Congratulations
To all
Saint Martin’s University
2017
Student Scholars!
SAINT MARTIN’S UNIVERSITY
Scholars Day

Student Scholars: Presentation Leads, and
Poster Presenters

Anna Agloro
Anna Belford
Jess Bever
Roslyn Buff
Marcus Bufford
Heather Byczynski
Blake Cloward
Shelby DeMers Diaz
Hunter Dorough
Sally Fletcher
Kristina Flock
Guadalupe Flores-Marin
Julia Forza
Hannah Frakes
Denis Gaty
Josh Glitch
Michelle Gross

Michael Huttar
Ryan Haseman
Alyssa Kageler
Madeline Knecht
Victor Leronymidas
Jaelyn Lindsey
Clarinda Marion
Samantha Meeks
Stephanie Mattson
Arthur Mills
Han Nguyen
Michael Novak
Brendan O’Donnell
Claire Palmer
Andres Perez
Sophia Pettis-Infante
Andrew Quackenbush

Megan Quinones
Holly Reed
Melissa Roth
Taylor Saastad
Jonathan San Nicolas
Kyle Schaar
Sharmaine Sebastian
Donovan Shaw
Collin Silvernail
Alyssa Slate
Austin Spicer
Destiny Stegall
Zach Stevenson
Kristina Tody
Ryann Woods
Christian Yoro
Valeria Zamano

Room Hosts

Dr. Katie Bugyis  Dr. Daniel Hamilton
Harned Hall 115  Harned Hall 116
Dr. Daniel Einstein  Dr. Diane Hamilton
Harned Hall 117  Harned Hall 210
Dr. Shawn Duan  Dr. Robert Hauhart
Harned Hall 212  Harned Hall 213
Dr. Aaron Goings

Scholars Day Committee Members

Fr. David Pratt, Chair  Dr. Diane Hamilton
Dr. Jeff Birkenstein  Dr. Nathalie Kuroiwa-Lewis
Dr. Eric Boyer  Dr. Daniel Einstein
Dr. Robert Hauhart  Ms. Fiona Kelly

SAINT MARTIN’S UNIVERSITY
Scholars Day
Special Thanks

This year’s events would not have been possible without the generous support of the following:

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Shawn Duan, Ph.D.
Sam Fox, Ph.D.
Issac Jung, Ph.D.
Aaron Goings, Ph.D.

Heather Grob, Ph.D.
Robert Hauhart, J.D., Ph.D.
Jeremy Newton, Ph.D.
Stephen Parker, Ph.D.
Lisa Power, Ph.D.
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Carol Overdeep, Ph.D.
Sonalini Sapra, Ph.D.
Chun Seong, Ph.D.
Katya Shkurkin, Ph.D.
Arwyn Smalley, Ph.D.
## Session One: Presentations

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<td>Title: Soloflex Whole Body Vibrations Research Project.</td>
<td><strong>Michael Novak, Rachel Fanchin, Kyler Pommerening, Traci Sahagun</strong></td>
<td>HH 210</td>
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<td><strong>Alyssa Slate</strong></td>
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<td>Title: Lead into the Dark: Race, Class, and Clean Drinking Water in Flint, Michigan.</td>
<td><strong>Megan Quinones</strong></td>
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**Session Two: Presentations**

**Time Schedule**

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<td>Presenter: <strong>Samantha Meek</strong> HH 115</td>
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<td><strong>Title:</strong> America’s War on Drugs: Appropriate Means to An End or an Unnecessary Call for Violence and Divide?</td>
<td>Presenter: <strong>Julia Forza</strong> HH 116</td>
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<td><strong>Title:</strong> White Girl, Red Father</td>
<td>Presenter: <strong>Holly Reed</strong> HH 117</td>
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<tr>
<td><strong>Title:</strong> The Skookum Creek Cutthroat Counter Project</td>
<td>Presenters: <strong>Ryan Haseman,</strong> <strong>Logan Cornwall-Brady,</strong> <strong>Blake Henderson,</strong> <strong>Lance Rohwedder.</strong> HH 210</td>
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<tr>
<td><strong>Title:</strong> The Blue Wall of Silence: An Unspoken Code of Misconduct.</td>
<td>Presenter: <strong>Ryann Woods</strong> HH 212</td>
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<tr>
<td><strong>Title:</strong> Mary The Mother of God: Deconstructing Femininity in the Media.</td>
<td>Presenter: <strong>Sophia Pettis-Infante</strong> HH 213</td>
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**Session Two Abstracts on pg. 16-17**
### Concurrent Poster Session Event

**Title:** Personality as Predictor of Political Orientation and Relationship Outcomes  
**Presenter:** Taylor Saastad

**Title:** Social Media & Self Esteem  
**Presenter:** Jaelyn Lindsey

**Title:** Consequences of Toxic Leadership to Organizational Commitment in the United States Military  
**Presenter:** Denis Gaty

**Title:** Depression in Female College Students  
**Presenter:** Stephanie Mattson

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**Title:** De-escalation Training: its benefits, drawbacks, and implementation problems.  
**Presenter:** Kyle Schaar  
**Faculty sponsor:** Dr. Robert Hauhart  
**HH 212, 3:00 PM**

The recent police shootings, broadcasted nationwide through news sources and social media, have re-kindled a seemingly never-ending tension between our citizens and the police. Our nation is calling for change and police officials are turning to de-escalation training to reach the rising bar set by our citizens.

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**Title:** How Masculinity Manifests Across Races in American Media  
**Presenter:** Alyssa Kageler  
**Faculty sponsor:** Dr. Katie Bugyis  
**HH 115, 3:00 PM**

Racial minorities display masculinity in a different way than white men. How do various races of men take on gender roles and the male schema? The focus is not to use white men as a baseline or a standard but rather to critique based on them being a social majority.

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**Title:** University Pornography: Oppression of Values In The Case of Saint Martin's University  
**Presenter:** Dr. Robert Hauhart  
**HH 213, 3:00 PM**

Pornography is a disputed issue that has caused an eruption of moral correctness in ethics. It is necessary to decide whether it is ethical to permit the viewing of pornography on a religious campus. Although pornography does, in some cases, eliminate harm to individuals, there is experimental evidence that proves pornography has led to the degradation of women, rape culture, and a lack of community on the campus of Saint Martin's University. As a Catholic University, having pornography accessible on student Wi-Fi should be called into question given its harmful effects and the contradiction it poses in to our Benedictine values.
Presenter: **Andrew Quackenbush**  
Faculty sponsor: **Dr. Stephen Parker**

**Title: Physics of Sailing**
Sailing has roots as old as the global expansion of mankind, but how does it work? The wind, the waves, and the overall hull design affect both the direction and magnitude of the various forces that act on the ship. A combination of all these forces allows one to set sail on the open sea, regardless of whether or not the winds are in the direction that you actually want to travel. This presentation will discuss different types of sails, hulls, and keels and explore what effects they have on the ship's propulsion and stability.

Presenter: **Anna Belford**  
Faculty sponsor: **Dr. Sam Fox**

**Title: Characterization of the landscape of winter and spring wheats under cold stress**
Plants respond to changes in their environment, such as abiotic stress, by altering the expression levels of a wide array of genes. We conducted high-throughput gene sequencing to identify differentially expressed genes in winter and spring wheat in response to cold shock stress. We mapped our data to a reference genome, annotated the dataset, and generated gene expression counts. We estimated differential gene expression and ran statistical analyses, identifying 1521 genes that were up-regulated and exhibited an increased expression under cold stress in the winter wheat. We also identified 928 genes that were subsequently down-regulated in the winter wheat. Moreover, we identified many genes that were differentially expressed in the winter wheat that did not fluctuate in the spring wheat in response to cold stress treatment. The data elucidated from this study can translate to downstream applications that aim to expand crop sustainability in sub-optimal environmental conditions.

Presenter: **Josh Glitch**  
Faculty sponsor: **Dr. Shawn Duan**

**Title: Rotary Dampener Device**
Often smaller mechanical systems are overlooked from an analysis standpoint in engineering. A small, rotary dampener that will be a custom design by our senior design group will help aid in rotational motion of computer doors and hatches. Through our analysis and design criteria we will create a device that can fit in smaller clearances, is scalable, and provides a high degree of ability to resist rotational motion using a dampening fluid.

### Concurrent Poster Session Event 1:00-2:00 PM

<table>
<thead>
<tr>
<th>Title</th>
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<tr>
<td>Risk factors associated with teen runaways</td>
<td>Kristina Tody</td>
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<tr>
<td>Barriers to Stable Housing for Homeless Veterans</td>
<td>Donovan Shaw</td>
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<tr>
<td>Mental Health Stigma Among College Students</td>
<td>Jonathan San Nicolas</td>
</tr>
<tr>
<td>Barriers to Mental Health in the United States Military</td>
<td>Jim Clark</td>
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</table>
Title: Effects of Social Media on Young Adults  
Presenter: Kristina Flock

Title: Campus Sexual Assault: Prevalence and Underreporting  
Presenter: Shelby DeMers Diaz

Title: Non-Traditional Therapeutic Models for Veteran Students  
Presenter: Andres Perez

Title: Factors Associated with Depression in Female Collegiate Athletes.  
Presenter: Hannah Frakes

Title: Purposed Science Center Building  
Faculty sponsor: Dr. Chun Seong

Proposed three-story Science Center building located along the western edge between Harned and Cebula halls. The proposed building is intended to provide adequate space for the interrelated natural science, engineering, computer science, and mathematics programs, current and projected demands. The building will house the SMU Science Center and provide classrooms, labs and a roof top greenhouse to support the programs. The building is three stories high, approximately 30,600 square feet and cost approximately $13,000,000.

Title: Methods to Reduce Wrongful Convictions in Felony Cases  
Faculty sponsor: Dr. Robert Hauhart

This Paper examines the processes and procedures used by the criminal justice system to convict those suspected of committing crimes of felonies. These procedures include: eyewitness identification, interrogations, forensic evidence, and unethical acts within the courtroom. My paper consists of research from books, peer-reviewed articles, online articles, and court cases. The criminal justice system does not adequately prevent wrongful convictions. Punishment and accountability need to be used to deter improper use of power to create false and contaminated evidence for conviction.

Title: Fridging: The Unfortunate History of Women in Comic Plot  
Faculty sponsor: Dr. Sonalini Sapra

This paper looks at the impact of a concept known as "fridging", on comic culture both in the past and present. Fridging was popularized as a term in 1994, by comic author Gail Simone. Simone noticed an alarming trend of female characters being killed as a plot device, or when they were deemed no longer useful. It was very important that this paper be written because there is not currently very much academic work on this concept. Fridging is very dangerous, in that it becomes acceptable if it is not challenged. It cannot be challenged if readers cannot identify what they are seeing. Once sexism and fridging in comic books is identified, it can be fought. Much of the research for this thesis was done using the exact comic books where fridging occurs, with some background research on the history of comic books and sexism in other popular culture genres.
**Presenters:** Sharmaine Sebastian & McKenna Johnson  
**Faculty sponsor:** Dr. Aaron Coby

**Title:** Reducing the Magnitude of Soil Erosion Using Bacterial Biofilms Produced by Bacillus subtilis and Bacillus cereus

Erosion is an occurrence that often happens as a result of wind, rain, water flow, and other natural agents. In areas prone to such cases, especially in the Pacific Northwest where rain is a common occurrence, erosion can be damaging and repairs can be costly. Our study determined whether bacterial biofilms secreted by *Bacillus* species have the potential to reduce the magnitude of soil erosion caused by heavy rainfall. Soil mounds inoculated with biofilm-producing bacteria exhibited the lowest amounts of eroded soil, while soil mounds without biofilm-producing bacteria exhibited the highest amounts. These results support the hypothesis that biofilms can reduce the effects of erosion by holding loose soils together.

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**Presenters:** Anna Agloro  
**Faculty sponsor:** Dr. Arwyn Smalley

**Title:** Effects of silver nanoparticles on the germination and growth of Kale

Silver nanoparticles (AgNPs) are demonstrated as effective biocides, and thus they are one of the most commonly applied nanomaterials. Despite their many uses, potential runoff of AgNPs raises concerns for environmental safety. While some studies report on the positive effects of AgNPs, there are also studies that indicate negative outcomes. The effects vary depending on the species of plants and the AgNPs' characteristics. These findings emphasize the need to further understand the effects of AgNPs on crop plants as the demand for larger crop yields increases with our population. Capping agents are believed to help stabilize AgNPs. Each capping agent is associated with its own characteristics that will play a role in the size, toxicity, aggregation, and dissolution of AgNPs. In this study, we aim to further investigate the characteristic-based effects of AgNPs by observing the effects of different capping agents on the germination and growth of kale (*Brassica oleracea*).

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**Presenters:** Claire Palmiter  
**Faculty sponsor:** Dr. Shawn Duan

**Title:** Tree-Girdling: Mechanized Innovation

The objective in the design of the mechanized tree girdling equipment was to improve Department of Natural Resources current method of girdling trees. The current process is time consuming and lacking ergonomic balance causing the Department of Natural Resources to request that a new way to handle the task be created. As such we, the DNR Senior Design Team, have created a simple, functional, and easy to repair girdling device designed to tackle the rugged Pacific Northwest Environment whilst removing the need to sacrifice ergonomics for power.
Session Three: Presentations (2:00-2:25 PM)

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<th>Title</th>
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<td>Heather Byczynski</td>
<td>HH 115</td>
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<tr>
<td>Periodic Parameters Applied to a Difference Equation</td>
<td>Sally Fletcher</td>
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<td>Mullen Road Transportation and Safety Improvement Project</td>
<td>Madeline Knecht</td>
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<tr>
<td>The Fault in our Social Media: The Changing Relationship Between Reader and Writer</td>
<td>Roslyn Buff</td>
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<td>Benefits of Rehabilitation</td>
<td>Zach Stevenson</td>
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<tr>
<td>Analyzing Automobile Aerodynamics through ANSYS Simulations and Composite Manufacturing</td>
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Session 3 Abstracts on pg. 18-19

Session 3: Scholars Day Abstracts

HH 210, 2:00 PM

Title: The Fault in our Social Media: Changing relationships between Writer and Reader
Faculty sponsor: Dr. Jeff Birkenstein

This paper examines how author John Green’s use of social media changes the way his readers approach his novel “The Fault in our Stars.” The familiarity that readers gain with Green as a result of social media affects the way they approach his novel by giving them more of a context within which to read the novel. This allows them to better understand Green’s work and to more closely identify with it. The paper also pushes back against Roland Barthes’s essay “The Death of the Author” by arguing for a “rebirth of the author” that becomes possible through social media.

Presenter: Roslyn Buff

HH 212, 2:00 PM

Title: Benefits of Rehabilitation
Faculty sponsor: Dr. Robert Hauhart

There is a lot of research and statistical data showing that the punitive approach to criminal justice has failed, but there has not been much research involving the success, or failures, of the rehabilitative approach to criminal justice. This paper analyzes statistical data/research done on rehabilitative programs, and tells the personal accounts of ex-cons behind bars. It also shows why incarcerating young or non-violent offenders tends to have negative effects.

Presenter: Zach Stevenson

HH 213, 2:00 PM

Title: Analyzing Automobile Aerodynamics through ANSYS Simulations and Composite Manufacturing
Faculty sponsor: Dr. Isaac Jung

The purpose of our design is to incorporate aircraft aerodynamic features to be implemented on automobiles. Such devices include vortex generators, variable wing geometry, and roof-mounted spoiler. Simulations were written and tested to visualize airflow altered by such aerodynamic implications.
### Session Four: Presentations

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<td>HH 115</td>
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<tr>
<td></td>
<td>Produced by Bacillus subtilis and Bacillus cereus</td>
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<tr>
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<td>Effects of silver nanoparticles with varying Capping agents on the</td>
<td>Anna Agloro</td>
<td>HH 116</td>
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<tr>
<td></td>
<td>germination and growth of kale (Brassica oleracea)</td>
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<td>2:55</td>
<td>Tree-Girdling: Mechanized Innovation</td>
<td>Claire Palmiter, Ian Boyle, Scott Clair, Sirak Chhao</td>
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<td>3:10</td>
<td>Purposed Science Center Building</td>
<td>Clarinda Marion, Jonathan Carp, Andrew Piccini,</td>
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<td>Nathaniel Gazaway, Cameron Reece, Alexander Hoveln,</td>
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<td>Robert Baldwin, Heath Clayton, Ryan Egolf, Valeria Zamano</td>
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<td>3:25</td>
<td>Methods to Reduce Wrongful Convictions in Felony Cases</td>
<td>Christian Yoro</td>
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<td>3:40</td>
<td>Fridging: The Unfortunate History of Women in Comic Plot</td>
<td>Jess Bever</td>
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Session 4 Abstracts on pg. 20-21
### Session Five: Presentations  3:00-3:25 PM

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<td>Andrew Quackenbush</td>
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<td>Characterization of the transcriptome landscape of winter and spring wheats DV92 and G3116 under conditions of cold stress.</td>
<td>Anna Belford</td>
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<td>Josh Glitch, Robert Snyder, Lee Shouse</td>
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<td>Alyssa Kaegler</td>
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Session 5 Abstracts on pg. 22-23
**Title: An Exploration and Analysis of Mathematics as a Tool in the Arts**

This project explores the use of mathematics in art, focusing on linear perspective and Escher's popular “Circle Limit” woodcuts. Using linear algebra, hyperbolic geometry, and computer programming, we see how mathematics can be used to replicate these styles and, moreover, how mathematics can be used as a tool of improvement and innovation in the art world.

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**Title: America’s War on Drugs: Means to an End, or Unnecessary Call for Violence & Divide?**

The criminalization and war against drugs is immoral by taking away the individual’s free will and sense of moral responsibility. I take on the argument that the war on drugs should be ended and a new perspective towards drugs should be embraced within contemporary American society.

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**Title: White Girl, Red Father**

My personal essay explores particular childhood memories in vivid detail, focusing on my exposures to racial identity and learning Whiteness and other racial categories. As essay critic Phillip Lopate notes, “The past is frequently and often lyrically visited by personal essayists”; I expand his view by also making my experiences a social commentary. Not only describing scenes, I evaluate what those experiences meant and did to me at those ages through an adult lens. My essay is influenced by the works of E. B. White, Alice Walker and Cynthia Ozick. This piece continues the tradition of the personal essay by connecting intimately with the reader, conveying my thought process through memory to create meaning, and adding to social commentary.

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**Session Six: Presentations**

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<td><strong>Title: The Physics of Clouds: Beyond the Water Cycle</strong></td>
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<td><strong>Title: Development of a Lunar Soil Simulant Production Process.</strong></td>
<td><strong>Presenters:</strong> Melissa Roth, Vincent Roux, Jamie Widdowson HH 210</td>
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<td><strong>Title: The Effectiveness of Criminal Justice Research Distribution</strong></td>
<td><strong>Presenter:</strong> Michelle Gross HH 212</td>
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<tr>
<td><strong>Title: Ferro-Fluids as a replacement for traditional CPU coolant systems</strong></td>
<td><strong>Presenters:</strong> Brendan O’Donnell, Maxwell Harvey, Andrew Quackenbush, Neil McCafferty, Chris Moffet. HH 115</td>
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SAINT MARTIN’S UNIVERSITY
Session 1: Scholars Day Abstracts

Presenters: Collin Silvernail
Faculty sponsor: Dr. Heather Grob

Title: Cuba’s dual-currency monetary policy and its effects on economic inequality.
With the fall of the Soviet Union, Cuba faced massive economic uncertainty and sought to rely on its monetary policy to stabilize itself during an economic and humanitarian crisis. In an attempt to shield itself from the hyperinflation of the Cuban Peso (CUP), the Castro regime introduced the Cuban Convertible Peso (CUC). Although this achieved its short-term goal of political and economic stability, the effects of two legal circulating currencies effectively bifurcated the Cuban economy into two sectors which were separated by the two currencies. This separation had a disastrous effect for the most vulnerable within the economy. With the death of Fidel Castro, a new era within Cuba is beginning and a crucial step towards a more prosperous economy is the gradual adoption of a unified currency.

Presenter: Marcus Bufford
Faculty sponsor: Fr. David Pratt

Title: Plato’s Perfect City, and Other Authoritarian Lies, A Defense of Justice as Freedom.
This paper will show that Plato has forgotten humanity, when he is creating Kallipolis, and by forgetting the greatness and failures of humanity he has set up Kallipolis for failure. Plato has created the city Kallipolis and neglects humanity. Plato attempts to create a city of justice and to create a city that is run by just people but he has in fact created inhuman shells to run the city instead of a city run by feeling loving humans.

Presenters: Hunter Dorrough and Ana Garcia
Faculty sponsor: Dr. Jeremy Newton

Title: Occupational and Traumatic Stresses in First Responders: A Comparison and Evaluation of Resiliency
First responders, including firefighters/EMT and police, face different types of stress on a daily basis including stressors stemming from the job and its related duties (occupational stress) as well as being "repeatedly directly exposed to traumatic situations" which brings about abnormal amounts of traumatic stress when compared to other occupations. There is a lack of research on the difference in these stresses and the severity of stress among first responders which makes it more difficult to understand. In response, these stresses in first responders and civilians and their respective responses and adaptations to stress were analyzed. Rates of each stress were measured for each population and then were compared between them to determine if there were differences in the way they experience stress and how they respond with resiliency. This is expected to help psychology in regards to changing the way stress is treated to be more individualized.

Presenter: Megan Quinones
Faculty sponsor: Dr. Aaron Goings

Title: Lead into the Dark: Race, Class, and Clean Drinking Water in Flint, Michigan.
For two years, the residents of Flint, Michigan, have experienced a crisis with their drinking water. Like many environmental problems, the Flint water crisis disproportionately effects those in marginalized communities, particularly people of color and those experiencing poverty. The Flint Water Crisis clearly demonstrates that any notion that the U.S. has become a post-racial society is naive and counterproductive. When addressing the Flint Water Crisis, larger historical, racial, and socioeconomic factors must be

Presenters: Michael Novak
Faculty sponsor: Dr. Shawn Duun

Title: Soloflex Whole Body Vibrations Research Project.
Research groups have found whole body vibrations to be beneficial to the body at specific frequencies. The frequency controller used in the Soloflex Whole Body Vibrations system has been found to be inaccurate. The goal of this project is to provide an accurate digital frequency controller at a low cost for researchers to achieve precise results when researching the effects of Whole Body Vibrations.

Presenter: Alyssa Slate
Faculty sponsor: Dr. Robert Hauart

Title: Querry’s Search for Peace in Graham Greene’s A Burnt-Out Case
Graham Greene’s A Burnt-Out Case tells the story of Querry, a world famous church architect, who is suffering a spiritual crisis. He travels to a remote African leproserie after leaving his home in order to find peace. After hearing Deo Gratias, a leper servant, describe Pendele—a place where he and his mother found happiness near water—Querry spends the rest of his time trying to find Pendele. Based on subtle clues embedded in the text, I argue he finds Pendele at the end of the novel, just before his death, when rain starts to fall from the sky.

Presenter: Megan Quinones
Faculty sponsor: Dr. Aaron Goings

Title: Lead into the Dark: Race, Class, and Clean Drinking Water in Flint, Michigan.
For two years, the residents of Flint, Michigan, have experienced a crisis with their drinking water. Like many environmental problems, the Flint water crisis disproportionately effects those in marginalized communities, particularly people of color and those experiencing poverty. The Flint Water Crisis clearly demonstrates that any notion that the U.S. has become a post-racial society is naive and counterproductive. When addressing the Flint Water Crisis, larger historical, racial, and socioeconomic factors must be