seniors from the Meredith Fashion Design Program
Rachel Pratt, Rebecca Duncan and the staff of the Meredith Herald

And Most Especially
The faculty and staff mentors who have given countless hours to encourage and support today’s student presenters, performers, and honorees.
# Day at a Glance

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 – 9 a.m.</td>
<td>Breakfast and Poster Session</td>
<td>Carlyle Campbell Library</td>
</tr>
<tr>
<td>9 – 11:20 a.m.</td>
<td>Teaching and Learning: Educating Children and the Public</td>
<td>Ledford 101</td>
</tr>
<tr>
<td>9 – 11:10 a.m.</td>
<td>Laboratory Science: Research and a Closer Look</td>
<td>SMB 162</td>
</tr>
<tr>
<td>9 – 11:20 a.m.</td>
<td>Literature: Classical to Contemporary</td>
<td>Kresge Auditorium</td>
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<td>Social Science: Quality of Life, Diversity, and Immigration</td>
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<td>Business and Related Topics: Research, Renovation, and Cryptology</td>
<td>Harris 110</td>
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<td>9 – 11 a.m.</td>
<td>Communication and Media</td>
<td>SMB 118</td>
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<tr>
<td>10 – 11 a.m.</td>
<td>Musical Performance</td>
<td>Carswell Concert Hall</td>
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<tr>
<td>11:30 – 1 p.m.</td>
<td>Lunch</td>
<td>Belk Dining Hall</td>
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<td>Senior Fashion Showcase</td>
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<td>Dance Improvisation</td>
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<tr>
<td>11:30 – 12:15 p.m.</td>
<td>Student Achievement in Leadership Awards</td>
<td>Jones Auditorium</td>
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<td>Ceremony and Inductions of 2016-17</td>
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<td>Student Government Officers</td>
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<td>12 – 2 p.m.</td>
<td>Dessert</td>
<td>Carlyle Campbell Library</td>
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<td></td>
<td>Including Morning Research Posters, Meredith Sinfonietta (weather permitting), Strong Points Showcase, and The Presidents Cup</td>
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<tr>
<td>12:15 – 1:15 p.m.</td>
<td>Interior Design Showcase</td>
<td>Martin 242</td>
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<td>12:30 – 1:30 p.m.</td>
<td>Three Sisters Community Garden: Open House</td>
<td>Community Garden behind</td>
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<td>with Opportunities to Learn, Plant, and Participate in the Garden</td>
<td>Weatherspoon</td>
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<tr>
<td>12:30 – 1 p.m.</td>
<td>WINGS: Alpha Sigma Lambda Honor Society Inductions</td>
<td>Jones Chapel</td>
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<tr>
<td>12:45 – 1:15 p.m.</td>
<td>Colton Review Revealed: Graphic and Literary Creations</td>
<td>Kresge Auditorium</td>
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</tbody>
</table>
1:40 – 3:20 p.m. Clinical Practice and Human Emotion

1:40 – 3:50 p.m. Scientific Field Research and Sustainability

1:30 – 3:50 p.m. Studies in the Humanities: Gender, Feminism, and Film

1:30 – 3:50 p.m. Art History and Picturing Time

1:40 – 3:10 p.m. International Programs: Study and Research Abroad

1:40 – 3:25 p.m. Performances and Exposition

4 – 5 p.m. Student Academic and Leadership Awards Ceremony

5:30 – 6:30 p.m. Natural and Mathematical Sciences Student Achievement and Academic Awards

5:15 – 6:15 p.m. Reception for International Travel Award Recipients

5:30 – 7 p.m. Omicron Delta Epsilon, Beta Gamma Sigma, and Alpha Mu Alpha Business Honor Society Inductions

5:30 – 7 p.m. Lambda Pi Eta Communication Honors Induction

5:30 – 6:30 p.m. Kappa Pi Art Honorary Induction Ceremony

5:30 – 8 p.m. Nutrition, Health, and Human Performance Master's Program Research Posters and All Student Awards and Recognition

6 – 8:30 p.m. Psychology Department Student Awards & Recognition

6 – 7 p.m. Phi Mu Epsilon Math Awards

6:30 – 9 p.m. Celebrating Women of Achievement in Human Environmental Sciences

7:30 – 9 p.m. Celebrating Women of Achievement in Music
Schedule of Events

7:30 – 9:00 a.m.  POSTER PRESENTATIONS
Carlyle Campbell Library

A Review of Sea Turtle Migration Studies
Miranda Ameen

Sensory Sensitivities in Neurotypical Young Adults
Hannah-Leigh Barham

Using Wild Edible Foods and Foraging to Enhance Nutrition
Suzanna Bass, Aisha Merkt

The Relationship Between Home Safety Checks and Implementation of Fall Prevention
Alayna Bolyard

The Profession of Child Life
Meghan Brooks

A Study Examining New Risks Associated with Teen Pregnancy in the U.S.
Aletheia Burrell, Melyssa Minto, Zineb Baali

Health Effects of Plastic Used in Food Containers
Latimah Bustillo-Arrechea

The Effects of Sensory Programs on Fine Motor Skills in Children with Autism
Raven Chavez

Modifying the Structure of Ciprofloxacin to Synthesize Novel Bacterial Resistant Antibiotics
Vanessa Cupil-Garcia, Nyssa Tucker

The Effects of the Amount of Makeup on the Ability of an Eyewitness to Identify a Suspect
Blair Delery

The Human Body in Space
Kimberly Hinton, Laura Dugom

Soil Carbon Content and Organic Material of a Prairie and Forest based on Prior Land Usage
Meredith Hovis

Taming Nature
Melissa Jenkins, Jessie Taylor

Infant Attachment and Maternal Substance Abuse
Kasey Jones

Designing for Theatre of the Absurd
Sarah Koop

Greening Religion
Mollie Melton, Brianna Crumbley
Life on Mars? The Challenges of Colonizing the Red Planet
Kaity Melvin

The Antimicrobial Properties of Metals
Linda Nguyen

GIS Mapping of Distribution of Kenyan Water Resources
Matilda Odera

Sarah Perry

Firm Valuation of Safaricom Limited.
Mercy Rialem

Immunology of the Skin: Variations in Leukocyte Composition
Alexandra Ridall, Hollis Brown, Alyssa Long, Elena Mulligan

Teachers’ Perceptions of the Effectiveness of Co-Teaching Approaches in the Classroom
Kami Robinson

Environmental Surveillance of Zoonotic Pathogens
Sona Salahuddin, Tatum LittleJohn, Andie Woodson

Effects of Caffeine Supplementation on High Intensity Interval Training versus Low Intensity Continuous Endurance Training
Courtney Saunders

How Has Coastal Erosion Affected the Arctic Shoreline? What Are Possible Implications of This Change?
Adeelah Sayed

Using a Tool of the Trade: Scanning Electron Microscopy (SEM)
Keri Shelton, Samantha May, Elissa Teran, Elizabeth Bruce, Zena Thompson

Associations Between Cooking Practices, Deforestation, and Health in Sub-Saharan Africa
Asha Tuli, Andie Woodson, Savannah Cook

Tartuffe: Theatrical Costume Design
Robin Whiteman

Impact of High Fat Maternal Diet and Exercise on Offspring Behavior
Emily Woolard
MORNING CONFERENCE SESSIONS

Teaching and Learning: Educating Children and the Public
Ledford 101

9–9:20 a.m.  Bilingualism and Mathematics: Does Language Play a Role in Mathematics Education?
Bailey Benge

9:20 - 9:40 a.m.  Arts Integration in Urban Elementary Schools
Hailey Blount

9:40 - 10 a.m.  Differences in Motivational Strategies in K-2 and K-5 Classrooms
Tess Coleman

10 - 10:20 a.m.  Does Digital Learning Increase Student Engagement?
Kristin Long

10:20 - 10:40 a.m.  What strategies have pre-service teaching fellows learned to meet the need of bilingual learners?
Liesel Nix

10:40 - 11 a.m.  Shifting Schemas: Perspectives of Pre-Service Teachers in a Learner-Centered Course
Rachel Redwine

11 - 11:20 a.m.  Emergence of Avian Influenza: A One Health Perspective
Ashley Souza

Laboratory Science: Research and A Closer Look
SMB 162

9 – 9:10 a.m.  Scanning Electron Microscopy: From Mouths to Butts. A Closer Look at Insect Mouthparts and Stingers. – A Pecha Kucha*
Rachel Breazeale, Helen Milano

9:10 - 9:30 a.m.  Autoinhibitory Regulation in Guanine Nucleotide Exchange Factor H1 (GEF-H1)
Destiny McDuffie

9:30 – 9:50 a.m.  Synthesis and analysis of a carbozole-based dye and its use in a Dye-Sensitized Solar Cell
Crystal Gunther

9:50 - 10:10 a.m.  The Effects of Asparagusic Acid on Glutamate Dehydrogenase
Tia Joyce

10:10 - 10:30 a.m.  Connecting Organic Chemistry and Biochemistry through Synthesized Inhibitors and Succinate Dehydrogenase
Kimberly Hinton

10:30 – 10:50 a.m.  Investigating the Effects of Varying Body Mass Index on a Physiologically-Based Pharmacokinetic Model for Ertapenem
Valerie Bobola

10:50 - 11:10 a.m.  Functional characterization of the drought responsive gene abg1 by expression in yeast
Rachel Powell

Literature: Classical to Contemporary
Kresge Auditorium

9 – 9:20 a.m.  The Function of Nature in Selected Fairy Tales
Mollie Melton

#MeredithCSA  SCHEDULE OF EVENTS  7
9:20 - 9:40 a.m.  Shakespeare’s Richard III: Man vs. Monster
Toni O’Steen

9:40 - 10 a.m.  Biographical Connections in Charles Dickens’s Tale of Two Cities
Katie Soost

10 - 10:20 a.m.  George Orwell’s Nineteen Eighty-Four and Animal Farm and Russia Today
Macy Allen

10:20 - 10:40 a.m.  Transportation and Movement in Jane Austen’s Pride and Prejudice
Catherine Bryant

10:40 - 11 a.m.  Zelda Fitzgerald’s Save Me the Waltz: Through the Eyes of a Woman
Brooke Mayo

11 - 11:20 a.m.  Intrigue and Romance: Examining the Elements of Film Noir in Laura
Katie Soost

Social Science: Quality of Life, Diversity, and Immigration
Ledford 111

9 – 9:20 a.m.  The Connection Between Exercise, Academic Performance, and the Potential Career Earnings of
College Students
Melisa Antunez

9:20 - 9:40 a.m.  Quality of Life Indicators in an Aging Population
Amber Winslow

9:40 - 10 a.m.  Religious Diversity in the Workplace
Melissa Jenkins, Brianna Crumbley, Aditi Shrestha

10 - 10:20 a.m.  Migration after NAFTA: a closer look into agricultural communities in Mexico
Katelyn Smith

10:20 - 10:40 a.m.  Immigration and the U.S. Construction Industry
Sarah Skinner

10:40 - 11 a.m.  Living Without Papers: The Experiences of Two Generations of Undocumented Immigrants
Maria Rodriguez

Business and Related Topics: Research, Renovation, and Cryptology
Harris 110

9 – 9:20 a.m.  Human Resource Audit, Part 1
Group 1: Rebecca Lawler & Natalia Rosales
Natalia Rosales & Asmae Qaroach
Asmae Qaroach & Allie Solares
Katie Pittman, Alyssa D’Arco & Mary Blair Stephens
(Group: Rebecca Lawler, Natalia Rosales, Asmae Qaroach, Allie Solares, Katie Pittman,
Alyssa D’Arco & Mary Blair Stephens)

9:20 - 9:40 a.m.  Human Resource Audit, Part 2
Group 2: Rosmairy Concepcion, Glenda Suria, & Aarusha Shakya
Elizabeth Cheatham & Jamie Mayr
Logan Campbell & Katie Bolton
Alexis Holmes & Paige Wilkins
9:40 - 10 a.m.  Optimum portfolio maximization using the Black Litterman Model  
Zainabu Otieno

10 - 10:20 a.m.  Mechanical Turk in Public Policy Research: Two FTC Experimental Replications  
Alla Akiyeva

10:20 - 10:40 a.m.  Elliptic Curve Cryptology  
Maria Core

10:40 - 11 a.m.  The Plummer T. Hall House, Raleigh, NC – A Renovation and Study of “Aging in Place”  
Seely Stephenson, Kristen Mayer

Communication & Media  
SMB 118

9 – 9:30 a.m.  Preventing Hunger: Communication Fieldwork with Campus Kitchens  
Kristen Rivera, Caleigh Thomas, Josette Roten, Elizabeth Huss

9:30 - 9:50 a.m.  The Effects of Government Censorship of Media on the Culture and Global Awareness of the Public  
Abigail Lorentzen

9:50 – 10:10 a.m.  The Effectiveness of Metaphor in Narratives of Buffy the Vampire Slayer  
Kristen Rivera

10:10 - 10:30 a.m.  Keeping the Performing Arts Alive: A Study of the Use of Media Techniques in the Arts Industry  
Josette Roten

10:30 - 10:50 a.m.  Sharknado 3: Oh Hell No! and the ‘Bad Film’ Genre  
Blair Delery

10:50 - 11:10 a.m.  Small Business, Big Storefront: the Use of Social Media in Reaching Customers  
Nancy Merritt

Music Performance  
Carswell Concert Hall

10 – 11 a.m.  Octavia!  
Chelsea Huber, Lily Stavish, Carly Zeugschmidt, and Professor Kent Lyman

AFTERNOON CONFERENCE SESSIONS AND EVENTS

Clinical Practice and Human Emotions  
Ledford 101

1:40 – 2 p.m.  Acts of Love: Increasing Empathy for Individuals with Mental Illness Through Dance  
Nicole Lawson

2 – 2:20 p.m.  The Effects of Mirrors on Body Satisfaction of College Women Practicing Yoga  
Taylor Hinson

2:20 – 2:40 p.m.  The Relationship Between Mental Health Therapy and Emotional Intelligence  
Michelle Summer Garcia

2:40 – 3 p.m.  “Affecting Identities”: An Analysis of the Role of Emotions in Formation of Social Identity  
Brianna Crumbley

3 – 3:20 p.m.  Adaptive Piano Lessons for Children with Autism Using the Lovaas Model of Applied Behavior Analysis and Discrete Trial Teaching  
Jessica Williford
Scientific Field Research and Sustainability
SMB 162

1:40 – 1:50 p.m.  
Urban Wildlife on Meredith College Campus – A Pecha Kucha*  
BIO 346 Ecology Lab Students

1:50 – 2:10 p.m.  
Osmetemen as a Defense Against Army Ants in Swallowtail Butterfly Caterpillars  
Elissa Teran

2:10 – 2:30 p.m.  
Comparing Parasite Biodiversity from Centrarchid Fishes in North Carolina Ponds and Lakes  
Kerrigan Gudger

2:30 – 2:50 p.m.  
Surveying the Food Climate of Meredith College: A Qualitative Study  
Illa Jones

2:50 – 3:10 p.m.  
Biodiversity Survey of Parasites in Freshwater Fishes  
Zoe Flowers

3:10 – 3:30 p.m.  
Evaluating the Direct and Indirect Protective Effects of Malaria Interventions  
Autumn Bridges

3:30 – 3:50 p.m.  
Nitrogen Fixation Genes in Tylosema  
Maegan Smith

Studies in the Humanities: Gender, Feminism, and Film
Kresge Auditorium

1:30 – 1:50 p.m.  
Views on Sexual Orientation and Gender Identity at Meredith College  
Roxanne McPherson

1:50 – 2:10 p.m.  
The Gendering of Sex: Social Constructions of Sex and Gender Performativity in The Amazon Web Series Transparent  
Hayden Hains

2:10 – 2:30 p.m.  
Reclaiming Villainesses: How Media, Culture, and Society Perceives Villainesses  
Ashley-Rosetta Hall

2:30 – 2:50 p.m.  
Retrospective Feminism: Imperator Furiosa and the (Im)Possibility of Feminism in Beowulf  
Sidney Shank

2:50 – 3:10 p.m.  
Finding the Feminism in Watchmen  
Nyssa Tucker

3:10 – 3:30 p.m.  
The Strong Black Woman: Protected or Forgotten?  
Nideara Tucker

3:30 – 3:50 p.m.  
Evaluating Societal Response of Anti-Semitism in the Movies  
Tina Salmon

Art History and Picturing Time
SMB 118

1:30 – 1:50 p.m.  
God of Wonders: An Examination of Late Classical and Early Christian Art  
Abigail Lorentzen

1:50 – 2:10 p.m.  
Marcel Duchamp and His Artistic Identity  
Leah Mooney

2:10 – 2:30 p.m.  
The Erasure of Women Artists in the early 20th century: A Case Study of Elena Luksch-Makowsky and Zofia Styjenska  
Nora Butkovich

10  SCHEDULE OF EVENTS  #MeredithCSA
<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:30 – 2:50 p.m.</td>
<td>A Brief History of Natural Dyes</td>
<td>Jessie Taylor</td>
</tr>
<tr>
<td>2:50 – 3:10 p.m.</td>
<td>Tino di Camaino’s Tomb of Maria of Hungary</td>
<td>Molly Hull</td>
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<tr>
<td>3:10 – 3:430 p.m.</td>
<td>Tintoretto’s Virgin and Magdalene in his Depositions</td>
<td>Molly Hull</td>
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<tr>
<td>3:30 – 3:50 p.m.</td>
<td>A Picture of Time</td>
<td>Caleigh Thomas</td>
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<tr>
<td>1:40 – 1:50 p.m.</td>
<td>Immigration and Globalization in Costa Rica – A Pecha Kucha*</td>
<td>Jessica Alston, Sarah Skinner</td>
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<tr>
<td>1:50 – 2 p.m.</td>
<td>Gilman Scholarship Recipient’s Experience Funding and Studying Abroad in Gaborone, Botswana – A Pecha Kucha*</td>
<td>Stacie Wiggins</td>
</tr>
<tr>
<td>2 – 2:10 p.m.</td>
<td>A Cultural Comparison Between Large and Small Towns in Italy – A Pecha Kucha*</td>
<td>Brianna J. Ramos</td>
</tr>
<tr>
<td>2:10 – 2:20 p.m.</td>
<td>Pure Vida: A true lifestyle – A Pecha Kucha*</td>
<td>Noel Fox, Olivia Powlas</td>
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<tr>
<td>2:20 – 2:30 p.m.</td>
<td>Africa as we know it – A Pecha Kucha*</td>
<td>Helina Biru, Mercy Rialem</td>
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<tr>
<td>2:30 – 2:50 p.m.</td>
<td>Oscar Wilde’s Italy</td>
<td>Ann Cox</td>
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<tr>
<td>2:50 – 3:10 p.m.</td>
<td>The Disappearance of Barrier Islands along the West African Coast</td>
<td>Matilda Odera</td>
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<tr>
<td>1:40 – 2:05 p.m.</td>
<td>Beats for the Bard: Composing Music for Shakespearean Drama</td>
<td>Maigan Kennedy</td>
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<tr>
<td>2:05 – 2:30 p.m.</td>
<td>A Creative Project Using Natural Dyes</td>
<td>Avonee Simmons, DeNancy Brown</td>
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<tr>
<td>2:30 – 2:55 p.m.</td>
<td>An Exploration of Modern Motion Capture Technology and Its Applications in Performance Dance</td>
<td>McKenzie Bradley</td>
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<tr>
<td>2:55 – 3:25 p.m.</td>
<td>Introducing Your New Favorite Author: Miguel de Cervantes</td>
<td>Karla Salgado, Daniella Rivera, Maria Rodriguez, Molly Smerko, Melissa Smith, Sarah Skinner, Rosmary Concepcion Ortega</td>
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</table>

*Pecha Kucha (peh-chuh kuh-chuh) is an Anglicized version of a Japanese phrase meaning “Chit-Chat”. It involves a technique of presenting grounded ideas, convictions, and experiences in a concise format – 20 images, each displayed for 20 seconds with the presenter providing commentary on the topic being presented. Pecha Kuchas are not “research” presentations per se, but the student does present through the authority of her knowledge and experience.
Mechanical Turk in Public Policy Research: Two FTC Experimental Replications

Alla Akiyeva
Faculty Adviser: Professor Jeff Langenderfer, Business

The use of online surveys by the academy and business is widespread and well documented, though there has been limited research conducted through online channels when the ultimate use is public policy development. The present study replicates two copy tests that were conducted on behalf of the Federal Trade Commission (FTC) using personal interviews. In the replications, the data was collected through Amazon Mechanical Turk, a crowd-sourced online marketplace that matches willing workers with requestors seeking online labor. Because online data collection is considerably less expensive and can be collected much more quickly, comparable results may signal that a shift to online data collection is viable for policy purposes and as legal evidence.

The first replicated survey was originally conducted for the FTC to support an advertising rule change. The second FTC study tested consumer understanding of existing and proposed mortgage disclosure forms. Both studies used computer assisted personal interviews as the data collection method. This research effort replicates the two studies as self-administered online Qualtrics surveys, recruiting respondents through Mechanical Turk and using questionnaires and stimuli identical to those in the original copy tests. The online replication results were then compared to those from the FTC personal-interview studies, and differences in results were tested for statistical significance.

Although respondents in the first replication were more skeptical about the advertisement claim as indicated by statistically significant differences in their level of belief regarding ad claims, the ads misled a substantial number of people in both the original study and the replication. In the second study, roughly half of the answers exhibited statistically significant differences from the original FTC results, suggesting underlying differences in the two samples. However, the main takeaway was the same in both the replication and the original study, indicating that the proposed forms are significantly more effective at communicating mortgage information.

George Orwell’s Nineteen Eighty-Four and Animal Farm and Russia Today

Macy Allen
Faculty Adviser: Professor Martin McNamee, English; Professor Kelly Roberts, English

A self-proclaimed socialist, George Orwell, an English writer in the early twentieth century, used his writing to reflect on global politics — mainly the political revolution of Soviet Russia. His two most famous works are Animal Farm and Nineteen Eighty-Four. Both Animal Farm and his dystopian novel Nineteen Eighty-Four are critiques on totalitarianism and socialism. The purpose of my thesis is to analyze the reception Orwell’s Nineteen Eighty-Four and Animal Farm during the twentieth century, to analyze Orwell’s works through a New Historian, Deconstructionist, and Psychoanalytic lenses to see if these two novels can be applied to present-day Russia. For my presentation, I will focus on the relationships between Orwell’s Animal Farm and Nineteen Eighty-Four and present-day Russian policy. Although Russia is described as a modern democratic state, it still exhibits censorship of literature and news, a strict foreign policy, and a culture that stems from Soviet and Tsarist traditions; this ultimately leads Russian citizens to have a loss of identity, in many ways like Orwell’s barnyard animals and citizens of Oceania had in his two novels.

Immigration and Globalization in Costa Rica - A Pecha Kucha

Jessica Alston, Sarah Skinner
Faculty Adviser: Professor Callie DeBellis, Foreign Languages and Literatures

As a component of our summer study abroad program in Costa Rica, we were involved in a seminar class about globalization. This class was conducted both pre-departure and in-country. We chose to keep these globalization concepts in mind as we explored the country, keeping a special focus on how it related to immigration. During our travels, we took pictures of objects and scenes that related. Using our course readings and supplementary articles inspired by our observations, we explored the correlation between globalization and immigration further. We found that immigration is a large
component of globalization and is a principle reason for growing interdependence between cultures. In our photographs, the immigration history of Costa Rica was apparent. Every immigrant group - from the first Spanish immigrants in the early 1500s, to the African slaves that were brought over to work the plantations, to the Jamaican immigrants that came in the early 1900s, and finally to today’s immigrants that come from neighboring Central American countries- have all made their impact on the cultural landscape of Costa Rica. Immigration patterns thus intensify the effects of globalization.

A Review of Sea Turtle Migration Studies
Miranda Ameen  
Faculty Adviser: Professor Carolina Perez-Heydrich, Biology

Animals from the Family Cheloniidae play a crucial role in our aquatic ecosystems. They maintain the health of seagrass beds, sand dunes, and provide a food source for many fish via algae on their carapace. Their status as endangered and threatened has caused an increase in concern for their species survival. With limited technology and funding, data is scarce in regards to the migration patterns of sea turtles. A literature review was conducted to (1) identify factors driving sea turtle migration patterns, (2) explain field methodology associated with this research, and (3) summarize findings from relevant field studies. The four major drivers of migration were found to be food, predation, temperature, and water currents. Field techniques involved in the tracking process included: satellite telemetry, data trackers, capture-mark-recapture studies, and movement analyses. Individual field studies provided inconsistent results regarding neonatal movement patterns; however, studies targeting adults appear to indicate seasonal migration rituals. Based on this literature review, current gaps in knowledge surrounding sea turtle migration highlight a need to focus future research efforts on examining the correlation between sea turtle movement and survival. With limited funding, however, efforts should also focus on educational programs/materials aimed at stimulating public interest to further develop the research base and conservation of sea turtles.

The Connection between Exercise, Academic Performance, and the Potential Career Earnings of College Students
Melisa Antunez  
Faculty Adviser: Professor Anne York, Business & Economics

According to the Bureau of Labor Statistics, the time use on an average weekday for college students participating in sports, exercise, or recreation, is 17 minutes. Previous research has shown that those who consistently exercise on average have higher earnings and those with higher GPAs on average have higher earnings in their careers. The purpose and focus of this research is to determine if there is a connection between exercise, academic achievement and the potential earnings of college students. Furthermore, this research uniquely examines the amount of exercise of current college students and how it correlates to both their GPA and earnings of their expected career by using income data from the Bureau Labor of Statistics. That is, do those who exercise more have career plans that lead to higher earnings? Using survey methods with college students in North Carolina, students were asked if they exercise regularly. If so, then they answered how many times per week they typically exercise and how many minutes on average they spend exercising on a daily basis. They were also asked to express their attitudes about exercise — specifically why they exercise or why they do not. Finally, they were asked to state the occupation they see themselves most likely doing in their future career after college. This research analyzes the responses by demographics, such as gender, to see if there are demographically-linked differences in responses. The results of this research may indicate it is important to encourage and motivate college students to make more time for an active lifestyle.

Sensory Sensitivities in Neurotypical Young Adults
Hannah-Leigh Barham  
Faculty Adviser: Professor Cynthia Edwards, Psychology

While there is a good amount of research done on sensory sensitivities in children with Autism Spectrum Disorder (ASD) and other learning disabilities, there has been limited research on sensory sensitivities in young adults with special needs. An exception is a study by Cole (2015) assessing sensory processing among young adults with high functioning ASD. Cole found differences in sensory processing patterns between an ASD population and a large neurotypical sample (Brown, C.E. & Dunn, W. 2002). However, Brown and Dunn’s participants were a general population norming sample, not specific to young adults. The present study examines sensory sensitivities in neurotypical young adults in order to better understand young adults with ASD. Hence, the current study was done to match and later compare to Cole’s study. The Adolescent/Adult Sensory Profile is a widely used assessment of sensory sensitivity. The current sample was matched on gender and educational level with participants from Cole’s 2015 sample. 20 males and 5 females completed a demographic screening questionnaire and an Adolescent/Adult Sensory Profile. Analyses are ongoing and focus on comparison between the current neurotypical sample, Cole’s ASD sample, and the aforementioned large-scale norming sample (Brown & Dunn).
Using Wild Edible Foods and Foraging to Enhance Nutrition
Suzanna Bass, Aisha Merkt
Faculty Adviser: Professor Bill Landis, Food and Nutrition

How can wild edibles and foraged foods integrate into everyday foods and increase our nutrition? Foraged foods and wild edibles, or edible plants that grow and reproduce freely, represent a significant yet underutilized source of highly nutritious foods with the potential to address nutrition and food security issues. The purpose of this research was to survey the variety and quantities of wild edibles available on Meredith’s campus, integrate them into healthful and palatable recipes, and assess their acceptability to consumers. The main campus (211 acres) was divided into 42 sections of different sizes based on existing man-made (sidewalks, roads) and natural barriers. Twenty-five percent of each section was randomly selected to be searched for wild edible plants. Transect lines were established in the selected parcels within a given section where investigators along searched and recorded every wild edible plant. Based on the findings from the campus survey, four wild edibles: dandelion, purslane, malabar spinach, and plantain were selected for inclusion in common recipes. Each food product was evaluated on several sensory qualities and for overall acceptability (1-5; 5 being the most favorable) by a panel of volunteers. The mean overall acceptability rating of the products was 3.3, which supports the idea that incorporation of wild edibles into the typical American diet is viable and may represent a novel source of affordable, sustainable and nutrient-dense foods.

Bilingualism and Mathematics: Does Language Play a Role in Mathematics Education?
Bailey Benge
Faculty Adviser: Professor Jane Gleason, Education

”Language, being the material in which we craft our identities, is a highly sensitive issue that invites emotional engagement and constant alertness to the vagaries of its use” (Sfard, 336, 2012). A focus group of bilingual Meredith students, with a focus on fluency in Spanish and English, was held to collect data. The purpose of this qualitative research on the effect of bilingualism on math education stemmed from a deep void growing between language and mathematical teaching, with little attention paid to language, in schools today. The students were asked questions and engaged in dialogue about how their bilingualism impacted their education in math. According to Sfard’s analysis of recent literature in 2012, one of the most pressing problems in the field of mathematical education is the lack of understanding of an interrelation between mathematics and language (Sfard, 337, 2012). By continuing research, and continuing to educate teachers and administration about this relationship, there are great hopes of “informing and improving educational practice” in this area. This presentation will discuss the implications of this data and research-based techniques that can positively shape the mathematical environment in the elementary school classroom for bilingual and monolingual learners going forward.

Africa As We Know It - A Pecha Kucha
Helina Biru, Mercy Rialem
Faculty Adviser: Dr. Brooke Shurer, International Programs

Africa is often misrepresented in and by the media to the world and especially to western countries. Due to the negative portrayal, beliefs and misconceptions about atrocities that lack context lead people to think of Africa as a place of misery, darkness, and despair: a monolithic continent where evil resides. Negative attitudes towards Africa as the “dark continent” has been fuelled by assumptions and exaggerated facts and generalizations. We want to show pictures that first come to mind when people think of Africa versus the reality. We will cover images from before the colonial times to where Africa is heading, at the same time addressing some of the current issues we are facing. The Pecha Kucha presentation is an opportune platform for the story of Africa to be told by an African voice separating facts from stereotypes, specifying realities that cannot be denied, and clearing commonly misrepresented ideas.

Arts Integration in Urban Elementary Schools
Hailey Blount
Faculty Adviser: Professor Monica McKinney, Education

Though inclusion of the arts in education has come up often as to whether or not it is beneficial or necessary, several studies have shown that arts-integrated curricula increase growth in student learning. Research has shown that arts integration can increase long-term retention rates of academic content and improve academic success for disadvantaged students (Hardiman, Rinne & Yarmolinskaya, 2014; Robinson, 2013). The purpose of this research project is to answer the question, “How do general education teachers and arts teachers integrate arts and core academic content into their instruction in the A+ Schools Program in an urban elementary school?” This study will be done through observations and interviews with 2-4 classroom and arts teachers in an urban elementary school. The observations will be done in order to see arts integrated lessons carried out and the interviews will help to further explain the teachers’ purposes, methods, and procedures. The results will be compared to the literature on best practices for arts instruction. The outcome of this study should provide ways for the researcher to integrate the arts into her future classroom and to share these findings with the educational community.
Investigating the Effects of Varying Body Mass Index on a Physiologically-Based Pharmacokinetic Model for Ertapenem

Valerie Bobola
Faculty Adviser: Professor Cammey Manning, Mathematics

Ertapenem is an antibiotic that treats a broad spectrum of infections and is administered once a day. A published physiologically-based pharmacokinetic model that incorporates known physiological parameters to simulate the absorption, distribution, and elimination of ertapenem in average height and weight males was analyzed. MATLAB computations were performed to investigate variations in height and weight; these computations revealed limitations in the fat volume parameter equation as the results of these computations were not physiologically plausible. A new parameter equation for the volume of the fat that incorporates the percentage of body fat, body height, and body weight was implemented and simulations were performed to investigate the distribution of the ertapenem in underweight, normal weight, overweight, and obese men of varying heights. These results will allow for further analysis that could lead to more effective dosing of ertapenem.

Urban Wildlife on Meredith College Campus - A Pecha Kucha

BIO 346 Ecology Lab Students
Faculty Adviser: Professor Francie Cuffney, Biology

As urban areas expand they can displace wildlife or wildlife can become part of the urban landscape. There have been anecdotal sightings of deer, hawks, raccoon, copperhead snakes, and even coyotes on Meredith’s campus. Students in Bio 346, Ecology Lab, set out to document urban wildlife on Meredith’s campus. Methodology included use of wildlife cameras, specified controlled observation times, collections of invertebrate species, catch and release in water bodies, and periodic campus walks to monitor a variety of types of wildlife. Wildlife encounters were documented, populations estimated, and pictures taken when possible. The project documents the diversity of wildlife on Meredith’s campus. Information on wildlife habitat requirements and human interactions issues are discussed.

The Relationship between Home Safety Checks and Implementation of Fall Prevention

Alayna Bolyard
Faculty Adviser: Professor Cynthia Edwards, Psychology

Statistics indicate that by 2030, 36% of people in the U.S. will be over the age of 60. Accelerated growth of senior citizens in our population consequently signifies an increase in the number of people having sight, hearing or memory difficulties, and hindered mobility thus increasing everyday risks in households. Falls are one of the major problems with the elderly, therefore prevention measures should be readily available to those in need. The purpose of the present study was to determine what type of intervention would produce the highest percentage of potentially risky items removed or altered in the home. Participants (N = 40) ages 65 and older either living independently or in a retirement home in North Carolina were given home safety checks. Directly after the safety check was conducted, participants were verbally told what items, according to the safety check, were suggested to be repaired, added, or altered in order to maintain a safe environment. One week post safety check, participants were given a phone call restating those same items previously suggested. One month later, a follow-up phone call was given to all participants to examine the number of changes made. It was hypothesized that the letter intervention would produce more change than the phone call, however, there would be no relationship between living arrangements and the number of home modifications made. The number of items participants changed based on the results from the follow-up phone call given one month post intervention was divided by the number of items that were suggested to be changed during the home safety check and again restated during the intervention thus producing a percentage of change score. Analyses are ongoing.

An Exploration of Modern Motion Capture Technology and Its Applications in Performance Dance

McKenzie Bradley
Faculty Adviser: Professor Barrett Koster, Computer Science

Motion capture technology has become an integral part of the art of animation and computer generated imagery. This work explores the evolution of motion capture technology over time and examines the advantages and disadvantages of various modern methods, with a focus on study of the Microsoft Kinect at the user and programmer levels, as supported by existing literature and media. It also showcases uses, both known and potential, of motion capture technology in other visual art forms, specifically performance dance. The work culminates in the use of a program created during this exploration to capture movement of dancers and create an integrated choreographic and technological performance piece.


Rachel Breazeale, Helen Milano
Faculty Adviser: Professor Maria Pickering, Biology

Scanning electron microscopy (SEM) is a method used to magnify specimens in order to observe their morphology in greater detail than a light microscope permits and see their surface structure. To view specimens at a high magnification while still

#MeredithCSA
Evaluating the Direct and Indirect Protective Effects of Malaria Interventions

Autumn Bridges  
Faculty Adviser: Professor Carolina Perez-Heydrich, Biology; Professor Cynthia Edwards, Psychology

The purpose of this study is to determine if two popular antimalarial interventions, insecticide-treated bed net (ITN) usage and indoor residual spraying (IRS), confer herd protection; that is, do these interventions, when used at the community level, provide protection to those not using them? Malaria is a major problem in sub-Saharan Africa, killing 0.6-1.2 million people each year. Those living in low income countries are most affected by the disease, and children are especially at risk of infection. The data used in the study was provided by the Demographic and Health Survey (DHS). A total of six countries were examined: Burundi, Liberia, Madagascar, Malawi, Nigeria, and Tanzania. A preliminary analysis of the data was conducted to estimate intervention-specific malaria prevalence, calculate odds ratios, and identify potential confounding variables for a final regression model. Maternal education, household wealth index, and urbanity were all associated with both use of ITN or IRS and malaria parasitemia. The next step is to fit a regression model that adjusts for confounding variables and formally assesses these interventions for their potential to confer herd protection at the community level.

The Profession of Child Life

Meghan Brooks  
Faculty Adviser: Professor Kathryn Clark, Child Development

Child Life Specialists have been found to have a positive impact on the psychosocial well-being of children during hospitalization. The practices associated with providing psychosocial support for children and families have changed as the profession has developed over the years. This paper will review the literature to gain a historical perspective to examine how child life practices have changed over time, examine current trends, and look toward the future to make some recommendations for the profession. Certified Child Life Specialists who have been in the field for an extensive period of time will also be interviewed with a predetermined set of questions. It is expected that child life practices have shifted from being broader and play-based to being ones that include more strategic interventions closely aligned with medical specialties in which support is being provided.

Transportation and Movement in Jane Austen's Pride and Prejudice

Catherine Bryant  
Faculty Adviser: Professor Rebecca Duncan, English

The characters in Jane Austen's Pride and Prejudice are often on the move: close to home they walk from estate to estate or into the town, and they ramble in pairs and groups through fields and forests. They range even further from home in vehicles of choice or necessity, visiting friends, pursuing business interests, maintaining important connections with others. These are the obvious activities and purposes of movement in the novel; yet hidden below the surface is a complex commentary on gender roles, class hierarchy and the development of relationships. Enhanced by Marxist and feminist theory, a systematic study of movement and transportation in the novel reveals a new set of power dynamics that crosses class and gender lines and influences the interactions between and among families and characters in subtle and surprising ways.

A Study Examining New Risks Associated with Teen Pregnancy in the U.S.

Aletheia Burrell, Melyssa Minto, Zineb Baali  
Faculty Adviser: Professor Carolina Perez-Heydrich, Biology

Past research has demonstrated the importance of socio-behavioral risk factors, such as family history and poverty on teen pregnancy; however, limited work has focused on the risks of teen pregnancy associated with the mother’s education level and the use of Title X family planning clinics for primary health care. With this study, we analyzed data...
Health Effects of Plastic Used in Food Containers

Latimah Bustillo-Arrechea  
Faculty Adviser: Professor Sasha Ormond, Chemistry; Professor Waldia Powell, Chemistry

Polyethylene terephthalate (PET) and Bisphenol A (BPA), often found in plastic number 7, are two components that make up some plastics. Plastic is used almost everywhere and for almost everything in the modern world: food and drink containers, receipts, baby bottles, medical devices, paints, dental sealants and fillings, and many others. BPA is known to interfere with the function of the endocrine glands in the body, leading to disruption of cell growth, reproduction, and even heart health. Within the last two decades, some countries replaced BPA with PET in many canned products, since PET had similar properties to BPA without having any of the harmful side effects. In recent studies, however, it has been shown that PET may also lead to serious health issues due to its interference with the endocrine system. While some food containers may carry the label BPA-free, it has been reported that small amounts of BPA still leach into the food due to potential false labeling or mislabeling. PET is usually used in water and soda bottles due its lightweight properties and its ability to contain carbonation. This project will focus on determining if containers labeled PET, BPA-free, or plastic type 7 leach harmful compounds into food or drink. The reported toxicity, hazards, and levels considered as safe for human exposure will be identified for the polymeric compounds, PET and polycarbonate containing BPA, and their metabolites. Published literature will be used to identify leached levels of PET and BPA into foodstuff from various food and drink containers. Some of the data will be obtained from the plastic suppliers, and we have to be cautious in the accuracy of these reports. This project will establish the groundwork for wet laboratory research at Meredith College that will determine the plastic levels leached from food and drink containers.

The Erasure of Women Artists in the early 20th Century: A Case Study of Elena Luksch-Makowsky and Zofia Stryjenska

Nora Butkovich  
Faculty Adviser: Professor Beth Mulvaney, Art History

This essay will compare and contrast the styles and influences of two Central European women artists. Although immensely influential and popular during their life time, these artists have been erased in the art historical canon. The first artist, Elena Luksch-Makowsky was a Russian-born painter whose popularity in fin-de-siècle Vienna was so large that she influenced artists such as Oskar Kokoschka and Egon Schiele. Her popularity soared until the fall of the Austro-Hungarian Empire, where she was forced to flee to Hamburg. The second artist, Zofia Stryjenska, a Polish-born painter won the highest awards at the Paris International Exhibition of 1925 because of her decoration of the Polish pavilion. Both of these artists’ successes are due to their depiction of Slavic folklore themes. The Viennese were enamoured with the mystical qualities of Luksch-Makowsky’s works, whereas Stryjenska’s depictions of folklore defined typical themes of Polish expressionism in the interwar period. My paper will examine the cultural context of these artists and their works to explain how these Slavic folkloric themes made them so popular. Through examining these artists of two different generations, who were stylistically and thematically similar, my research will supply supporting evidence that women artists have been systematically erased throughout the 20th century.

The Effects of Sensory Programs on Fine Motor Skills in Children with Autism

Raven Chavez  
Faculty Adviser: Professor Doreen Fairbank, Psychology; Professor Karthik Aghoram; Biology

The participants (N=3) were recruited from the Meredith College Autism Program (MAP) to determine the effects of sensory programs on fine motor skills in children with Autism. More specifically, would exposure to training in a sensory motor task improve the participants’ performance on a fine motor task that is a standard component of their daily program at MAP. Participants were children who were enrolled in MAP for at least six months and had mastered the Non-verbal Imitation, Gross Motor, Object, and Fine Motor Programs. This study used a
multiple baseline design across participants and the program that was measured was “drawing imitation of a cross” (e.g., how accurately the participant could draw a simple cross). This was done by giving verbal prompts such as “Do this,” and slowly fading the prompts so that the participant learned the task of drawing the cross independently. Participants engaged in a sensory motor exercise after their “drawing imitation” baseline was measured, to help increase strength before each program. This occurred for participant one after one week, for participant two after two weeks, and for participant three after three weeks. Participants were then measured after the sensory programs, and exercises were introduced to determine how well they completed the “drawing imitation” program independently. Data collection is ongoing and final results will be discussed within the context of how the hypothesized improvement in drawing the cross can be linked to the sensory program through the use of the multiple baseline design.

Differences in Motivational Strategies in K-2 and K-5 Classrooms

Tess Coleman
Faculty Adviser: Professor Julie Schrock, Education; Professor Kathryn Clark, Human Environmental Sciences

Motivating students in the classroom to complete tasks is an important component in education. This study focused on motivation strategies used by K-2 teachers and 3-5 teachers, focusing specifically on if the types of strategies used differed between the two groups of teachers. Teachers graduating from the same MAT and MED program were surveyed about the types of strategies that they were using to motivate their students. Results indicated that teachers in both K-2 and 3-5 classrooms were using mostly satisfaction (behavioral) strategies to motivate their students. Prior research indicates that relevance strategies are most effective in motivating students. Satisfaction strategies are those that create extrinsic motivation to complete a task (extra recess). Relevance strategies are those that create a link between the learning and a child’s life. Based on the results of this study, teacher’s would have a stronger impact on the motivation of a child if they are prepared to use a wide variety of motivational strategies, with a focus on strategies that emphasize the relevance of the task.

Elliptic Curve Cryptology

Maria Core
Faculty Adviser: Professor Jennifer Hontz, Mathematics

Cryptology is the process of developing a system for disguising information so that it cannot be understood by anyone except the intended recipient. Over time, people have developed more advanced cryptographic systems such as the Caesar Cipher, Thomas Jefferson’s disk cipher, and the German Enigma code using during World War II. One of the most recent mathematical developments is elliptic curve cryptology, a process that encodes information using elliptic curves over a finite field. This talk provides an overview into elliptic curves and an example to demonstrate their properties. In addition, this talk explores current applications and advancements of elliptic curve cryptology in the medical field.

Oscar Wilde’s Italy

Ann Cox
Faculty Adviser: Professor Catherine Rodgers, Theatre; Professor Gregory Vitarbo, History

Though Oscar Wilde is often associated with London, he described Rome as “the one true city of his soul,” and studying his time in Italy gives one a unique understanding of his life and work. My research aimed to find how Wilde’s exposure to Victorian Italian culture influenced his writing, political and religious values, and life as a homosexual, in ways that aesthetic Britain could not. By examining his letters, his poetry, his plays, and biographies to track his travels in Italy, I discovered recurring patterns of romanticism, Catholicism, and differing societal views of homosexuality. I traced these themes in Italy and Britain and compared the way they affected him. I found that these aspects of Italian culture gave him the chance to be most in touch with who he was as a writer, as a gay man, and as an icon of society. Understanding Italian culture and Wilde’s relationship to it, gives one a new and important perspective into the person he was - someone he would not have been without his beloved Italy.

"Affecting Identities": An Analysis of the Role of Emotions in the Formation of Social Identity

Brianna Crumbley
Faculty Adviser: Professor Steven Benko, Religious and Ethical Studies

Digital Culture presents us with the opportunity to shape our identities in an unfettered and honest way. While social media platforms such as Facebook, Twitter, Instagram, etc. promise freedom of expression, this level of direct access into the lives of others allows for both technology and community to discipline the construction of the self because each expression of identity is then influenced by the platform that it is being constructed upon. As an exploration of the ways in which affect theory and studies of identity politics overlap, this paper will theorize identity and analyze the factors that cause individuals to self-regulate the expression of their emotions in social contexts. Focusing on fear, shame, anxiety and disgust, this presentation addresses the effect that emotions have on an individual’s understanding of both their personal identity and their identity within a larger group. A framework created from a Foucauldian understanding of identity and power, Brene
Brown's grounded theory research on shame and vulnerability, and Martha Nussbaum's work on the role of emotions in the formation of social policy will be utilized to analyze the strategies used by individuals to maintain their group identity, and by groups to police and discipline their members. To better articulate this theory, examples will be drawn from online exchanges where social issues have problematized the simultaneous expression of individual identity and adherence to a group identity as individual expression of a singular identity is sometimes at odds in an online community.

Modifying the Structure of Ciprofloxacin to Synthesize Novel Bacterial Resistant Antibiotics

Vanessa Cupil-Garcia, Nyssa Tucker
Faculty Adviser: Professor Sasha Ormond, Chemistry

During the 2016 World Economics Forum, a Chemical and Engineering News article reported the Pharma industry’s declaration of war on “superbugs,” or antibiotic resistant bacteria. Bacteria that are resistant to antibiotics complicate the treatment and recovery of people who are sick, leading to further health issues or death. Ciprofloxacin is an antibiotic typically used to treat anthrax, pneumonia, and cystic fibrosis. As bacteria have become increasingly resistant to antibiotics including Ciprofloxacin and other quinolone derivatives, resistance is countered through the modification of the chemical structure of existing antibiotics, yielding drugs that are potentially as effective as the parent molecule without the existing challenge of bacterial resistance. Two derivatives will be synthesized via a two to three step synthetic pathway. The intermediates and final products will be purified and structurally characterized using Nuclear Magnetic Resonance (NMR) analysis and Fourier Transform Infrared (FTIR) Spectroscopy. The antibacterial efficacy of the Ciprofloxacin derivatives will be compared to the antibacterial activity of Ciprofloxacin via a minimum inhibitory concentration (MIC) assay. Modifications to the structure of the Ciprofloxacin should result in differences in the MIC assay, which will help identify the structure-activity relationship and determine which substitutions contribute to the antimicrobial performance of the quinolone derivative.

Sharknado 3: Oh Hell No! and the 'Bad Film' Genre

Blair Delery
Faculty Adviser: Professor Alisa Johnson, English; Professor Mark O'Dekirk, Psychology

For many years now, a number of network and cable channels have produced dozens of very terribly made movies deliberately, and for some reason, people love them. These movies are part of the bad film genre, and often described as being so bad that they are good. This genre is still blossoming, and has yet to be clearly defined. A ‘good movie’ can be identified by the director’s skillful use of cinematic language, but movies in this bad film genre deliberately misuse of elements of cinematic language. Because of this link between bad and good movies, analyzing the characteristics of one can help to identify characteristics of the other. Though movies in the bad film genre are usually set in a normal world, the things that happen in them are absurd, while a good movie would usually contain more logical actions. Another key trait of this bad film genre is a focus on monster/horror films, but ignoring classic movie monsters that usually have a deep motivation behind their monstrous actions, such as Dracula or the Wolfman, in favor of new hybrids, usually an implausible genetic cross between two or more familiar creatures. A great example of the bad film genre is Sharknado 3: Oh Hell No!, the most recent film in the Sharknado trilogy (soon to be a quartet). Sharknado 3 had 2.8 million viewers the first night it premiered (WTOP, 2014). Study of this film reveals many important aspects of the bad film genre; the three most consistent characteristics are incongruous creatures, terrible acting from wonderful actors, and implausible scenes that violates all aspects of reality. By focusing on aspects of the bad film genre, including its unconventional use of cinematic language, viewers can learn a surprising amount about what goes into making a good film.

The Effects of the Amount of Makeup on the Ability of an Eyewitness to Identify a Suspect

Blair Delery
Faculty Adviser: Professor Cynthia Edwards, Psychology

Eyewitness testimony is flawed and can be affected by many factors like emotions or the environment, yet it is still used in many court cases (Walker, 2013). Research shows that even falsified evidence can produce incorrect eyewitness testimony (Wade, Green, Nash, 2009). The present study was designed to investigate the accuracy of eyewitness testimony. Meredith College students (N=90) will view a video of a staged purse snatching in which the criminal is not wearing makeup, the participants will then be asked to pick the criminal out of a photo lineup and rate how confident they are that they chose correct. The participants will be randomly assigned to look at one of three lineups, one lineup where the suspects are wearing heavy makeup, one with light makeup, and one with no makeup. The hypothesis is that fewer participants in the heavy makeup group will correctly identify the criminal, and the majority of participants in the no makeup group will correctly identify the criminal. Data collection is ongoing.

Biodiversity Survey of Parasites in Freshwater Fishes

Zoe Flowers
Faculty Adviser: Professor Maria Pickering, Biology

Parasites are found essentially in all life forms and can affect their hosts and their surrounding ecosystems. Specific
parasites with complex life cycles involving multiple hosts can be sensitive to environmental changes and changes in the host populations. Thus parasite presence can provide additional information about their habitat and the health of the ecosystem. In order to study parasite populations and their changes over time, we must first know what species are present. A survey of fish parasites was conducted between October 2014 and July 2015 in Raleigh, NC at Meredith Pond on Meredith College campus. A total of 18 fishes, including 12 Lepomis macrochirus (Bluegill Sunfish), 5 Lepomis microlophus (Redear Sunfish) and 1 Micropterus salmoides (Largemouth Bass) were collected by rod and reel using spinners and live worms as bait. Total length and digital pictures were taken of each fish. Fish were immediately necropsied and examined for ectoparasites on the skin and gills, then endoparasites in the internal organs. Parasites found were examined under both dissecting and compound microscopes, and identified. Four major groups of parasites were found infecting the fishes: the flatworms (Phylum Platyhelminthes), including: monogenes, larval trematodes, and larval cestodes; spiny-headed worms (Phylum Acanthocephala); copepods (Phylum Arthropoda); and round worms (Phylum Nematoda). In total, 15 number of parasite species were found 2 acanthocephalans, 1 cestode, 1 copepod, 1 leech, 5 monogenes, 2 nematodes, 3 trematodes. All data was entered into a host-parasite database. Collections of more fish species and more fish specimens are sure to reveal additional parasites species in Meredith Pond.

Pura Vida: A True Lifestyle - A Pecha Kucha
Noel Fox, Olivia Powlas
Faculty Adviser: Professor Callie DeBellis, Foreign Language and Literatures

The tropical climate and location of Costa Rica gives it the unique opportunity to utilize multiple sources of renewable energy. Ninety-four percent of the energy produced in Costa Rica is renewable, bringing forth positive benefits such as growth of businesses, creation of jobs, and heightened tourism. With all of the positive aspects of producing clean energy, we will explore whether this alternative is feasible for Costa Rica long-term, as well as for other countries that want to follow suit. This presentation will be conducted in Spanish, so hold on tight and ¡PURA VIDA!

The Relationship between Mental Health Therapy and Emotional Intelligence
Michelle Summer Garcia
Faculty Adviser: Professor Andrea McPherson, Psychology; Professor Cynthia Edwards, Psychology

The present study explored the level of emotional intelligence (EI) in undergraduate college students. A follow up study then explored the relationship between mental health therapy and changes in EI. Study 1: To establish a baseline, the level of EI was tested on a sample of Meredith College student (N = 86) in the Introduction to Psychology Courses. To analyze levels of emotional intelligence, each participant was given a Brief Emotional Intelligence Scale (BES). The BES contained ten questions, rated 1 = “Strongly Agree” to 5 = “Strongly Disagree”. The participants were asked whether or not they had previously received mental health therapy, if they had never received mental health therapy, or if they were currently in mental health therapy. The “No Therapy” group (N = 53) had a mean BES of 23.27, (SD = 10.59) with a minimum score of 11 and a maximum score of 49. The “Currently in Therapy or Previously in Therapy” group (N = 23) had a mean BES of 24.04 (SD = 10.25) with a minimum score of 13 and a maximum score of 47. The EI scores ranged from low (49) to high (11), with the means of both groups around the same number (23-24), supporting the hypothesis that EI is intrinsic in every individual and the EI level of every participant will vary from low to high. Study 2: To analyze the relationship between mental health therapy and EI, the same BES questionnaire was given to students attending mental health therapy in the Meredith College Counseling Center. The BES questionnaire was given at the start of therapy and again after the participant made significant progress according to the therapist. The results were then compared. The hypothesized outcome is an increase in emotional intelligence after mental health therapy. Data collection for Study 2 is ongoing.

Comparing Parasite Biodiversity from Centrarchid Fishes in North Carolina Ponds and Lakes
Kerrigan Gudger
Faculty Adviser: Professor Maria Pickering, Biology; Professor Carolina Perez-Heydrich, Biology

Parasites are found in most organisms and are a part of healthy ecosystems. The presence of parasites with complex life cycles, those that involve multiple hosts, can give clues to species interactions within a system. Detection of a particular parasite species reveals that the other hosts must be present in the area as well. Parasite biodiversity survey data in an area can be used as a baseline to compare the parasite fauna through time or space; providing information about changes to the environment, including presence or absence of hosts. This study was conducted to compare parasites of centrarchid fishes (the sunfish family) from a small pond, Meredith College’s Pond, to those of a slightly larger body of freshwater, Lake Raleigh, on NC State University’s campus. Between October 2014 and December 2015 a survey was conducted on the helminth parasites present in fishes of the Meredith Pond in Raleigh, NC in order to get a baseline record of the parasite species present. From January 2016 to May
2016 this survey will be expanded to a larger body of water, Lake Raleigh to see if these parasite species vary over space and in a different sized body of water. Centrarchid fishes were collected with the rod and reel method, then taken back to the lab, measured, photographed, and dissected. Each organ was examined for helminth parasites using both dissecting and compound microscopes. Parasites were then identified and added to a database. Preliminary data from the Meredith Pond reveals parasites from four phyla: Acanthocephala (spiny-headed worms), Arthropoda (copepods), Nematoda (roundworms), and Platyhelminthes (monogenes, cestodes, and trematodes). Similarities in parasite species with complex life cycles between sites reveal that appropriate intermediate and definitive hosts are found at both sites.

Synthesis and Analysis of a Carbozole-Based Dye and its Use in a Dye-Sensitized Solar Cell

Crystal Gunther
Faculty Adviser: Professor Sasha Ormond, Chemistry

Research is currently looking for compounds that can power solar cells, obtain high solar power efficiencies, and have low degradation. Compounds that contain color have the desired property to deliver the electrons required to transport and renew energy in a solar cell. Organic dyes are being researched and employed in solar cells due to their high extinction coefficients, which give them a better advantage to being good light harvesters. A carbozole-based organic dye will be synthesized, purified, analyzed and then tested for effectiveness in a dye-sensitized solar cell (DSSC). The synthesis is a three-step process and will implement basic and advanced organic techniques such as heating a reaction and working under inert atmosphere. Purification of the intermediates and the product will be achieved through column chromatography. After synthesis and purification, nuclear magnetic resonance (NMR) will be used to confirm the correct structure and fourier transform infrared spectroscopy (FTIR) will be used to investigate the functional groups in the synthesized product. Ultraviolet-visible spectroscopy (UV-vis) will be used to measure the wavelength of maximum absorption and extinction coefficient, which will indicate how well the product can absorb light in the required region for a DSSC and with the optimum power. Fluorescence will be used to determine if the product is stable in the excited state. Cyclic voltammetry (CV) will be used to measure the product’s ability to operate continuously in the solar cell as well as identify electrochemical properties. The product will then be used to prepare a DSSC and the efficiency of the solar cell will be measured, calculated, and compared with values found in literature. The comparison will help determine the accuracy and proficiency of the technique and will improve the preparation of DSSCs at Meredith College.

The Gendering of Sex: Social Constructions of Sex and Gender Performativity in the Amazon Web Series Transparent

Hayden Hains
Faculty Adviser: Professor Steven Benko, Religious and Ethical Studies

The claim that gender is a social construct separates gender from sex, such that gender is the socially constructed performance of the biological fact of sex. The recognition that gender is a social construct and fluid has meant that biological sex is interpreted as a prediscursive fact: the more socially relative gender is understood to be, the more rigid, true, obvious, and immutable sex is said to be. However, as writings by Butler and Fausto-Sterling make clear: both gender and sex are social constructs, though the latter is constructed as true and real while the former is constructed as fluid and mutable. To see the interplay between gender as social construct and sex as biological fact, one need only examine cultural artifacts where gender and sex are disrupted. An example of popular media where gender and sex are disrupted is in the Amazon series Transparent, which follows the story of Maura and her three adult children as they learn that the person that they knew to be their father has come out as transgender. The narrative of Maura’s coming out and transition can be analyzed to show how transgender individuals subvert the ostensibly stable binaries of sex and gender by revealing the fluidity and constructedness of both. A narrative and aesthetic analysis of Transparent, seasons one and two will explore how the show comments on, represents while also transgressing hegemonic understandings of gender and sex. While transgender individuals expose the constructedness of sex, there is a refying of gender, which reveals that when gender is troubled, sex is reified and when sex is troubled, gender is reified. In other words, sex or gender has to be considered real and immutable because of how essential they are to identity formation and the fostering of cultural citizenship.

Reclaiming Villainesses: How Media, Culture, & Society Perceives Villainesses

Ashley-Rosetta Hall
Faculty Adviser: Professor Shannon Grimes, Religious and Ethical Studies; Professor Steven Benko, Religious and Ethical Studies

The purpose of this presentation is to examine the changing cultural perceptions surrounding women as villains and how this is a positive outcome for women and girls through the investigation of classic fairytales across multiple media including animation which allows for more imaginative interpretations and live action which focuses on fantastic realism. By focusing on the history of fairytale villainesses, we can see how the
caricature of women ruled entirely by emotion, has been used to restrict women socially, intellectually, and ethically.

Fairytales and folktales do not exist in a social or cultural vacuum, as culture within any society is an ongoing conversation that is constructed, deconstructed, and evaluated by those who create and consume it. These stories create an ethical and moral understanding of the world and offers a set of rules and expectations on how women should be perceived and valued.

As the primary purveyor of stories that influence culture, Disney Animation Studios have helped shift the perceptions of women from objects of beauty without moral responsibility, to the modern interpretation of women as fully capable autonomous human beings. The role of Disney Studios has been to create the visual world for stories and as fairytales have moved from oral to animated and finally live-action formats our understanding of villainesses has changed dramatically. Using both the live action and animated versions of villainesses, from Maleficent/Sleeping Beauty showing Maleficent’s evolution from a slighted uninvited wise woman to a betrayed Queen of the Fairies, or Cinderella’s Lady Tremaine as both selfish and socially cornered by the restrictions of the time and Snow White’s Evil Queen who allowed jealousy to rule her, this presentation will show how women have moved from the realm of moral irresponsibility to being fully responsible for their actions as the medium for sharing fairy tales has transformed along with the method of storytelling.

The Effects of Mirrors on Body Satisfaction of College Women Practicing Yoga

Taylor Hinson
Faculty Adviser: Professor Andrea McPherson, Psychology; Professor Cynthia Edwards, Psychology

Body image concerns are a pertinent issue in American society as body dissatisfaction is seen in virtually all demographics. Results of previous studies have found that the practice of yoga significantly improves body satisfaction and overall body image (Daubenmier, 2005; Delaney & Anthis, 2010; Dittmann & Freedman, 2009; Impett et al, 2006; Flaherty, 2014). Yogic philosophy, with its integration of the mind, body, and spirit, emphasizes the internal rather than external and encourages the practitioner toward non-judgment of the self (Dittmann & Freedman 2009). As mirrors provide a means for exterior evaluation and can be found abundantly in many Western yoga studios and fitness centers, it raises the question as to whether or not the presence of mirrors affect and possibly impede the potential benefits of a yoga practice in terms of body satisfaction and body image. The aim of the present study was to determine the effect of the presence of mirrors during a yoga practice on body satisfaction. Participants were undergraduate students enrolled in a 7-week beginner’s yoga course. Participants completed body satisfaction questionnaires before and after each yoga practice throughout the course, half in the absence of mirrors and half in which mirrors were present. The hypotheses were that (1) body satisfaction scores would significantly increase pre- to post-yoga practice, and (2) these differences would be significantly higher after mirror-absent practices. Preliminary data analysis comparing mean differences indicate support of these hypotheses. Data collection on a second cohort will be completed by the end of February.

Connecting Organic Chemistry and Biochemistry through Synthesized Inhibitors and Succinate Dehydrogenase

Kimberly Hinton
Faculty Adviser: Professor Walda Powell, Chemistry

Students often fail to see the connection between the Organic Chemistry and Biochemistry, even though both courses are usually taken simultaneously or subsequently. This research was an attempt to longitudinally connect these two courses by linking a multistep organic chemistry laboratory synthesis to a biochemical metabolic pathway and enzyme kinetics. This project examined the multistep organic synthesis of two known inhibitors, 2,2-difluorosuccinic acid and 2,4-dinitrophenol, and their effect on the enzyme complex, succinate dehydrogenase. The purpose of this research project was to determine by which particular mechanism of action and to what extent the two synthesized inhibitors obstruct the succinate dehydrogenase’s ability to catalyze the removal of two hydrogens from its substrate succinate in the formation of fumarate. These reactions were observed using an artificial electron acceptor and blue colorimetric probe allowing the reaction to be monitored using UV-spectrophotometer set to 600 nm. The velocities for the uninhibited and inhibited reactions at various substrate concentrations were measured over 30 minutes. From these, different substrate concentrations and corresponding velocities, Km and Vmax values were calculated and subsequently the specific kind of synthesized inhibitors determined. These results yielded both qualitative and quantitative effects of 2,2-difluorosuccinic acid and 2,4-dinitrophenol on succinate dehydrogenase. Succinate dehydrogenase catalyzes the fifth reaction in the biochemical metabolic pathway of the Krebs cycle where succinate is reduced to fumarate; the extent of the effects of these two synthesized inhibitors on this biochemical reaction was measured using the experimentally determined Km and Vmax.

The Human Body in Space

Kimberly Hinton, Laura Dugom
Faculty Adviser: Professor Bill Schmidt, Physics; Professor Walda Powell, Chemistry

Many organizations, both private and public, are developing plans to send people to Mars. NASA (National Aeronautics
Soil Carbon Content and Organic Material of a Prairie and Forest based on Prior Land Usage

Meredith Hovis
Faculty Adviser: Professor Matthew Stutz, Geoscience

Human impacts from agriculture commodities generate soil erosion. For centuries, humans’ use of land in the North Carolina Piedmont has increased soil erosion. Soil, being one of the largest carbon sinks in the carbon cycle, is significant to research when investigating global climate change. Although, carbon in the soil is slow to accumulate and can take many decades to process. Two site locations were chosen to test soil organic content. Soil samples were collected from a prairie ecosystem at Prairie Ridge Ecostation and from an established Ecological Research as Education Network (EREN) forest plot in the Meredith College Forest. Both ecosystems were once locations for agricultural or logging practices. Both soil types were moderately to severely eroded due to prior land usage. The Meredith College forest has been an established forest for approximately 80 years, whereas the prairie has been transformed 10 years ago. Both ecosystems were affected by humans, but have taken various stages to recover into secondary succession sites. Furthermore, both sites have various levels of slope which allowed soil erosion to vary. Does soil organic material content vary based on prior land usage? Using the EREN protocol for testing organic material, the soil moisture content and percentage of organic material from the samples were calculated and compared from the two ecosystems. The average percentage of organic material of the prairie ranged from 4.90% to 8.76%. In comparison, the average percentage of organic material of the forest ranged from 10.30% and 15.20%. The forest contains higher organic matter and carbon content. Soil restoration can occur over a period of decades if returned to natural vegetated condition. There is a difference between carbon accumulated in prairie soils versus forest soils. There is a difference in carbon soil based on land restoration.

Octavia!

Chelsea Huber, Lily Stavish, Carly Zeugschmidt
Faculty Adviser: Professor Kent Lyman, Music

Playing the piano with a friend was one of the most popular pastimes of the pre-electronic age. Prior to the gramophone, the radio, the LP player, the cassette deck, the CD player and the iPod, people had to make music themselves if they wanted to have any at all. This tradition is preserved and carried on today by groups like Octavia!, Meredith’s piano ensemble. This group of four pianists has prepared an interesting program that includes a sonata for four hands by Mozart, pieces for two pianos by Germaine Tailleferre (the only female member of the group of French composers known as “Les six”), and an uproarious rendition of Albert Lavignac’s Galop-Marche, for one piano eight hands. The performance of each work will be accompanied by interesting background information on the composers, the works, and the tradition of piano ensemble playing.

Tino di Camaino’s Tomb of Maria of Hungary

Molly Hull
Faculty Adviser: Professor Beth Mulvaney, Art History

Santa Maria Donna Regina is a unique example among churches constructed during the trecento in Naples. Maria of Hungary, the Queen of Naples, had intended for the church to be part of a Clarissan convent for noble women and her final resting place. Tino di Camaino, the first Sienese court sculptor for the Angevin dynasty, was commissioned c.1325 by King Robert to construct a tomb for his mother, Maria of Hungary. The tomb became propaganda to solidify his claim to the throne. Later, the church would be stripped of its medieval interior and be transformed into a Baroque church, losing the integrity of the original plan. I will place Maria’s wall tomb within the context of the program dedicated to the glorifying the Angevin dynasty and Maria’s efforts. Through determining the relationship between the tomb and its surroundings, I will declare how this wall tomb epitomizes the talents of Camaino that have been under-appreciated as a result of Giorgio Vasari’s Tuscan bias. I will use this tomb as an example of why Camaino should be considered the first court artist of Naples. Moreover, I will support this claim by comparing this tomb to others commissioned by the Angevin dynasty.

Tintoretto’s Virgin and Magdalene in his Depositions

Molly Hull
Faculty Adviser: Professor Beth Mulvaney, Art History

Jacopo Tintoretto’s paintings of religious narratives completed between 1550-1570 are indicative of the atmosphere in
Religious Diversity in the Workplace
Melissa Jenkins, Brianna Crumbley, Aditi Shrestha
*Faculty Adviser: Professor Margarita Suarez, Religious and Ethical Studies*

The emergence of new media in a post-9/11 world largely affects how individuals perceive and understand faith traditions. This project sought to expand those understandings through assessing levels of comfort with discussion of religion in the professional environment which, though generally discouraged, remains an integral aspect of society and interpersonal relationships. We began by interviewing HR representatives from two organizations in the Raleigh-Durham area, North Carolina Mutual Life Insurance Company and the Arc of North Carolina, with the intent of gaining insight into how religious diversity is (or is not) addressed in their workplaces. We then created an anonymous online survey to assess the employees’ attitudes regarding religious attire, policies, and discrimination in the professional setting. Our results indicated that the role of religion in the workplace is widely ill-considered beyond basic discrimination policy, and we believe that our findings can influence the development of informative training and conversation.

Taming Nature
Melissa Jenkins, Jessie Taylor
*Faculty Adviser: Professor Rebecca Duncan, English*

From childhood we are barraged with images of “tamed” nature. For instance, an anthropomorphized gecko sells us car insurance; a smiling polar bear sells us soft drinks. We set out to study the proliferation of tamed nature in our culture and its possible effect on people’s sense of responsibility to the environment. Seeking a statistical correlation between media manipulation of animals and attitudes toward environmental stewardship, we surveyed two samples of convenience, showing one group a series of tamed animal images and the other a series of more authentic images of wild animals. We then requested they fill out a survey. We found no statistically significant differences between the two treatment groups. Next, we analyzed responses by respondent age, gender, and educational background and discovered several significant differences between younger (18-34) and older (35+ years) age categories. By conducting several two-sample t-tests and two-sample proportion tests, we tested the hypotheses that adults’ opinions differ on conservation efforts, human intervention methods, air purification, and oil extraction. Results indicate that we cannot accurately determine the impact of animal images due to their pervasive existence over time; however, there are varying beliefs among ages in regards to how humans should interact with animals.

Surveying the Food Climate of Meredith College: A Qualitative Study
Ilia Jones
*Faculty Adviser: Professor Jennifer McMillen, Food and Nutrition*

Obesity is associated with an increased risk for disease such as diabetes, cardiovascular disease, and certain cancers. 74% of men and 64% of women in America are either overweight or obese. Researchers are investigating the relationship between diet and lifestyle during young adulthood. A rapid weight gain is identified among college students, but not many studies have investigated why this occurs. This research seeks to understand how transitioning to the college lifestyle may contribute to changes in students’ dietary patterns. The principle investigator conducted six focus groups to gain participant perspectives of dietary patterns before and during college. A survey was then designed and administered to Meredith College undergraduate students to gain a more specific understanding of participants’ knowledge, attitudes, and beliefs about nutrition. Results from the focus groups indicated that increased independence contributes to nutrition confusion, fosters priority lineup, and increases focus on convenience in reference to diet. Further analysis developing an explanatory model revealed that all themes interacted with the central theme of nutrition confusion. Results from the survey suggest that students are not aware of necessary components of a healthy diet. Therefore, increasing nutrition knowledge through nutrition education may improve diets during the transition to college.
Infant Attachment and Maternal Substance Abuse
Kasey Jones
Faculty Adviser: Professor Kathryn Clark, Human Environmental Science

Infant Mental Health Professionals’ Perception of Effects of Maternal Substance Abuse on Attachment. The importance of attachment has been documented extensively in the literature. The research topic for this thesis project is the effects of maternal substance abuse on attachment. The research question for this project is: how do infant mental health professionals perceive the effects of maternal substance abuse on attachment? Three infant mental health professionals were interviewed, these were transcribed and coded for themes, and this data was compared with the research data. Upon review of the data, the researcher determined three common themes: there are often external stressors that increase the difficulty of creating a secure attachment, multiple systems have an impact on the relationship between a mother and her child, and continued intervention and support is very beneficial for the development of a secure attachment. The findings from the research data were congruent with the current research literature. This work will add to the current body of knowledge by providing information about the common themes that are regularly seen in clinical practice working with mothers who are substance abusers and their infants.

The Effects of Asparagusic Acid on Glutamate Dehydrogenase
Tia Joyce
Faculty Adviser: Professor Karthik Aghoram, Biology

Asparagusic acid, solely found in asparagus, has been shown to inhibit the function of certain enzymes due to its ability to potentially substitute for a-lipoic acid in a-keto-acid oxidation systems. During this research experiment, the effects of asparagusic acid on glutamate dehydrogenase (GDH), an enzyme responsible for synthesizing the amino acid glutamate from NH+ and a-ketoglutarate was investigated. Along with glutamate synthesis, GDH is responsible for amino acid degradation upon protein digestion. GDH is important because its inhibition could lead to reduced ability to obtain vital energy in people who have entered starvation mode. While it is known that asparagusic acid inhibits GDH, it is not yet known whether there are any differences in the level of inhibition between the three varieties of asparagus: green, white, and violet. Asparagusic acid was extracted from the three different varieties of asparagus to determine if there is significant difference between the inhibitions of glutamate dehydrogenase from each variety. Green, white, and violet asparagus were ground to make separate extracts and placed in yeast cells using L-glutamate and NADP+ as substrates. The inhibition of glutamate dehydrogenase with and without asparagusic acid was found by measuring the amount of NADPH produced. NADPH was measured and quantified using a color based indicator and the optical density of the reaction at 450 nm. The optical density was then compared to a calibration curve to calculate NADPH production. Based on the current trends of experimental results, green asparagus provides the most inhibition of glutamate dehydrogenase. It is suspected that GDH inhibition decreases in the order of green, violet, and then white. More research is still needed to statistically determine the definitive order of inhibition and the kinetics of the reaction.

Mental Health Related Campus Resources: An Examination of Demand for Meredith Student Services
Langley Kelly
Faculty Adviser: Professor Joy Learman, Social Work

College campuses across the United States are experiencing a mental health crisis; with approximately half of college students struggling with a mental health disorder. Furthermore, research shows that psychological stress among students is on the rise. Despite this burgeoning need for services, as well as college campuses’ efforts to provide valuable resources, many campus mental health services are underutilized. Thus, the purpose of this study was to determine the need for mental health services on Meredith College campus, as well as identify factors related to service utilization. Student feedback was solicited on a range of mental health issues (including depression, anxiety, post-traumatic stress, eating disorders and substance use), as well as the main reasons students consult with the Meredith College Counseling Center. Application of the results included specific recommendations on how Meredith College can improve its mental health service offerings while increasing utilization among students.

Beats for the Bard: Composing Music for Shakespearean Drama
Maigan Kennedy
Faculty Adviser: Professor Catherine Rodgers, Theatre

Renowned as the consummate authority on Western theatre, William Shakespeare’s works have been performed for over 400 years. Many of Shakespeare’s works include songs, and, though the lyrics remain, much of the music they were originally set to has been lost in antiquity. In other cases, the musical notations that were recorded have now become too obsolete contextually for the more modern settings some directors choose to pursue. As continuity in the storytelling of drama is of paramount importance, composers are
challenged with setting Shakespeare’s centuries-old lyrics to new, original works. The main objects of my presentation will be to enumerate the process of composing for Shakespeare, to identify significant and memorable examples of modern compositions for Shakespearean works, and to write and perform my own original compositions based on the findings of my research.

Cyanobacteria Vs Water
Jessica Knisley
Faculty Adviser: Professor Francie Cuffney, Biology

Microcystis is a type of cyanobacteria that has been causing toxic algal blooms in lakes near Raleigh. These toxic algal blooms cause oxygen depletion when the blooms die, suffocating the oxygen in the lake, causing toxins in the water that have been linked to prostate and breast cancers. For this experiment microcosms were set up in the laboratory with culture of microcystis added to the water. Aluminum sulfate and water hyacinth were used as treatments to reduce concentrations of microcystis. After four weeks of treatment, the aluminum sulfate drastically decreased the cyanobacteria and turned the remaining algae black. The water hyacinth completely got rid of the microcystis. The goal of this project is to look for alternative ways to produce cleaner and safer water in the surrounding lakes in the Raleigh area by depleting the amount of cyanobacteria. For future research, the long term effects of aluminum sulfate will be examined, along with proper control techniques for water hyacinth.

Designing for Theatre of the Absurd
Sarah Koop
Faculty Adviser: Professor Catherine Rodgers, Theatre

Theatre provides a unique outlook on history through the stories it tells. Stella Adler states, “The theatre was created to tell people the truth about life and the social situation.” The Absurdist movement in theatre proved to be a turning point because of the unique way it tells the truth. Absurdism is defined as the belief that human beings exist in a purposeless, chaotic universe. Playwrights use this idea to create environments for their characters that often do not make sense to the characters in the world, or even the audience members at times — this very device is used to emotionally manipulate the audience and create the same sense of frustration that absurdist artists feel. In designing an absurdist play, it is the designer’s job to add structure and meaning to a seemingly unstructured world — for show’s like, Waiting for Godot, No Exit, and Caligula, designers are expected to rise to the challenge. In my research, I will be compiling ideas on design theories, researching historical influences, and reading literary criticisms — from that I will create a production concept, as well as design either a set or costume piece to the three plays listed above using the information to enlighten my overall design concept.

Acts of Love: Increasing Empathy for Individuals with Mental Illness through Dance
Nicole Lawson
Faculty Adviser: Professor Carol Finley, Dance

“The oppressor is solidary with the oppressed only when he stops regarding with the oppressed as an abstract category and sees them as persons who have been unjustly dealt with...and risks an act of love (Freire 50)”

This research examines the effectiveness of participation in a choreographic process which incorporates discussion, journaling and movement reflection in increasing the likelihood of the participant developing empathy for individuals with mental illness. Each component of the choreographic process will be monitored to demonstrate whether or not dance and movement can impact the empathy levels of members of the privileged group of neuro-typical participants for members of the under-privileged group of individuals with mental illness. The participants’ levels of empathy will be tested before the study and after participation in the study using an adaptation of the Toronto Empathy Questionnaire. Two major strategies are employed in this choreographic process: 1) the use of discussion and journaling to help participants reflect on their position in a privileged group and the impact of that privilege on individuals with mental illness and 2) the use of movement reflection to help participants embody their discoveries and generate movement to be used in the creation of a dance. As most research investigates the impacts of movement processes on members of unprivileged groups, this research will explore the possibility of using movement processes to increase the empathy of privileged groups toward under-privileged groups. This type of research could open up new avenues for reducing social injustice by increasing the span of justice work from under-privileged groups to include work with privileged groups.

Does Digital Learning Increase Student Engagement?
Kristin Long
Faculty Adviser: Professor Cece Toole, Education

Digital learning is becoming more and more important as our global community changes into a more technological world; therefore, our classrooms need to prepare our students for their future. Digital learning can also promote deeper learning by allowing access to quality courses and online teachers, project based learning, and personalized skill building. The research in this study focuses on defining digital learning and student engagement, as well as determine if there is a connection between these two concepts. My hypothesis for this study
is that digital learning will increase student engagement. To complete this research, the researcher will first conduct a survey to identify teachers who use digital learning regularly in their classrooms. From the results she will select at least two participants to observe a lesson that incorporates digital learning and a lesson that does not incorporate digital learning. The intent is to observe the same teacher teaching both lessons preferably on the same day which will allow observation of the same students in two content areas. When observing the lessons, a checklist that includes six student engagement behaviors identified from the literature review. In order to observe each behavior in the checklist equally the researcher will focus on one behavior at a time for approximately 5 minutes. During that time if the behavior is observed it will be recorded by using the number of students demonstrating the behavior and include the example of the general class behavior in my notes. If a behavior is never observed, it will also be indicated on the checklist. Based on this small sample size the results indicate a finding in the direction of a higher level of student engagement with the use of digital learning lessons.

**God of Wonders: An Examination of Late Classical and Early Christian Art**

Abigail Lorentzen  
*Faculty Adviser: Professor Beth Mulvaney, Art History; Professor Jeffrey Martinson, Political Science*

Not only did Early Christian artists use similar artistic techniques as classical Roman and Greek artists, they also used classical prototypes in formulating the images of Christian figures and symbols. Scholars have established strong ties between classical models and Christian portrayals and subject matter in art, noting similar iconographical themes and figural representation. This study explores the relationship between ancient classical archetypes and early Christian art, examining the development of Christian religious images and symbols. Representations of the dove, the peacock, and the ichthys were very popular in both Christian and late classical art. While their meanings remained similar in both artistic periods, all three figures carried a deeper, more religious meaning in Christian art. Similarly, the artistic formulas for the portrayal of Christ and Jonah in Christian art were adopted from portrayals of important classical figures. Early Christian artists used Christ as the Good Shepherd as a very common artistic theme, often copying the depiction of kriophoros, or ram carrier, a common figure in ancient Greek cults. Portrayals of Christ as the Miracle Worker are almost identical to images of Aesculapius, a Greek god of medicine and depictions of Jonah mirror representations of Endymion, a mythical figure. These examples showcase the relationship between late classical and early Christian art. Early Christian artists adapted late classical art, replicating classical iconographical themes and figural formulas in a Christian context until they lost their association with pagan meaning and began to become iconic symbols and representations of Christianity.

**The Effects of Government Censorship of Media on the Culture and Global Awareness of the Public**

Abigail Lorentzen  
*Faculty Adviser: Professor David McLennan, Political Science; Professor Jeffrey Martinson, Political Science*

Television media have the power to influence and inspire millions of people. This research explores the censorship of television media by governments and how the type of governmental regime in a country influences the global awareness of citizens within that nation through this censorship. Global awareness was measured in this study by observing the amount and type of information that was presented by the media and determining if the information provided was sufficient enough to educate the public. To determine if media censorship does influence global awareness, a survey and case study were conducted. The survey was distributed to students at Meredith College who have studied abroad or are international students in the United States to determine how they viewed media objectivity in the nations where they resided. The students were asked to rate how objectively they felt domestic and international media covered domestic and international news on a scale of 1-5. Violations of media objectivity such as misleading terminology, lack of context, and opinions being presented instead of facts can strongly affect global awareness by hindering public access to the truth. There was not a noticeable difference in the answers of study abroad participants and international students. Additionally, the case study was conducted examining media censorship in four countries: Switzerland, Armenia, North Korea, and the United States of America and allowed for a primary observation of how the media presented information to the public and if that information allowed for a globally aware public. The results of an in-depth analysis of the survey and case study supported the notion that the type of governmental regime in a nation has an influence on media censorship and influences the global awareness of citizens of the state.

**Zelda Fitzgerald's Save Me the Waltz: Through the Eyes of a Woman**

Brooke Mayo  
*Faculty Adviser: Professor Robin Colby, English*

Overshadowed by her famous husband, F. Scott, Fitzgerald, Zelda Fitzgerald was not taken seriously as a writer in her own lifetime. Her first and only novel, Save Me the Waltz, published...
in 1932, was attacked by the early reviewers as a deeply flawed work, and still today critics are prone to emphasize the weaknesses of the novel, citing the awkward style and the problems with plot construction. However, this novel is worth reading for several reasons, including the fact that it sheds light on the Jazz Age and the Fitzgeralds themselves. Largely autobiographical, this novel follows the life of Alabama Beggs Knight, who represents Zelda herself. Through Alabama, Zelda explores her family background, her experiences with travel, and her quest for self-expression through ballet. I will conduct a close reading of this novel, drawing on biographical information as well as feminist criticism. I intend to argue that Save Me the Waltz should not be ignored or undervalued, as it serves to demonstrate some of the complexities of a literary marriage and to provide insight into a woman's point of view during an interesting time period: the Roaring Twenties.

Autoinhibitory Regulation in Guanine Nucleotide Exchange Factor H1 (GEF-H1)

Destiny McDuffie
Faculty Adviser: Professor Karthik Aghoram, Biology

Guanine nucleotide exchange factor H1 (GEF-H1) is a key activator of the GTPase RhoA, stimulating the exchange of GDP for GTP. Rho A is an important regulator in pathways controlling cell behavior such as actin and microtubule cytoskeleton dynamics, cell polarity, gene expression, and membrane transport. GEF-H1 is critical to modulating cell movement through RhoA activation. In certain cancer types an overexpression of GEF-H1 has been identified, and leads to increased cancer cell invasion and metastasis. Dbl GEFs are typically autoinhibited in their native state, but such a mechanism has not been identified for GEF-H1. Due to the high sequence homology of a region N-terminal to the activating DH domain of GEF-H1 to the N-terminal autoinhibitory region of another GEF, Vav1, we propose that this region of GEF-H1 is also autoinhibitory. We hypothesize that this autoinhibitory region binds to the DH domain blocking the GTPase binding site. To determine the role of the proposed inhibitory region, GEF-H1 variants that contained different autoinhibitory fragments were constructed, expressed recombinantly, purified from E. coli cells, and then tested for their ability to activate RhoA through a fluorescence assay. One variant tested, DH-PH 201-601, which lacks the autoinhibitory region, showed high activation of RhoA. The activity of the 201-601 variant in the presence of peptides that correspond to the proposed autoinhibitory region were tested and successful inhibition of RhoA was seen showing the first evidence that the proposed region of GEF-H1 is autoinhibitory. With more research the mechanisms that control GEF-H1’s autoinhibition can be determined leading to the design of chemical inhibitors for therapeutic purposes and novel molecular tools, such as biosensors. Regulation of GEF-H1 activation could lead to advancements in the prevention or delay of the invasion of malignant cancer cells into other tissues.

Views on Sexual Orientation and Gender Identity at Meredith College

Roxanne McPherson
Faculty Adviser: Professor Joy Learman, Social Work

Changing the world starts one person at time, one problem at a time. Thus, the present researcher utilized her honors thesis as an opportunity to create a positive change on Meredith College’s campus by developing and implementing a Gender Identity and Sexual Orientation Awareness Week. In order to inform her project, the investigator conducted a survey to examine Meredith College students’ knowledge and experiences regarding these issues. The information gained from the 104 survey respondents was then used to craft the awareness week to educate Meredith College students about members of the LGBTQ+ community. During the awareness week, several events were presented, including a Mythbusters event to dispel stereotypes affecting the community and a “Fact of the Day” campaign. The researcher also created a video collage: “Meredith College Reacts to Marriage Equality”. Based on the results of the survey, as well as lessons learned from the project, recommendations for Meredith College were developed. Two key recommendations included the provision of diversity training for staff, faculty, and student leaders, as well as the adoption of a policy regarding the admission of male-to-female trans* students. It is hoped these recommendations will create an inclusive atmosphere that is welcoming to all students.

The Function of Nature in Selected Fairy Tales

Mollie Melton
Faculty Adviser: Professor Eloise Grathwohl, English; Professor Robin Colby, English

“Fairy Tale” brings to mind images of enchanted forests and magical creatures. Scholars that study fairy tale theory take C.S. Lewis’ words to heart that “a book worth reading only in childhood is not worth reading even then.” Within ecocriticism, how do fairy tales compare in their treatment of the natural world? I have selected four fairy tales from authors ranging from Victorian to present day to use to answer this question: John Ruskin’s “The King of the Golden River,” J.R.R. Tolkien’s “Leaf by Niggle,” C.S. Lewis’ The Lion, the Witch, and the Wardrobe, and A.S. Byatt’s “The Story of the Eldest Princess.” This project seeks to draw together these four stories to examine how elements of the fairy tale genre create a framework for the authors’ use of nature and the characters’ relation to nature within the story. The literary tradition of the pastoral can be seen in Ruskin and Lewis’ stories through the journey into and then return from a more pristine natural setting, while this pattern is consciously broken by Byatt. A Christian critical perspective is important in Lewis’ The Lion, the Witch, and the Wardrobe and in Tolkien’s “Leaf by Niggle” in the treatment of life and creative ability. Animal theory will be
central to understanding the role of non-human creatures in the four works, while wilderness theory and the literary device of the pathetic fallacy illuminate the treatment of the landscape by the four authors as reflective of the moral status of the world and what the ideal state of the land should be. The project will focus on the critical perspectives that most help to illuminate the tales.

Greening Religion
Mollie Melton, Brianna Crumbley
Faculty Adviser: Professor Angela Marritt, History; Professor Robin Colby, English

As the second year of a six-year study this project looks at how faith communities in Raleigh are institutionalizing environmentally-friendly practices. Beginning with religious and preservation-based reading to increase understanding of challenges faced in implementing environmental practices, and through interviews with representatives from six faith communities and two historical properties, we assessed environmental teachings and practices as well as the challenges faced by these communities. The six faith communities were selected based on membership in NC Interfaith Power and Light, stated interest in environmental issues or sustainability, and proximity to Meredith. The site interviews consisted of a series of 11 questions that related to teachings, campus facilities, and practices that were sustainable and allowed us to see sustainable projects or improvements the faith communities were pursuing. We performed site visits to two homes on the National Register of Historic Places in Raleigh in order to understand additional challenges faced by historic religious buildings in becoming more sustainable. We determined that while many faith communities shared motivation in doctrinal teachings, how they implemented their practices varied widely and was influenced by the unique individual and community elements.

Life on Mars? The Challenges of Colonizing the Red Planet
Kaity Melvin
Faculty Adviser: Professor Bill Schmidt, Physics

The idea of actually living on Mars is pressing more and more to the forefront of our societal consciousness, as our natural resources are continuing to be depleted faster than they can be replaced. As with any space expedition, travelling to and eventually colonizing Mars comes with many challenges, ranging from complete redesign of current space craft to accommodate additional crew, fuel, and/or supplies, to rehabilitating astronauts after prolonged space missions. The goal of this project is to review current studies and identify challenges with a hypothetical manned Mars mission, and propose mechanisms to solve said challenges. The primary focus will be to examine specific biological challenges that could arise on a manned mission to Mars, and determine possible ways to address and solve those difficulties.

Small Business, Big Storefront: the Use of Social Media in Reaching Customers
Nancy Merritt
Faculty Adviser: Professor Teresa Holder, Communication; Professor Doug Spero, Communication

Small business owners are discovering that an engaging, online presence is as important as an attractive storefront when it comes to reaching customers. A better understanding of customer activity online would allow these businesses to use social media channels more effectively. The Uses and Gratifications Theory has been used in various studies to show that individuals use specific platforms in different ways and that, when used successfully, these platforms can create a more involved, committed, and personal image for an organization. This study seeks to guide small businesses in using social media by discovering why customers are using Facebook, Twitter, Instagram, and other popular social media sites. Customers of a small, Raleigh business will be asked how much time they spend using popular sites, what content they are looking for when they login, and how a social media presence impacts their perception of businesses. Findings from this study can be applied to guide small businesses in reaching customers online by identifying successful sites and site content that customers are looking for.

Marcel Duchamp and His Artistic Identity
Leah Mooney
Faculty Adviser: Professor Beth Mulvaney, Art History

Using the term “retinal art” to describe contemporary artistic movements such as impressionism or fauvism, Marcel Duchamp aimed to move beyond the simple act of painting a pretty picture. He instead chose to explore the very nature of art and its quality of being distinctly human. In order to understand Duchamp’s innovative ideas, this presentation will explore a number of his works with a contextual methodology. Essentially, how did the First World War affect the art that he created? In turn, how did his art affect Western culture? Asserting that art was simply the human element of objects, he explores concepts that are associated with identity in Western society such as gender, alter-egos, and consumerism. This revolutionized the purpose of art in the twentieth century. By applying unconventional techniques to his creative processes, Duchamp’s pieces gave way to a number of insightful observations about the human condition that always seemed to come back to one idea: self-identity.
The Antimicrobial Properties of Metals
Linda Nguyen
Faculty Adviser: Professor Sasha Ormond, Chemistry
The term ‘antimicrobial’ is used to describe something that possesses an ability to destroy microbes and inhibit their growth, effectively killing the microorganisms. For centuries, metals have been known to have antibacterial effects. The earliest evidence of this phenomenon can be traced back to an old Egyptian medical record, the Edwin Smith Papyrus, where Egyptians used copper to sterilize their water and help treat chest wounds. There is still wide speculation regarding the process behind this treatment and why metals are effective in destroying the microbes. Copper and silver are two of the metals whose antimicrobial effects are currently under investigation by the scientific community; they will be outlined in this report, along with other antimicrobial metals. This research attempts to grasp at the plausible mechanisms behind them and what makes them antimicrobial through a literature review. The chemistry and the processes that allow metals to be antimicrobials will be investigated and reported, as well as the different materials and situations in which the antimicrobial metals are used.

What Strategies Have Pre-Service Teaching Fellows Learned to Meet the Need of Bilingual Learners?
Liesel Nix
Faculty Adviser: Professor Courtney George, Education
As the United States becomes more linguistically diverse, the demand of teachers to be able to teach bilingual and non-English speaking students becomes more essential. In North Carolina alone, hundreds of language groups are represented. In return, there are many students in the school system who need additional interventions and support. The literature suggests that there are many effective strategies to aid in the success of English language learners (ELLS). In this study, preservice teachers from the Teaching Fellows program were surveyed on their knowledge of the best teaching practices for ELLs. Participants shared strategies they had learned, had seen put into practice in classrooms, and had used themselves while working with students. Findings showed that there were many similarities between the strategies presented through the literature and the survey responses. Despite the commonalities, there were still some aspects of ESL education that were overlooked through the survey results. Finally, the study has implications for future research, as well as for preservice training for teachers.

The Disappearance of Barrier Islands along the West African Coast
Matilda Odera
Faculty Adviser: Professor Matthew Stutz, Geoscience
The realities of coastal erosion on the West African coasts can only be expressed by the natives who have lived or live almost at the edge of the coast. The residents of the coastal regions of West Africa have coastal erosion as the greatest threat facing their homes, the sources of their livelihoods, recreation lands and their lives. Most factors that have led to coastal erosion along the beaches are engineered by man: beach sand mining, deforestation of mangrove forests, coastal engineering. Sierra Leone is one of the countries deeply affected by beach sand mining that has led to most of the beach sand on the barrier island coasts on it. These disruptions to beach processes encourage coastal erosion. Some factors are, however, beyond man’s control: sea level rise, storms, strength and direction of ocean currents and waves. The human and natural factors have both played major roles in the erosion of coastal barrier islands. This project seeks to address the issue of coastal erosion with focus on the barrier islands, the erosion rates that have taken place on the barrier islands in the course of 9 years, how many of them have experienced coastal engineering, and how development in the area has been impacted by all the activities along the coast. Through the use of the Google Earth application, these places are catalogued and studied with respect to the areas mentioned above. Barrier islands are effective to study in relation to coastal change since they are generally low lying and therefore vulnerable to impacts such as tropical cyclones, sea waves and tides.

GIS Mapping of Distribution of Kenyan Water Resources
Matilda Odera
Faculty Adviser: Professor Matthew Stutz, Geoscience
For its size, the sub-Saharan country of Kenya has very diverse climatic conditions. The country’s economy relies heavily on agricultural products. The climate ranges from wet and dry regions to very arid areas. The wet and dry regions support growth of plants and are therefore great farming regions. The arid and semi-arid regions support very little vegetation; however the grass found in the semi-arid areas support the rearing of livestock. Most rehabilitation efforts in Kenya, like irrigation, are geared towards making arid and semi-arid areas of the country productive for crop farming and animal rearing. Organizations such as the African Wildlife Foundation (which works in the Laikipia County in the Central Rift Valley region) and the Rehabilitation of Arid Environments

Rift Valley region) and the Rehabilitation of Arid Environments Foundation (which works in the Laikipia County in the Central Rift Valley region) and the Rehabilitation of Arid Environments
Shakespeare's Richard III: Man vs. Monster
Toni O’Steen
Faculty Adviser: Professor Garry Walton, English; Professor Kelly Roberts, English

Shakespeare’s history play Richard III has both thrilled and appalled audiences for centuries, depicting the story of the decline of a bloodthirsty and ugly monster. But how much of the title character is based upon fact and how much is based upon slander? This essay focuses on how Richard III is portrayed in works prior to Shakespeare’s play, such as Thomas More’s The History of King Richard the Third, Edward Hall’s The Union of the Two Noble...Families of Lancastre and Yorke and Raphael Holinshed’s account from The First and Second Volumes of the Chronicles of England, Scotland, and Ireland — as well as his portrayal in Shakespeare’s play (Richard III) and in modern works of historical fiction, such as Susan Higginbotham’s The Stolen Crown, Philippa Gregory’s The Cousins’ War Series, and Anne O’Brien’s The Virgin Widow. After consulting the works of modern historians, this essay endeavors to identify the most accurate and truthful portrayal among the seven authors of Richard III’s physical appearance, his relationships with three important people in his life, and his involvement with the mystery surrounding his nephews, the famous Princes in The Tower. Although Shakespeare did not invent the negative portrayal of the last warrior king, he certainly did not help to lessen it; his work is an evident influence on the works following his tragic play.
College student. I speculated that a consumer’s specific preference for fresh or local produce indicates a commitment to obtaining the best quality food and making informed decisions related to the food system. After graphically analyzing the data using Microsoft excel, I found that although shoppers generally felt well informed, a higher percentage of shoppers than students had misconceptions about organic pesticide use. The data did not indicate that those who actively seek fresh, local produce have a better understanding of agricultural practices.

**Functional Characterization of the Drought Responsive Gene abg1 by Expression in Yeast**
Rachel Powell  
**Faculty Adviser: Professor Karthik Aghoram, Biology**

As the climate continues to change, water availability fluctuates between record-breaking rainfall and periods of severe drought. Fifty-five percent of crop losses are a result of drought, leading to widespread loss of profits and decreased food availability. Abscisic acid (ABA) production and late embryogenesis abundant (LEA) genes have both been shown to help protect the plant during times of drought by signaling for guard cells to close the stomata in efforts to retain moisture. The genetic sequence of the gene abg1 is very similar to LEA drought tolerance genes and is thought to help with the production of ABA. For this study, abg1 was examined for its potential to confer drought tolerance in plants by monitoring gene expression during osmotic stress tests. Testing for abg1 expression under osmotic stress revealed inconclusive results that can neither be used to confirm nor deny abg1 as a drought tolerance gene. Similarly, protein expressions could not confirm the presence of abg1 in transformed yeast cells. This does not mean abg1 is not present in transformed yeast cells, but that the expression is not strong enough to be confirmed through testing. Additional research is needed to continue to examine the expression of abg1 followed by repeat osmotic stress tests.

**A Cultural Comparison Between Large and Small Towns in Italy - A Pecha Kucha**
Brianna J. Ramos  
**Faculty Adviser: Dr. Brooke Shurer, International Programs; Professor Cynthia Edwards, Psychology**

Cultural differences were examined between large towns in Italy and small towns in Italy. Tourist tend to gravitate towards the larger towns based on perception, popularity, and places to see in those areas. The smaller towns are not viewed as much which means less tourism, and in turn are more authentic in culture than the larger towns in Italy. Some people prefer to go to the popular site rather than the less known areas due to more knowledge leaning towards the popular sites versus the smaller sites. The awareness of the authenticity of smaller towns over larger towns in Italy is essential to getting the most out of the study abroad experience.

**Shifting Schemas: Perspectives of Pre-Service Teachers in a Learner-Centered Course**
Rachel Redwine  
**Faculty Adviser: Professor Tisha Duncan, Education; Professor Cynthia Edwards, Psychology**

As a profession, we must have a shift in both perspective and practice to transform teaching at all levels. Are pre-service education classrooms preparing students to be flexible, adapt to new situations, and rely on their own expertise and understanding while seeking support when needed? Lieberman and Miller (2004) identify the following shifts for transforming the social realities of teaching: from individualism to professional community; from teaching at the center to learning at the center; from technical and managed work to inquiry and leadership (p. 11). The author seeks to critically examine the perspectives of pre-service teachers participating in a social studies methods course using constructivist practices.

**Firm Valuation of Safaricom Limited.**
Mercy Rialem  
**Faculty Adviser: Professor Bing Yu, Finance**

Safaricom LTD. is a leading mobile service provider in Kenya founded in 1997. It has the widest and strongest coverage and the home of the famous mobile service M-Pesa. Safaricom is a company I am interested in finding more information about regarding its business and financial standing. This research study seeks to understand the business Safaricom is in, and to evaluate its financial health by carrying out an intensive research and analysis of its financial statements and key statistics. Analysis of its major competitor, Airtel Kenya Limited, will also be conducted so as to carry out a peer to peer comparison with Safaricom. With the guidance of the instructor in-charge, most of the information and research materials will be gathered from: the Nairobi Securities Exchange, websites of both the companies, and annual reports of the companies. Excel tool will be used extensively to carry out the quantitative analysis aspect of this project. The results of this study will determine if investment in Safaricom LTD. stocks has a very good chance of yielding top risk-adjusted returns.

**Immunology of the Skin: Variations in Leukocyte Composition**
Alexandra Ridall, Hollis Brown, Alyssa Long, Elena Mulligan  
**Faculty Adviser: Professor John Mecham, Biology; Professor Francie Cuffney, Biology**

Skin, our largest organ, consists of a unique population of immune cells that interact with skin cells to create our primary barrier to infection. The function of the majority of these cells, including various leukocytes (white blood cells = WBCs) is known. Not previously described is how the population density and diversity of WBCs varies as a function of where the WBCs...
are located in relation to the surface of the skin. The purpose of our research was to examine four parameters of skin capillary WBCs collected close to the skin surface i.e. within first 40 μL of blood, as compared to successive 40 μL of blood. The four parameters were: packed cell volumes (PCV) to include volumes of red blood cells, WBCs and plasma; total WBC count; WBC cell types; and the density of CD4 lymphocytes. Approximately 40 μL of blood was collected at the surface via fingerpick immediately followed by a subsequent second sample of the same volume. Measurements of the four parameters for each sample were determined at time 0, and PCVs were determined again at +24 hr. incubation at 22 0C. A minimum of five samples will be collected for each parameter. Preliminary results suggest that there are variations in blood cell composition between the initial sample and subsequent samples. The research is ongoing and results will be presented.

Preventing Hunger: Communication Fieldwork with Campus Kitchens
Kristen Rivera, Caleigh Thomas, Josette Roten, Elizabeth Huss
Faculty Adviser: Professor Teresa Holder, Communication

In the United States, it’s estimated that 40% of food is wasted while one out of six Americans is food insecure. As part of a national, student-led effort to address hunger and poverty while reducing food waste, our Meredith chapter of Campus Kitchens (CK) sought to understand the impact of these issues in the local community and encourage the Meredith community to combat food insecurity. A team of communication students partnered with CK in an applied research project to identify problems and solutions with a goal of reaching key audiences, including prospective Meredith volunteers, participating students in the Kentwood CK project and their families, and the surrounding neighborhood. Our groups evaluated the existing Meredith Campus Kitchens recruiting materials including PowerPoint, oral presentation, and social media presence. Student teams developed proposals to address the client’s goals of educating young people about nutrition, engaging parents in the program, and strengthening a sense of community in the neighborhood. Project deliverables included special event proposals, educational materials, a social media plan, and the production of promotional videos. The presentation panel will include discussion of the client process and presentation of deliverables.

The Effectiveness of Metaphor in Narratives of Buffy the Vampire Slayer
Kristen Rivera
Faculty Adviser: Professor Teresa Holder, Communication

The Principal Investigator (PI) explored the effectiveness of metaphors in Buffy the Vampire Slayer, created by Joss Whedon, by conducting a focus group of undergraduate college students. The group viewed an episode titled “Go Fish,” in which Buffy and her friends investigate a monster that seems to be threatening athletes on their high school swim team. The episode contains instances of bullying, attempted sexual assault, and special treatment of athletes. Following the screening, the PI guided a discussion about the expression of traditional masculinity, symbolism of sea creatures in the episode, and the overall themes understood from the episode. Students were asked to identify specific behavior during interactions between peer groups in the episode, and then were asked to connect these observations with current events in the news to demonstrate an understanding of the themes. Findings from the narrative data showed the metaphors in Buffy the Vampire Slayer were not difficult to understand given the show’s blend of seriousness and humor. The participants in the study felt the social themes of athlete privilege, forced masculinity, and female heroes were apparent in the storyline, and they were able to connect these themes to news stories that have surfaced over the last four years. Using the data from this study on what made the metaphoric communication successful, a short narrative film will be produced and presented exemplifying the social themes identified by the group.

Teachers’ Perceptions of the Effectiveness of Co-Teaching Approaches in the Classroom
Kami Robinson
Faculty Adviser: Professor Heather Bower, Education

Co-Teaching is a method that can be used in the classroom in which two or more educators collaborate in an effort to best help their students learn. Previous research has shown mixed results about whether or not co-teaching is effective for students. The present research aimed to examine the co-teaching from the perspectives of educators. Teachers of various disciples—special education, regular education, ESL, and AIG — from a local school system were interviewed to determine their opinions on the effectiveness of the use of co-teaching methods in the classroom. Analysis of the results revealed four common themes: definition of co-teaching, benefits of co-teaching, challenges of co-teaching, and recommendations for future co-teachers. Overall, the participants in the study considered co-teaching to be an effective method for educating students.

Living Without Papers: The Experiences of Two Generations of Undocumented Immigrants
Maria Rodriguez
Faculty Adviser: Professor Lori Brown, Sociology

Since 1980, the United States has increasingly criminalized the status of being undocumented so that what was once a simple violation of rules, is now described as illegal. Judith
Strumpf (2006) has termed this growing punitive approach to the undocumented as “crimmigration” and refers to the blurring of criminal and immigration law in this country. With the use of fences, drones and other technology along the border with Mexico, immigrants have experienced major changes in the risks of border crossing experiences and what it means to live in the US without documentation. For this project, I conducted interviews with two undocumented male immigrants from Mexico, one who crossed the Mexico-US border in the late 1980s while the other made the trip quite recently in 2009. Both took similar routes yet faced unique situations and had very different experiences living in the US after they arrived. In particular, the man who crossed recently faced much greater danger at the border than the man who arrived in 1980. In addition, as compared to the man who has been here longer, the recent arrival has found more difficulties in everyday life in the US in living without documentation. This includes things like being able to open a bank account, get a driver’s license or the fear of just being asked for an ID. Probably the biggest difference in the two men, is the male who came in the 1980’s is now a legal resident while the more recent immigrant has no foreseeable path to make this happen. This research gives a voice to those affected by major government shifts in policies on immigration and law enforcement on the border.

Keeping the Performing Arts Alive: A Study of the Use of Media Techniques in the Arts Industry
Josette Roten
Faculty Adviser: Professor Teresa Holder, Communication

Why has audience attendance at performing arts events been steadily decreasing over the past twenty years in America? The purpose of this qualitative study was to explore how media techniques can increase awareness, appreciation, and participation in the performing arts. Findings are based on unstructured interviews with opinion leaders in the arts industry. Nationally recognized representatives with more than 20 years of experience in the performing arts were identified using a snowball technique and interviewed. (For the purpose of this study, performing arts were defined as dance, music, and filmmaking.) Anticipated findings from this study will provide insight into how audience members can be reached and attendance at performing arts events can be increased.

Environmental Surveillance of Zoonotic Pathogens
Sona Salahuddin, Tatum LittleJohn, Andie Woodson
Faculty Adviser: Professor Carolina Perez-Heydrich, Biology

The objective of this research is to assess the prevalence of different zoonotic pathogens in domesticated dogs and the environment surrounding Raleigh, NC. Zoonotic pathogens include parasites of animals that can be transmitted to humans. The specific parasites of interest to this project are the roundworms, Baylisascaris procyonis, Toxocara canis and T. cati. Humans are not natural parts of the life cycle of these roundworms, but if infective eggs are accidentally ingested via fecal contamination of the environment, the larval worms can cause significant damage to their human host. Research began by reviewing past literature on the topic in spring and fall semesters of 2015. After assessing the most effective method of examining soil and fecal samples for parasite eggs, it was decided that the Zinc Sulfate fecal flotation method would be most appropriate, and during fall of 2015, soil and fecal samples were collected from 3 public parks in Raleigh. Samples were processed and examined under the microscope for eggs; one sample yielded a suspected Baylisascaris procyonis egg. This semester more samples will be collected and processed from additional locations. Prevalence data of these pathogens will be analyzed at a census tract level, in relation to different sociodemographic factors in the Raleigh area such as race, education level, and income class. The importance of this research is to gain a better understanding of the prevalence of these pathogens, and identify the areas and people that are most at risk.

Introducing Your New Favorite Author: Miguel de Cervantes
Karla Salgado, Daniella Rivera, Maria Rodriguez, Molly Smerko, Melissa Smith, Sarah Skinner, Rosmairy Concepcion Ortega
Faculty Adviser: Professor Jonathan Wade, Foreign Language and Literatures

On April 23, 1616, the world said goodbye to two of the greatest writers it would ever know. While William Shakespeare is a household name across the globe, his Spanish counterpart remains relatively unknown; this despite the fact that he is as important to the Spanish language and narrative fiction as Shakespeare is to the English language and drama. In commemoration of the 400th anniversary of the death of Miguel de Cervantes, this panel will explore the life and work of Spain’s most celebrated author. For virtually all of Cervantes’s works not called Don Quixote there is a lack of readily accessible, quality information online. As a result, students will spend the semester researching and writing about one of Cervantes’s lesser-known works. In this session they will discuss their findings and reflect on the process by which they prepared this information for mass online consumption.

Evaluating Societal Response of Anti-Semitism in the Movies
Tina Salmon
Faculty Adviser: Professor Margarita Suarez, Religious and Ethical Studies

This paper examines the portrayal of anti-Semitism in contrasting settings between the films The Gospel According
to St. Matthew by Pier Pasolini and The Passion of the Christ by Mel Gibson, along with the societal impact of anti-Semitism as a result of these films. Throughout history, prejudice and hatred of, or discrimination against the Jewish community as a religious and cultural group has manifested in various ways. It is my intention to demonstrate that film has been utilized negatively to promote and encourage anti-Semitism through a particular concept of religiosity. Historically, Jesus was born as a Jew yet film is designed to separate Jesus from the Jewish community by demonstrating a difference between the Jewish Jesus and the Christian Jesus. For example, both films quote Matthew 27:25 “Let his blood be on us, and on our children” in an effort to demonstrate that Jesus as a Christian was killed by the Jews. This biblical phrase ultimately damns all Jews for eternity with the responsibility of Jesus death, and allows Christians to maintain a level of superiority while expressing hatred and discrimination against Jews without discomfort or accountability for such actions. I intend to demonstrate with examples that film is designed to promote an emotional response from the viewer through the powerful nature, life, and love of Jesus. Anti-Semitism need not occur if the film is promoted in a positive view. With proper understanding and education, it is possible to love Jesus and respect Jews as a different/religious/cultural group, without any loss of faith.

**Effects of Caffeine Supplementation on High Intensity Interval Training versus Low Intensity Continuous Endurance Training**

Courtney Saunders  
**Faculty Adviser: Professor Edward Robinson, Exercise and Sport Sciences; Professor Bill Landis, Food and Nutrition**

Previous research suggests that caffeine supplementation has a positive effect on performance variables. Caffeine supplementation enhances power production during high intensity exercise, which is controlled by the CNS and neuromuscular systems. Studies have also demonstrated a delay in fatigue during continuous endurance training after caffeine ingestion. Through a crossover design study, 40 participants between the ages of 18-35 will participate in a 3 week program to determine if caffeine supplementation will aid in the performance of a novel exercise routine. After familiarization and testing for baseline metabolic thresholds, individuals will participate in 4 trials which test high intensity interval training (HIIT) with caffeine, HIIT with placebo, continuous endurance training (CET) with caffeine, and CET with placebo. The HIIT sessions will be based on speed attained while performing a VO2max test and a modified Bruce protocol. Training for CET will include a sustained run based on a percentage of VO2 max determined during the initial testing. The aid of a stop watch, a vacuumed miniCPX  

vista metabolic cart, rating of perceived exertion (RPE), and a treadmill will be used to detect the effects of caffeine supplementation during the trials. Metabolic thresholds will be analyzed from individual workouts to examine the effects of caffeine supplementation. RPE will be recorded at set intervals during exercise to determine if individuals experience a higher exertion level than in the novel exercise routine than normally anticipated. Perceived exertion is also expected to be reported to be lower during the individual’s regular training mode; further, I hypothesize that caffeine supplementation will result in a lower RPE than placebo.

**How Has Coastal Erosion Affected the Arctic Shoreline? What are Possible Implications of this Change?**

Adeelah Sayed  
**Faculty Adviser: Professor Matthew Stutz, Geoscience; Professor Karthik Aghoram, Biology**

Sea ice, formed by the freezing of ocean water in cold climates, provides natural buffer zones for coastlines by absorbing the impact of ocean waves and protecting the continental shelf from erosion. Due to climate change, global temperatures are increasing and contributing to less sea ice and more open water. This research focuses on measuring Arctic sea ice extent and concentration using databases provided by the National Snow and Ice Data Center (NSIDC) in order to plot the movement of sea ice from 1978-2014. Using historical imagery time lapses of yearly fluctuations and a ruler program in Google Earth, the perpendicular distance of eight cities situated around the Arctic from the edge of the Arctic sea ice pack was measured annually. An overall trend of a receding distance from sea ice was seen graphically after compiling the data, indicating that most of these communities are becoming more prone to more disastrous storms and water erosion. The most significant recession of over 600 km over the 36 year period occurred in Barrow, Alaska. Further data was used to record the months of freezing and thawing at the sites over the same time frame and found that most of these communities have been experiencing shorter time periods of solid ice. One noteworthy result was in Wrangel Island, Russia as in recent years the period of open water has increased by 1-2 months. These findings of declining levels of sea ice and concentrations illustrate the growing concern in preserving this ecosystem service.

**Retrospective Feminism: Imperator Furiosa and the (Im)Possibility of Feminism in Beowulf**

Sidney Shank  
**Faculty Adviser: Professor Steven Benko, Religious and Ethical Studies**

The surprising inclusion of and response to feminism in Mad Max: Fury Road has made people reconsider the role of women
in the action-adventure genre. This presentation will analyze the critical and popular celebration of Imperator Furiosa as a strong feminist character as a way of asking the larger questions of what determines whether a character is perceived as feminist and whether it is possible to mine other works for the presence of similarly feminist characters. As an extreme contrast to Mad Max, this research searches for feminist women in the oral epic Beowulf as well as Robert Zemeckis’s 2007 film of the same name. The feminist enthusiasm for Furiosa has created the appropriate atmosphere in which to return to Beowulf’s Queen Wealththeow, Queen Modthryth, and Grendel’s Mother. Like Furiosa, these women exist in patriarchal, warrior-clan societies where women’s agency is compromised by misogyny. Additionally, their respective genres—action films and heroic epic—are not known for depicting strong, independent women. The purpose of this presentation is to ask what makes a text or a character feminist, to address the problem of anachronism in finding feminism in texts from patriarchal societies, to expand the scholarly research done on women in the action-adventure genre, particularly in relation to agency and social power, and to examine potential reasons as to why these traits have been overlooked in previous studies.

Using a Tool of the Trade: Scanning Electron Microscopy (SEM)
Keri Shelton, Samantha May, Elissa Teran, Elizabeth Bruce, Zena Thompson
Faculty Adviser: Professor Maria Pickering, Biology

Scanning Electron Microscopy (SEM) has been used throughout many fields of biology to examine and discover structures unseen by the naked eye. The ability to look at surface features at high magnification allows us to gain a better understanding of the physical and morphological features of organisms. In our SEM course, each student will be using SEM as a tool to highlight the surface morphology of a wide variety of biological specimens. Student projects provide examples of how SEM can be used as a tool to answer biological questions. Specimens of entocytherids, a family of ostracods that are ectosymbionts of crayfishes, are very small. Looking at them with SEM allows us to get a better view of the copulatory organs, which are important for species identification. Fruit flies are important model organisms in genetic studies. Phenylbutyrate, a chemical chaperone involved in the folding and unfolding of proteins, was administered to Drosophila, and SEM will allow us to compare morphology of drug-treated flies to control flies. Looking at the larvae of another species of fly, the drain fly from the family Psychodidae, allows us to compare morphology during different stages of development. In addition, SEM will allow us to view the differences in cuticle layers between terrestrial and marine classes of tardigrades, each adapted for their environment. The morphology and structure of fish scales taken from various body sections of the bluegill, Lepomis macrochirus, will allow for a better comprehension of the importance of the physical properties of scales on different regions of the fish’s body. These projects exemplify the wide variety of uses for Scanning Electron Microscopy.

A Creative Project Using Natural Dyes
Avonee Simmons, DeNancy Brown
Faculty Adviser: Professor Eunyoung Yang, Fashion Merchandising and Design

Designers constantly stimulate their creativity by searching for new inspiration sources. Finding the right textiles and materials for a design is also very critical in the process of creating garments. Therefore, the fashion industry is expanding the variety of new and unique materials using fast pace, up-to-date technology. However, a noticeable portion of fashion industry is reintroducing natural dyeing techniques focusing on environmental sustainability. This research project is focused on exploring the sustainable practice of natural dyes while incorporating traditional Korean costume in a creative project.

Seven natural dye substances were chosen and formulas to create dye solution were reviewed through literature. Cu, Fe, and Alum mordants were used for each dye on cotton and raw silk. As a result, the color saturation of intended hues varied with the types of mordant used with each dye substance. The first designer chose Gromwell, Madder, Lac, and Gardenia dyes. The second designer used Gromwell, Gardenia, and Alkanet. Both designers found that fabrics that were dyed with the Alum mordant had a better dye quality along with the unmordanted fabrics. Iron and Copper Sulfate tended to make darker colors and splotchy results on the fabrics. Raw silk was able to absorb the dyes better than the cotton. Using natural dyes is a much more sustainable practice. As a result, two garments were created with naturally dyed cottons. The garments showcase the silhouette inspired by Korean costume Hanbok, and construction techniques of traditional patchwork Jogakbo. In conclusion, the designers found that less harmful chemicals could be used in producing fabrics in the fashion industry. Natural dyes are an environmentally friendly source for dyeing fabrics. Various colors and intensity can be achieved by types of mordant used or depending on the fiber content.

Immigration and the U.S Construction Industry
Sarah Skinner
Faculty Adviser: Professor Callie DeBellis, Foreign Language and Literatures

Immigration is a highly polarized issue in the U.S today. One of the most commonly repeated phrases is that immigrants steal jobs from U.S citizens, especially lower paying jobs such
Migration after NAFTA: a closer look into agricultural communities in Mexico

Katelyn Smith
Faculty Adviser: Professor Callie DeBellis, Foreign Language and Literatures

Throughout history the United States has depended on foreign labor to help stimulate the economy and keep businesses running. In the agricultural sector of the United States especially, the majority of foreign labor comes from the United States’ southern neighbor, Mexico. Due to the mixture of appreciation and disapproval of the use of foreign labor it is important to understand the lives of migrant workers who come to work in the United States. Secondary sources were used to analyze the political and economic situation that Mexico was in during the negotiation of the North American Free Trade Agreement (NAFTA) and when the trade agreement was first put into place. Primary sources such as the Zapatista (EZLN) Declaration of War and interviews of migrant farmworkers in North Carolina published by the non-profit organization Student Action with Farmworkers were used to gain a broader understanding of the shifts in culture. Other findings include the access to Mexican government support programs and the effectiveness of these programs. Understanding how NAFTA caused migration cycles and the effects on the culture of agricultural communities in Mexico will help us to better understand the reasons why so many come to the United States in search of labor.

Nitrogen fixation genes in Tylosema

Maegan Smith
Faculty Adviser: Professor Carolina Perez-Heydrich, Biology; Professor Robert Reid, Biology

With the growing population, food production has been an upcoming topic of interest. Tylosema is a legume that is native to Africa. Most legumes have the ability to fix nitrogen, but Tylosema cannot. If Tylosema were able to fix nitrogen, it could be a very useful food source in Africa and around the world. Early nodule genes and other genes associated with nitrogen fixation have been identified in different legumes. These genes will be searched for in Tylosema to see if these genes are present in the DNA of the plant. To determine if the genes are in Tylosema, we extracted DNA using two different methods, used PCR and ran electrophoresis gels to confirm findings. Taylor, Cheyenne, and Mara 3 were the primers mainly used. Two species of Tylosema have been used, Tylosema esculentum and Tylosema fassoglensis. Tylosema esculentum has been shown to produce the best results. In previous research, these primers have given positive results in Tylosema. We are currently trying to determine a method that yields duplicate results. If replicable results are found, we will be able to sequence the bands of DNA that were amplified. This sequenced DNA would allow us to conclude that Tylosema contains the amplified region of the nitrogen fixation gene, but that the gene is turned off in the plant’s DNA.

Biographical Connections in Charles Dickens’s Tale of Two Cities

Katie Soost
Faculty Adviser: Professor Robin Colby, English

From its start, Charles Dickens’s A Tale of Two Cities was never the success for Dickens that his other works had been. The novel received harsh criticism on all fronts, in particular for its lackluster characters and unsophisticated plot. J.F. Stephen grouped the novel’s characters with characters from other Dickens works, saying they are “melodramatic, pretentious, and, above all, deadly dull.” A reviewer from The Saturday Review attacked the plot, claiming that “It would perhaps be hard to imagine a clumsier or more disjointed framework for the display of tawdry wares which form Mr. Dickens’ stock-in-trade.” Yet
Avian flu among humans. The main objective of this work was to review the various factors that can contribute to zoonotic emergence of avian influenza using a One Health framework. With this review, information about avian influenza was compiled to describe the interactions among virus, host, and environmental factors, and identify research questions that can be further developed. Limited information is available regarding mechanisms associated with zoonotic emergence from avian species to humans. Past research indicated that bats could harbor avian influenza, and thus may serve as a bridge species between the jump from avian to human hosts. To evaluate this hypothesis, preliminary field and lab work this semester is investigating whether detection of avian influenza is possible via PCR analysis of bat guano samples from the Triangle area.

The Plummer T. Hall House, Raleigh, NC - A Historic Renovation and Study of "Aging in Place"

Seely Stephenson, Kristen Mayer
Faculty Adviser: Professor Ellen Goode, Interior Design

The Plummer T. Hall house is a historic Queen Anne Style home. It was built sometime between 1880 and 1893 in the Oberlin neighborhood, which was once a freedman’s village. Preservation North Carolina currently owns the house, which is located on Oberlin Road and is straddling two lots. The city of Raleigh has plans to widen Oberlin Road, therefore the house will be moved farther off the sidewalk, and into the adjacent lot. Originally, the house was used by Reverend Plummer T. Hall of Oberlin Baptist Church, which was located across the street. It is the only remaining historic building associated with the early stages of the development of this church, which was an important social and cultural landmark in the neighborhood.

Working with Preservation North Carolina, our goal was to come up with a renovation and addition plan that would allow for a more contemporary living style without compromising the historical architectural significance. The front elevation was to remain the same, as well as the original three front rooms. Any new construction could not extend beyond the widest points of the existing home in order not to alter the appearance from the street.

After taking field measurements and drafting the original footprint, a fully accessible master suite, ADA compliant side entrance, and mudroom/laundry room were added onto the back of the house. In the 1990s, there was an addition to the original house, which was reconfigured. Formal entertainment rooms remained intact at the front, while the addition from the 90s was renovated to meet a more contemporary living style. The project features universal design elements throughout, which allows any future inhabitants to “age in place”.

These conceptual plans were presented and given to Preservation NC to show potential buyers different options. There is a link to all of the designs from this studio class on their website; however the house is still for sale.

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Intrigue and Romance: Examining the Elements of Film Noir in Laura

Katie Soost
Faculty Adviser: Professor Alisa Johnson, English

Creating a world of mystery and romance, the film Laura (1944) is both entertaining as well as an artistic masterpiece. In the film, a detective finds himself attracted to the beautiful but dead female victim of the murder case he is investigating. The film is representative of the film noir genre, which is typically characterized by dark, starkly contrasting lighting, as well as the presence of a lead man and his downfall, the femme fatale. While the heavy darkness contrasts with lighter, more upbeat genres such as the musical, film noirs are often artistic masterpieces, displaying a technical and stylistic expertise unparalleled in other genres. Laura displays this masterful artwork, creating a film that enchants audiences with its chilling and breathtaking beauty. My paper will examine the elements that make Laura such a masterful film noir.

Relying on my viewings of the film, I will pull out key aspects and scenes in the film that reveal the ways in which the film fulfills the elements of the genre. I will conclude that cinematic elements, such as lighting and camera work, help create the characteristic darkness, while the editing creates suspense, and the lead male and female fully meet up to expectations of the tragic male and the femme fatale.

Emergence of Avian Influenza: A One Health Perspective

Ashley Souza
Faculty Adviser: Professor Carolina Perez-Heydrich, Biology; Professor Karthik Aghoram, Biology

Avian flu has the ability to be a sentinel virus for pandemic flu among humans. The main objective of this work was to review the various factors that can contribute to zoonotic emergence of avian influenza using a One Health framework. With this review, information about avian influenza was compiled to describe the interactions among virus, host, and environmental factors, and identify research questions that can be further developed. Limited information is available regarding mechanisms associated with zoonotic emergence from avian species to humans. Past research indicated that bats could harbor avian influenza, and thus may serve as a bridge species between the jump from avian to human hosts. To evaluate this hypothesis, preliminary field and lab work this semester is investigating whether detection of avian influenza is possible via PCR analysis of bat guano samples from the Triangle area.

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Despite the harsh reviews, A Tale of Two Cities is a work that should not be ignored. In it, Dickens masterfully uses the English language to weave plot and character against the backdrop of the French Revolution. My analysis will focus on the characters of the noble Charles Darnay and the reckless Sidney Carton, who together show interesting connections to the author himself. Biographer Michael Slater notes in his Charles Dickens that, during the time of writing, Dickens was leading several separate lives, reflected in his novel in that Carton is a sort of shadow or shady double for Darnay. Additionally, biographer Peter Ackroyd found that Dickens had a distaste for lower class positions, and this distaste is reflected in Carton and Darnay, among others, who are upper class. In order to establish a clear understanding of Dickens and his connections to Darnay and Carton, I will draw on biography as well as psychoanalytic criticism. In addition, I will do my own close reading of the text. As a result of my research and reading, I will argue that, through the two characters, Dickens wrestles with aspects of himself.

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The paper focuses on black dyes, cochineal, and indigo. Modern, artificial pigments are known as natural dyes. In my presentation I attempt to show the transition from naturally sourced dyes to minerals are needed. A meeting is first conducted with the Small Business Technology and Development Center (SBTDC) to establish the student’s interest in the industry and area of expertise. The student then meets with the company representative to conduct the HR Audit and determine the important issues that need to be resolved during the semester. Action items are developed to address problems and a final presentation will be made with a deliverable project to the company. The company’s business objectives are highlighted throughout the process.

HR Audit, Part 2

Group 2 (see schedule for list of names)
Faculty Adviser: Professor Kristy Dixon, Business

The Human Resource Audit is a tool that reviews a highlight of the organization’s regulatory and policy compliance. An in-depth analysis is made to determine the strengths and weaknesses of the organization and make decisions on where improvements are needed. A meeting is first conducted with the Small Business Technology and Development Center (SBTDC) to establish the student’s interest in the industry and area of expertise. The student then meets with the company representative to conduct the HR Audit and determine the important issues that need to be resolved during the semester. Action items are developed to address problems and a final presentation will be made with a deliverable project to the company. The company’s business objectives are highlighted throughout the process.

A Brief History of Natural Dyes

Jessie Taylor
Faculty Adviser: Professor Beth Mulvaney, Art History

Color – as an abstract and physical phenomenon – inspires artists trying to capture the emotional and physical effects that color has on human life. Today it is easy to take modern art supplies for granted. In an art shop a plethora of bright paint and pigments are available premixed and ready to use. However, this easy access to color was not always the case. Colorants originally derived from organic materials: plants, invertebrates, or minerals are known as natural dyes. In my presentation I attempt to show the transition from naturally sourced dyes to modern, artificial pigments.

The paper focuses on black dyes, cochineal, and indigo. These dyes are steeped in a rich history of culture and tradition. Black, red, and blue each have unique stories spanning thousands of miles and intricate trade routes; immersed in secrecy and deceit; and practiced using highly developed techniques and recipes. This paper briefly delves into the expansive history of black, red, and blue dyes; and touches on the techniques of batik and shibori fabric dyeing – the precursors to modern color theory and industrial fabric dyeing techniques.

Osmeterium as a Defense Against Army Ants in Swallowtail Butterfly Caterpillars

Elissa Teran
Faculty Adviser: Professor Maria Pickering, Biology

Many organisms have adaptations to protect themselves from potential predators. Swallowtail butterfly larvae (Lepidoptera: Papilionidae), use an evertable odoriferous osmeterium, a Y-shaped organ near its anterior end, as a defense against predators, though its effectiveness against army ants is unknown. In the premontane wet forest of Monteverde, Costa Rica, larval instars of the swallowtail, Papilio polyxenes, were systematically placed in foraging streams of army ants, Eciton burchelli, to determine if the osmeterium of the larvae repelled the foraging army ants. All five instars were tested; each instar tested consisted of a treatment group that was not able to evert their osmeterium and a control group that could. First, second, third, and fourth instars demonstrated low survivorship for both the treatment and control groups. Fifth instars with functional osmeterium survived significantly more often than those without a functional osmeterium (90% vs. 30%, n = 15 each). All instars successfully repelled ants using their osmeterium, as seen by ants backing off the caterpillars when the osmeterium was everted. However, younger instars were slower to leave ant raid trails and were overcome by successive waves of ants; unlike fifth instars, who could move faster out of the ant trails. Here, survivorship was observed to be both a function of osmeterial eversion and the caterpillar’s size-related speed at removing themselves from ant trails. This study provides further insight into the ecological importance of chemical defenses in predator-prey relationships.

A Picture of Time

Caleigh Thomas
Faculty Adviser: Professor Shannon Johnstone, Art; Professor Beth Mulvaney, Art History

At a very young age the present researcher fell in love with sports. That passion grew and grew until the time to play was up at the end of high school. In the last two years a new love was found in photography and the two loves began to merge into one - sports photography. In the practice of photography, questions that emerged were, “How do photographers capture finish line photos? What do they use?” Information was gathered and researched on the history of...
the camera and photo finish technology. The researcher also interviewed some of the top photographers in sports, began photographing collegiate sporting events, and then went to a sports photography workshop in California learning from award-winning photographers from around the country. It was discovered that photo finishes are not even photos at all, but are digital composites made up of thousands of scans made each second of the finish line. It is not a picture of reality, but a picture of time. In undertaking research on this in fall of 2015 it was discovered that there were technologies that the researcher did not know existed. Through travel and further discovery it was learned that photos are not used at all to decide the winner of a close race. Photography has another job entirely - to tell the story.

**Finding the Feminine in Watchmen**
Nyssa Tucker  
Faculty Adviser: Professor Steven Benko, Religious and Ethical Studies

The tension in comic books is that while male superheroes and female superheroes typically have powers exceeding what normal men and women have, they only possess as much agency as the writer and artist give them. Male superheroes draw power - mainly in the form of physical strength - from the values and ideals they embody and uphold. If a male superhero is weak it is because someone is stronger than him or because he has the wrong values or ideals. However, female superheroes, regardless of how much stronger they are then mortals, are depicted as weak precisely because they are female. The strengths and weaknesses of female superheroes are determined by the social conventions of the society they are drawn in and the imaginations of the writer and artists. Female superheroes are more limited by gender norms than are male superheroes because gender norms locate the weakness of women as emanating from the fact that they are women, rather than because they have been outwitted or overpowered by a villain. Watchmen by Alan Moore and Dave Gibbons sought to challenge the basic assumptions regarding the superhero genre, however, the women within the graphic narrative were portrayed with a degree of agency that is typical of the genre. Using two analytical modes, feminist theory and graphic narratives as literature, this presentation will first establish how graphic novels achieve literary complexity, and second, will identify where Watchmen succeeds and fails in transcending the narrow ways in which women are portrayed in graphic narratives.

**The Strong Black Woman: Protected or Forgotten?**
Nideara Tucker  
Faculty Adviser: Professor Amie Hess, Sociology

With eating disorders at an all-time high among young women in the United States, social scientists have given much atten-
into the costs and benefits associated with cooking practices as they relate to health and environmental outcomes.

**Tartuffe: Theatrical Costume Design**

Robin Whiteman  
*Faculty Adviser: Professor Jennifer Becker, Theatre; Professor Carla Ross, Communication*

Summary of Tartuffe: The play Tartuffe written by Molière focuses on a family with a new guest in their home: Tartuffe. Tartuffe appears to be a pious man but is not what he seems. Orgon, father of the family, and Orgon's mother, Madame Pernelle are taken in by what the reader learns is his grand deception. The rest of the family does not believe in Tartuffe's supposed goodness as they have seen his evils. Tartuffe eventually swindles Orgon out of his entire estate, which is discovered after Elmire, Orgon's wife, tries to seduce Tartuffe to demonstrate his true character. All is ultimately made right through a policeman, messenger of the king. Tartuffe is taken away and Orgon is free to stay in his home.

During playwright Molière's time, Neoclassicism was the style. Neoclassicism is characterized by the three basic tenants of reality, morality, and universality; verisimilitude; the three unities of time, place, and action; decorum; and five act form. In subtle revolt, Molière wrote Tartuffe in a way that both fit and laughed at the style. These clothing designs do the same: they whimsically reflect on the trends of the 17th century and today by using fashion to provide characterization. My concept uses color symbolism and accessories to convey meaning.

My interpretation of Tartuffe looks at the character Tartuffe as not a man who symbolizes the hypocrisy of the entire “pious” body but the individuals who try to take control away from others (see Bold, “Moliere”). Tartuffe is so deeply invested in his deception that he believes he is doing what is right.

Tartuffe slowly trades out the family’s expensive jewels for cheap replicas because he wants them to be more pure and less worldly, and to take control; he does this slowly so the family will not be aware. Characters who are connected have similar costumes in color and/or pattern. For example, Orgon and Elmire’s costumes both include green fabric and gray lace. Elmire and Tartuffe both have red in their costumes. However, the audience knows that Elmire is truly closely connected to Orgon because of her skirt’s green lining; this is her inner self.

**Gilman Scholarship Recipient’s Experience Funding and Studying Abroad in Gaborone, Botswana - A Pecha Kucha**

Stacie Wiggins  
*Faculty Adviser: Elizabeth Yaros, International Programs; Professor Doreen Fairbank, Psychology*

Research has shown that the majority of students contemplating studying abroad worry about the price and financial aspects. This presentation will focus on my experience funding a study abroad trip, my experience while in Botswana, and how the Benjamin A. Gilman International Scholarship helped make this experience possible. The Benjamin A. Gilman International Scholarship provides grants for students who have financial needs in order to broaden the population who studies abroad. As a recipient of the Gilman scholarship, I was able to study public health in Gaborone, Botswana. I had the opportunity to observe in many health clinics, participate in a homestay, and participate in excursions to cultural villages and nature reserves. Through these experiences, I was able to see and compare the contrasting health policies between Botswana and the USA. In addition, I observed the cultural differences in Botswana such as the power differentials in the small villages. In my presentation, I will discuss such health policies and cultural differences. Through my experience abroad, I gained a new sense of independence by breaking out of my comfort zone and an appreciation for the beauty and diversity of the world. Like many students with limited financial means, without the scholarships I received, I would have been unable to experience studying abroad. The purpose of this Pecha Kucha is to raise awareness of funding options and benefits of study abroad.

**Adaptive Piano Lessons for Children with Autism Using the Lovaas Model of Applied Behavior Analysis and Discrete Trial Teaching**

Jessica Williford  
*Faculty Adviser: Professor Paul Winterhoff, Child Development*

Children with autism face unique challenges when learning to play the piano, including, difficulty communicating, making eye contact, and remaining attentive throughout their lesson. Dr. Ivaa Lovaas’ methods of Applied Behavior Analysis (ABA) and Discrete Trial Teaching (DTT) have proven to be a very effective early intervention method of teaching young children with autism. These methods include breaking down basic skills into their component parts and teaching them through a system of positive reinforcement, then building on those skills to expand their number into more advanced skills. It was hypothesized that the Lovaas Model of teaching could be used to teach a young child with autism to play the piano if it was carefully adapted and combined with the pedagogy of early childhood music education. A pilot study was undertaken to test this hypothesis. Three young children with autism were recruited for this study and each participant received 25 piano lessons over the course of eight weeks. Piano lessons were taught using the Lovaas Model of teaching combined with traditional music concepts. This presentation will discuss the development and implementation of the pilot study and will reflect on the outcomes and the developmental impact for the participants involved in the study.
Quality of Life Indicators in an Aging Population
Amber Winslow
Faculty Adviser: Professor Deborah Tippett, Human Environmental Science

As more people are living longer in the United States and throughout the world, a growing concern is how to help aging individuals maintain independent, high-functioning, healthy, high-quality lives. As a larger proportion of the world's population is falling in this sector, with almost one in five of the United States' population being over 65, it becomes increasingly important to understand the factors that enable people to sustain a high quality of life as they age. Common indicators used to measure quality of life include the individual's physical and mental health status, the environmental and social supports in place for that person, their general outlook on life, and their perceived human value and sense of purpose in life. Studies suggest indicators that predict high quality of life include coping mechanisms, social support and engagement, and perceptions of well-being. These factors may serve a protective function and indicate an overall high quality of life, even where there is the presence of other negative quality of life indicators. The purpose of this study was to explore the question: How can we enable an ever-increasingly older population to continue to live healthy, high quality, independent lives? Five in-depth interviews were conducted with five healthy adults over the age of 85 using a qualitative approach to determine common themes of successful aging. These indicators may prove useful in addressing social supports and services as a means of enabling and empowering this growing portion of the population.

Impact of High Fat Maternal Diet and Exercise on Offspring Behavior
Emily Woolard
Faculty Adviser: Ginger Moser, EPA – Public Health; Professor Cynthia Edwards, Psychology

A large body of research indicates that mothers who were overweight or obese before becoming pregnant increased their chance of having a baby with complications, including impairments in cognitive ability, susceptibility to developing anxiety disorders, and potentially even increasing the risk of developing Autism Spectrum Disorders. The motivation for the present research is to provide a stronger understanding of the various outcomes of maternal obesity by examining the offspring of female rats that have been placed on a High-Fat Diet (HFD) before breeding and throughout lactation. In addition, the influence of exercise by use of a running wheel both during and after pregnancy will be evaluated. Fifty female rats were divided into two groups and fed either a control diet or HFD for four weeks before breeding. At that point, these two groups were divided again into having either a running wheel or no running wheel, yielding a total of 4 groups. The offspring from each of these four groups are currently being assessed for cognitive and psychosocial outcomes in order to determine whether these are associated with maternal HFD and exercise. Preliminary results of this ongoing research will be discussed.
Student Participant Index

Alla Akiyeva
Macy Allen
Jessica Alston
Miranda Ameen
Melisa Antunez
Zineb Baali
Hannah-Leigh Barham
Suzanna Bass
Bailey Benge
Helina Biru
Hailey Blount
Valerie Bobola
Alayna Bolyard
Yousra Bouzaghar
McKenzie Bradley
Rachel Breazeale
Autumn Bridges
Meghan Brooks
Hollis Brown
DeNancy Brooks
Elizabeth Bruce
Catherine Bryant
Aletheia Burrell
Latimah Bustillo-Arrechea
Nora Butkovich
Raven Chavez
Madison Clark
Tess Coleman
Savannah Cook
Maria Core
Ann Cox
Brianna Crumbley
Vanessa Cupil-Garcia
Blair Delery
Laura Dugom
Zoe Dugom
Michelle Summer Garcia
Noel Fox
Kerrigan Gudger
Crystal Gunther
Hayden Hains
Ashley-Rosetta Hall
Heather Hickman
Taylor Hinson
Kimberly Hinton
Meredith Hovis
Molly Hull
Elizabeth Huss
Melissa Jenkins
Nishi Jindal
Ilia Jones
Kasey Jones
Lisa Jones
Tia Joyce
Langley Kelly
Maigan Kennedy
Jessica Krisley
Sarah Koop
Karsyn Laney
Nicole Lawson
Tatum LittleJohn
Alyssa Long
Kristin Long
Abigail Lorentzen
Alyssa Mathewson
Samantha May
Kristen Mayer
Brooke Mayo
Destiny McDuffie
Mollie Melton
Kaity Melvin
Nancy Merritt
Helen Milano
Melyssa Minto
Leah Mooney
Elena Mulligan
Linda Nguyen
Liezel Nix
Matilda Odera
Toni O'Steen
Romaire Concepcion Ortega
Zainabu Otiento
Sarah Perry
Rachel Powell
Olivia Powlas
Brianna J. Ramos

Rachel Redwine
Mercy Rialem
Alexandra Ridall
Daniella Rivera
Kristen Rivera
Kami Robinson
Maria Rodriguez
Josefeta Roten
Sona Salahuddin
Karla Salgado
Tina Salmon
Courtnay Saunders
Adeelah Sayed
Sidney Shank
Payton Shearin
Keri Shelton
Aditi Sheehan
Avonee Simmons
Sarah Skinner
Molly Smerko
Katelyn Smith
Maegan Smith
Melissa Smith
Katie Soost
Ashley Souza
Lily Stavish
Seely Stephenson
Jessie Taylor
Elisa Teran
Caleigh Thomas
Katrina Thomas
Zena Thompson
Nyssa Tucker
Nideara Tucker
Asha Tuli
Robin Whiteman
Stacie Wiggins
Hunter Williford
Jessica Williford
Amber Winslow
Andie Woodson
Emily Woolard
Carly Zeugenschmidt
Parking Areas
1 Chapel Lot Staff and Visitors (Visitor spaces are marked) Open 4 p.m. to 7 a.m. for Students
2 Alumnae Lot Staff and Visitors (Visitor spaces are marked) Open 4 p.m. to 7 a.m. for Students
3 Ledford Lot Staff
4 P-6 Commuter, Staff and Apartment Visitors (as marked)
5 P-5 Commuter Lot
6 P-4 Commuter Lot (unpaved)
7 Cate Center Lot Staff — Open 4 p.m. to 7 a.m. for Students
8 Art Center and Library Lot Staff (Visitor and Commuter as marked)
9 Martin Lot Staff — Open 4 p.m. to 7 a.m. for Students
10 Gym Lot Staff and Commuters as marked
11 Softball Field Lot Staff (Seniors and Underclass as marked)
12 Potte Lot (Underclass as marked)
13 G-2 Lot Underclass Students
14 G-1 Lot Underclass Students (Commuters as marked)
15 Hallman-Barefoot Lot (Seniors and Visitors as marked)
16 Wainwright Commuter Lot
17 Jones-Wainwright Lot (Staff and Visitors as marked)
18 Athletic Field Parking
19 The Oaks Student Apartment Parking