The theme for this year’s Celebration of Scholarship, *Opening a Doorway to Lasallian Scholarship*, reflects an ongoing opportunity for members of the Lewis University community to search for the intersection of meaning and purpose with their academic pursuits. Through concurrent, poster, creative works and business plan presentations, students and faculty from across the University will have the opportunity to share their scholarship, celebrate a milestone in their academic experience, and consider paths that remain to be explored.
PLENARY SESSION
St. Charles Borromeo Convocation Hall
05 Ernest J. Miller, FSC, D.Min. ................................................................. 11 AM-Noon

CONCURRENT SESSIONS
Academic Building
06 Session I ........................................................................................................ 1-1:45 PM
07 Session II ...................................................................................................... 2-3 PM
8 Session III ..................................................................................................... 3:15-4:15 PM
10 Session IV ................................................................................................... 4:30-5:30 PM

CREATIVE WORKS
Oremus Fine Arts Center
11 President’s Art Exhibition Works on Display (Brent and Jean Wadsworth Family Gallery) ................................................................. Noon-5:30 PM
11 Gallery Talk (Studio Theatre) .................................................................... 2-3 PM
12 Creative Works Performances (Studio Theatre) ........................................ 3-4:30 PM

POSTERS
Academic Building (Posters on display from Noon- 5:30 PM)
14 Session A ..................................................................................................... 2-3 PM
18 Session B .................................................................................................... 3:15-4:15 PM
22 Session C ................................................................................................... 4:30-5:30 PM

BR. JOEL DAMIAN, FSC BUSINESS PLAN & PITCH COMPETITION
St. Charles Borromeo Convocation Hall
26 Judging .......................................................................................................... 12:30-4:30 PM

PRESENTERS INDEX
29

COMMITTEE
31

THEATER PREVIEW
Philip Lynch Theatre
28 “Peter and the Starcatcher” ........................................................................... 7 PM Curtain
Lewis University is proud to sponsor the Eighth Annual Celebration of Scholarship. Providing an opportunity for the University to showcase the scholarly and artistic work of its graduate students, undergraduate students, and faculty, this annual scholarly event is co-sponsored by the Culture of Inquiry Coordinating Committee; the School of Graduate, Professional, and Continuing Education; the Colonel Stephen W. and Lyla Doherty Center for Aviation and Health Research; the Lowell Stahl Center for Entrepreneurship and Real Estate Studies; the History Center: Urban, Cultural and Catholic History of the Upper Midwest; the Center for Ministry and Spirituality; the University Faculty Development Committee; and the Scholars Academy.

The theme for this year’s Celebration of Scholarship, Opening a Doorway to Lasallian Scholarship, reflects an ongoing opportunity for members of the Lewis University community to search for the intersection of meaning and purpose with their academic pursuits. Through concurrent, poster, creative works and business plan presentations, students and faculty from across the University will have the opportunity to share their scholarship, celebrate a milestone in their academic experience, and consider paths that remain to be explored.

The Lewis University Celebration of Scholarship will present scholarly work in the following formats throughout the afternoon.

**CONCURRENT SESSIONS**
Students and faculty will give a 15-minute presentation on a research topic or paper they have written, unless otherwise noted as a panel discussion, which will follow a 60-minute format. Concurrent sessions will be scheduled in rooms in the Academic Building from 1-5:30 PM. Registration for presenters and information regarding the various Celebration of Scholarship events will be available throughout the day in the hall between the Academic and Science Building.

**CREATIVE WORKS**
These include any piece that has been written, published and produced in a fine arts field, including: music, art, theatre, literary reading, poetry, etc. These exhibits will be displayed from Noon-5:30 PM in the Art Gallery. A Gallery Talk, representing winners from the President’s Art Exhibition, will take place in the Studio Theatre of the Oremus Fine Arts Center from 2-3 PM, immediately followed by Performances from 3-4:30 PM.

**POSTER SESSIONS**
Research posters will feature the results of research projects, internships and class presentations. Posters will be displayed in the Academic Building and Science Center from Noon-5:30 PM with the authors present at times as designated in this program.

**BR. JOEL DAMIAN, FSC BUSINESS PLAN & PITCH COMPETITION**
The Br. Joel Damian, FSC Business Plan & Pitch Competition, hosted by the Lowell Stahl Center for Entrepreneurship and the College of Business, encourages entrepreneurship among students throughout the Lewis community. The College of Business recognizes that potentially successful business ideas can come from a wide range of disciplines and may originate from an individual or a group of individuals. These presentations are scheduled from 12:30-4:30 PM for judging in the Convocation Hall.
Dear Colleagues:

It is my privilege to welcome everyone to the 8th Annual Celebration of Scholarship. I am pleased to be a part of this important Celebration that recognizes the scholarly accomplishments of the undergraduate and graduate students and faculty members of Lewis University. This year, 2019, marks the 300th anniversary of the death of Saint John Baptist de La Salle, founder of the Institute of the Brothers of the Christian Schools. In recognition of the tercentenary, the theme of Celebration, *Opening a Doorway to Lasallian Scholarship*, honors our common Lasallian mission as demonstrated through the various scholastic pursuits accomplished by members of the University community.

Students have been working with their respective faculty mentors for the last year to investigate, create and present the new ideas and knowledge that you will experience as a part of this year’s Celebration of Scholarship. This year’s celebration will include 39 concurrent sessions, 101 posters, 13 business competition presentations and 11 creative works performances. Additionally, artwork from the President’s 11th Annual Art Competition will be on display, and winners will participate in an afternoon gallery talk. The Plenary Session at 11 a.m. in Convocation Hall will feature Brother Ernest J. Miller, FSC, D. Min., Vice President for Mission at LaSalle University, who will give the keynote presentation titled “Teach, Learn, Transform: The Heart and Soul of Lasallian Higher Education.” We are privileged to have this educator, scholar and social critic as our keynote speaker. Following his remarks there will be multiple sessions, posters, displays and presentations in the Academic Building and Science Center, St. Charles Borromeo, as well as the Oremus Fine Arts Center throughout the afternoon and evening. During the program, the three finalists for the Dr. Stephany Schlachter Excellence in Undergraduate Scholarship Award will be announced. The winner of the $2,000 scholarship will be presented with the award at a future dinner.

This day is possible because of the commitment of many faculty and staff. Thank you to the School of Graduate, Professional and Continuing Education, the Office of the Provost, the Coordinating Committee, the subcommittees and the many volunteers who give their time to make this event a success. Thank you to the Chair of the committee, Dr. Sarah Powers, Assistant Professor in the Biology Department and Co-Chair-Dr. Erica Kwiatkowski-Egizio, Associate Professor, Secondary, Middle & Foreign Language Program, College of Education.

Faculty and student research, scholarly pursuits and creative works are fundamental to the life of the University. It is with great pride we celebrate the work that has been done and with great hope we look to the future to see these efforts continued.

Enjoy this Celebration of Scholarship and blessings to all.

Sincerely,

David J. Livingston, Ph.D.
President
Dear Colleagues:

I’m pleased to introduce Lewis University’s 8th Annual Celebration of Scholarship, which highlights the research, scholarship and creative accomplishments of our students and faculty.

The Celebration brings to life our Mission values of knowledge, wisdom, justice, fidelity and association. In concert with our Mission values, President Livingston’s vision and our university’s strategic plan call for academic excellence grounded in research and scholarship, work that responds to the needs of society, and a transformative student experience that emphasizes impact and experiential learning. The Celebration embodies this vision in inspiring and meaningful ways.

This year’s celebration will include 39 concurrent sessions, 101 posters, 13 business competition presentations and 11 creative works performances. And, I’m delighted to announce a new award this year: the Dr. Stephany Schlachter Excellence in Undergraduate Scholarship Award, honoring our former provost who supported the Celebration in countless ways as it came to life during her tenure. Three finalists for the award will be named in the Celebration’s program, and one project will receive a $2,000 award.

2019 marks the 300th anniversary of the death of Saint John Baptist de La Salle, founder of the Institute of the Brothers of the Christian Schools. In recognition of the tercentenary, the theme, Opening a Doorway to Lasallian Scholarship, honors our common Lasallian mission as demonstrated through the various scholastic pursuits accomplished by members of the University community.

With this in mind, we could not have found a more appropriate speaker for this event: Brother Ernest J. Miller, FSC, D. Min. who serves as Vice President for Mission, LaSalle University. Brother Ernest’s keynote address, “Teach, Learn, Transform: The Heart and Soul of Lasallian Higher Education,” promises both to inspire and ground us in the values that underpin our research and scholarship.

I am grateful for all those who have worked diligently to make this Celebration a reality and a success. Thank you to the many faculty and staff who serve on the Celebration of Scholarship Coordinating Committee, various sub-committees and in other volunteer capacities. A special thanks to co-chairs Dr. Sarah Powers, Assistant Professor in Biology, and Dr. Erica Kwiatkowski-Egizio, Associate Professor in Education.

The spirit of association permeates this day and speaks to our commitment to academic excellence, collaboration, and community.

Sincerely,

Dr. Christopher Sindt
Provost

#LewisUAchieve
11 AM – NOON

ST. CHARLES BORROMEO CONVOCATION HALL

Welcome
Dr. Anne Rapp, Interim Dean, School of Graduate, Professional, and Continuing Education

Remarks
Dr. David Livingston, President, Lewis University

Introduction of Keynote
Dr. Sarah Powers, Assistant Professor of Biology; Chair, 2019 Celebration of Scholarship

Keynote Address
Ernest J. Miller, FSC, D.Min., Vice President for Mission, LaSalle University

Audience Questions
Facilitated by Dr. Powers

Closing Remarks
Dr. Chris Sindt, Provost, Lewis University
“TEACH, LEARN, TRANSFORM: THE HEART AND SOUL OF LASALLIAN HIGHER EDUCATION”

Ernest J. Miller, FSC, D.Min.
Vice President for Mission, LaSalle University

As Vice President for Mission, Brother Ernest has revised or implemented new mission-focused initiatives for faculty, staff and administrators. He aims to deepen the knowledge and understanding of the Lasallian charism and mission for today’s educational and spiritual needs. In addition, Brother Ernest works with students to grasp the long arc of the Lasallian story and vision.

A native of New Orleans, Brother Ernest is a member of the Institute of the Brother of the Christian Schools, the Roman Catholic religious institute that founded and sponsors the University. He joined the Brothers in 1993 and in 2003 he made his final profession of vows.

He served three years (2009-2012) as the Associate Director for Mission and Ministry in the District of Eastern North America (DENA), the geographic area for all the Brothers’ communities and Lasallian ministries in seven states, Washington, DC, Ontario, Canada, and Jamaica. Before the creation of DENA, he served two years as Director of Education and Lasallian Mission Formation in the former District of Baltimore.

Prior to his five years in District service, Brother Ernest served as a teacher at three Lasallian secondary schools. He was founding director of the David S. Baginski, FSC Scholars Program, an interdisciplinary studies endeavor for honors-level students.

Brother Ernest completed a D. Min. at the Catholic Theological Union in Chicago. He graduated from The Elliott School of International Affairs at George Washington University with a M.A. in International Affairs; La Salle University with a M.A. in Education; Georgetown University with a Master in Liberal Studies; and Loyola University New Orleans with a B.A. in Political Science.

Brother Ernest has presented at numerous conferences, workshops and retreats on Lasallian historical and educational themes, Catholic social teaching, church history, human rights, and religious brotherhood, among others. In 2010, he was the Convener of the Lasallian Convocation on the Rights of the Child at the United Nations in New York.
SESSION I
1-1:45PM

**AS-134-A**
Moderator: Br. Lawrence Oelschlegel, FSC
There Is No Exit: Desire and Obsession in Two Novels of Identity
Undergraduate Student Project in Humanities
Samantha Moffett
Br. Lawrence Oelschlegel, FSC
The presentation will report on the analytical comparison between “Death in Venice” by Thomas Mann and “American Psycho” by Bret Easton Ellis through the shared theme of identity. The report first focuses on the examination of homosexual identity through allusions and repression within Gustav Von Aschenbach of “Death in Venice”. The report then shifts to the disassembling of Patrick Bateman’s idea of self, revealing his unreliable psychopathic identity through the narrative structure of “American Psycho”.

**AS-150-A**
Moderator: Therese Jones
Inorganic Materials for Water Remediation: Developing a CURE for the General Chemistry Laboratory Through Research
Faculty Project in Math & Science
Lasallian Research Grant
Dr. Daniel Kissel
Metal-Organic Frameworks (MOFs) are coordination polymers that feature abundant surface area in a compact volume allowing for excellent guest-host interactions potentially useful for several environmental applications. The dynamic nature of the coordination bonds within the framework, however, limit the stability of most MOFs, particularly in aqueous solution. Research into advanced MOF materials that incorporate polymeric units and crosslinkers to stabilize MOFs are thus an attractive pursuit. This talk will focus on my research interests in inorganic MOF materials, which has led to a new Chemistry Undergraduate Research Experience (CURE) in the general chemistry laboratory.

**AS-156-A**
Moderator: Dr. Gretchen Hoge
Reducing Hypertension: A Community Based Program
Graduate Student Project in Nursing
Maria Esther Talusan
Dr. Mary Desmond
The Hispanic population is predisposed to cardiovascular diseases. The aim of this work is to reduce hypertension in the Hispanic population, specifically 65 years and older, by utilizing a community health, worker-led and educational intervention with focus on lifestyle behavior: nutrition and physical activity.
### Pay-for-Performance Programs in Healthcare: Effective or Deceptive?
**Undergraduate Student Project in Math & Science**

**Nabeel Ghani**  
Dr. Jennifer Roberts

Pay-for-performance programs have become a mainstream tool in ensuring quality healthcare by incentivizing healthcare systems and medical practitioners. While their tagline, “providing high quality, patient-centered care while limiting institutional resources” seems like a positive goal, the reality of the situation might be markedly different. This presentation will aim to shed light onto the deceptive reality of pay-for-performance programs and their lack of effectiveness.

### Mesenchymal Stem Cell Therapy for the Treatment of Osteoarthritis
**Undergraduate Student Project in Math & Science**

**Brandon Popp**  
Dr. Jennifer Roberts

Mesenchymal stem cells (MSCs) are a non-controversial source of stem cells. Their ease of isolation and rapid expansion rate has led to an interest in their therapeutic potential. MSCs have been identified as an effective treatment option for osteoarthritis, the most common type of arthritis. MSCs can regenerate cartilage that was previously broken down by osteoarthritis. The aim of this review is to reveal the effectiveness of MSCs in the treatment of osteoarthritis.

### Shakespeare Studies Panel
**Moderator: Dr. Mardy Philippian**

#### What Made a Good Ruler in Sixteenth-Century England?
**Undergraduate Student Project in Humanities**

**Katarzyna Majchrowicz-Wolny**  
Dr. Mardy Philippian

Drawing on the writings of sixteenth-century writers, my discussion focuses on two aspects of the making of a good ruler: the formative process on the one hand and the analysis of a set of values and attributes of a good ruler on the other.

#### The Definition of a Good Ruler in Early Modern England
**Undergraduate Student Project in Humanities**

**Patricia Damocles**  
Dr. Mardy Philippian

I attempt to answer the question, What makes a good ruler? in terms of the Elizabethan period by dissecting the strengths and weaknesses seen in the characters of William Shakespeare’s “Richard II”. A country can only be upheld by how well it is governed, which is why having a balance between the king’s two bodies is crucial when maintaining the throne.

### Combating Cardiovascular Disease by Use of Omega-3 Fatty Acids to Reduce Atherosclerosis
**Undergraduate Student Project in Math & Science**

**Sultan Ahmed**  
Dr. Jennifer Roberts

Cardiovascular disease afflicts approximately 735,000 Americans every year. This growing phenomenon can be combated with changes in lifestyle such as diet. Studies have been performed observing the effect of Omega 3 (n-3) Fatty Acids on risk for cardiovascular disease. This project aims to review the data from these results, focusing on the relation between use of Fatty Acids and occurrence of Atherosclerosis, the leading cause of cardiovascular disease.
The Anti-Cancer Properties of *Nigella Sativa*
Undergraduate Student Project in Math & Science

Aiman Khan
Dr. Jennifer Roberts

*Nigella sativa*, also known as black cumin seeds, may be a potential treatment for cancer due to its anti-cancer properties.

Caffeine Reducing the Risk of Alzheimer’s
Undergraduate Student Project in Math & Science

Afrah Ali
Dr. Jennifer Roberts

Multiple recent studies have shown that caffeine can both lower the risk of Alzheimer’s, as well as decrease systems in those who have already developed Alzheimer’s. Specifically, caffeine targets abnormal beta amyloid protein plaques, that are known to be a major trademark of Alzheimer pathology.

**AS-158-A**
Moderator: Dr. Pramod Mishra

Engaging in the Design Process: Brother James Gaffney, FSC, Student Center Art Installation
Undergraduate Student Project in Visual Arts
Finalist, Dr. Stephany Schlachter Excellence in Undergraduate Scholarship Award

Julianna Walen, Victoria Foster, Paulina Zougras, Ashley LaFayette, Brianna Knutsen, Alberto Gomez, Audrey Pearson
Kristin Callahan

Graphic design students will present their progress in the development of an art installation commissioned for the Brother James Gaffney, FSC Student Center. They will discuss the stages of the design process, to reveal their systematic approach to creative problem-solving. First, they will share their methodology for problem identification through the use of student surveys and interviews. Then they will speak about how this data helped the group to identify and understand a student need that could be addressed with the creation of an art installation. Then, they will present the final art installation concept and discuss the rationale behind its development and the role of client feedback in molding the ultimate idea. Finally, they will share the upcoming stages in the realization of the final design.

SESSION III
3:15-4:15PM

**AS-132-A**

Studies in the Gothic Novel Panel
Moderator: Dr. Jamil Mustafa

Identifying Superior Expressions of Gothic Elements in Reeve’s *The Old English Baron*
Undergraduate Student Project in Humanities

Amy Bukovsky
Dr. Jamil Mustafa

I took a psychoanalytic and new historicist approach to Clara Reeve’s novel *The Old English Baron* which employs many Gothic elements, focusing on entrapment and confinement within Medieval architecture.

Degeneration and Darwinian Theory in *She*
Undergraduate Student Project in Humanities

Jesse Drake
Dr. Jamil Mustafa

The novel *She* by H. Rider Haggard demonstrates the Gothic concept of degeneration through Darwinian theory, as an all-powerful female character challenges patriarchal order.

Setting the “Woman Question” and the “Separate Spheres” in *The Mystery of Edwin Drood*
Undergraduate Student Project in Humanities

Katarzyna Majchrowicz-Wolny
Dr. Jamil Mustafa

My inquiry is focused on the Gothic elements of Charles Dicken’s *The Mystery of Edwin Drood*. I apply a feminist lens to examine the setting in the novel and the portrayal of female characters to examine how Gothic novel conveys the social activism evident in Dicken’s earlier fiction.

Dehumanization and Supernatural Elements: Gothic and Romantic Features of Percy Shelly’s *St. Irvyne; or The Rosicrucian*
Undergraduate Student Project in Humanities

Brandon Vlach
Dr. Jamil Mustafa

A psychoanalytical analysis of the Gothic and Romantic elements of Percy Shelly’s *St. Irvyne; or The Rosicrucian*.

**AS-134-A**
Moderator: Dr. Deborah Augsburger

The Impact of the Banning of Section 101 on the Chicago Fire Community
Undergraduate Student Project in Social Sciences

Alexis Quintana
Dr. Zachary Binkley

This presentation will investigate the recent issues surrounding spectatorship and logistics concerning the Chicago Fire and their fan sections.

HIITing the Heart
Undergraduate Student Project in Nursing

Brian Rosen
Dr. Zachary Binkley

The aim of this presentation will be to distinguish the cardiovascular benefits of High Intensity Interval Training (HIIT). Over the past few years, HIIT has become all the craze in the fitness industry. Mainly being praised for its acute weight reduction benefits, there is substantial evidence to support long term advantages to the cardiovascular system. HIIT works for everyone, youth sports to elderly population as well as patients in cardiac rehab. This session will provide the information for those who are unfamiliar with the lesser known benefits of HIIT.
**AS-150-A**

*Moderator: Dr. Michael Cherry*

**Modeling DNA Self-Assembly Through Graph Theory**

*Faculty Project in Math & Science*  
*Caterpillar Scholar Award*

*Dr. Amanda Harsy Ramsay*

Motivated by the recent advancements in nanotechnology and new laboratory techniques using the Watson-Crick complementary properties of DNA strands, formal graph theory has become useful in the study of self-assembling DNA complexes. One focus in DNA nanotechnology is the formation of nanotubes which have wide-ranging potential, such as containers for the transport of nanocargos, templates for nano-objects, and in drug-delivery methods. In this research, we focus on mathematical construction methods for self-assembling DNA structures.

**A Novel Way of Measuring Airplane Thrust**

*Undergraduate Student Project in Math & Science*

*Margaret Capalbo*  
*Dr. Ryan Hooper*

A new method for measuring the thrust of an airplane was evaluated. A prototype device based on the piezoelectric effect was built to make these measurements. Primitive data was collected and analyzed to determine the success of the device.

**Muon ID Detector Simulation for the Mu2e Collaboration at Fermilab**

*Undergraduate Student Project in Math & Science*

*Jackson Waters*  
*Dr. Ryan Hooper*

The Mu2e experiment at Fermilab is attempting to observe muon-to-electron conversion, and one essential area that ensures proper beam behavior in the experiment is the Mu2e Extinction Monitor Area. A sub-detector that needs to be added to this area is the Muon ID detector, and this will allow for enhanced calibration in the experiment. To optimize the parameters of this detector, it first needs to be integrated into the Mu2e simulation environment before being built.

**AS-155-A**

*Moderator: Dr. Cynthia Stevens*

**Vitamin K and Alzheimer’s Disease**

*Undergraduate Student Project in Math & Science*

*Patrick Walsh*  
*Dr. Jennifer Roberts*

Currently an estimated 40 million people have dementia, a group of diseases that includes Alzheimer’s. Evidence has shown that lifestyle choices as well as genes could lead to Alzheimer’s disease. Recent studies have shown that Vitamin K, a fat-soluble vitamin, could be used to reduce risk of Alzheimer’s disease. Since dietary modification(s) represent an easy mode of treatment, further studies should be carried out to explore how Vitamin K can treat or prevent Alzheimer’s disease.

**Long Term Effects of Central Nervous Stimulants**

*Undergraduate Student Project in Math & Science*

*Keith Young*  
*Dr. Jennifer Roberts*

The presentation will examine the repercussions of using central nervous stimulants for extended periods of time to combat attention deficit hyperactivity disorder (ADHD).

**AS-158-A**

*Moderator: Dr. Brittany Stephenson*

**Reimagining the Values of the Sanctified Zone**

*Undergraduate Student Project in Visual Arts*

*Julianna Walen, Audrey Pearson, Betsaira Cadena Noguez*  
*Kristin Callahan*

Red Graphics, a student graphic design organization, was tasked with reimagining the six values of Lewis University’s Sanctified Zone in the form of TV graphics. Red Graphics executive board members, Audrey Pearson, Julianna Walen, and Betsaira Cadena Noguez, took on this project to help build student awareness of the Sanctified Zone values through visual appeals and common language. Red Graphics will present their three design directions and describe the intended impact on the student body.
Critical Race Theory and Higher Education Policy  
Graduate Student Project in Education  
**Miguel Millett**  
This study is a critical race analysis of the Higher Education Act of 1965.

Destructive Emotions and the Uncanny in Joseph Conrad’s *Heart of Darkness*  
Undergraduate Student Project in Humanities  
**Lydia Kozlowski**  
*The Heart of Darkness* is a representation of Gothic elements through Kurtz’s and Marlow’s destructive and obsessive emotions due to power and domination in Africa.

Lowering of Homocysteine Levels By Vitamin-B Cofactors in Acute Ischemic Strokes  
Undergraduate Student Project in Math & Science  
**Saniya Qadir**  
Dr. Jennifer Roberts  
Half of all diagnosed strokes are thrombotic strokes. In a thrombotic ischemic stroke, atherosclerosis severely reduces blood flow to the brain. Increased homocysteine, a risk factor, not only thiolates low-density lipoproteins, which produces atheromas, but also activates platelets, contributing to further arterial blockage. Cofactors such as vitamin B6, B9, and B12 aid enzymes responsible for breaking down homocysteine. With these results, physicians may find it important to emphasize the use of B-vitamins in stroke patients.

Health Benefits of Intermittent Fasting  
Undergraduate Student Project in Math & Science  
**Niveen Nabulsi**  
Dr. Jennifer Roberts  
According to a 2016 study administered by the Global Burden of Disease Study, cardiovascular diseases, cancers, neurodegenerative diseases and diabetes are among some of the leading causes of death (GBD, 2016). With a growing concern for the incidence of these diseases, science searches for a non-pharmacologic method of prevention.

**AS-134-A**  
*Effective Leadership Styles in Today’s Modern Organizations*  
Graduate Student Project in Business  
Dr. Lesley Page, Cheryl Dorsey, Jessica Hauser  
Dr. Lesley Page  
The topic of leadership is on everyone’s radar today. We don’t need to look far to see leadership discussed in a wide array of industries such as healthcare, higher education, non-profit management and for-profit corporations. This concurrent session will focus specifically on how servant and authentic leadership styles can help organizations maximize employee potential by fostering an environment that brings out the best in the workforce.

**AS-155-A**  
*Evaluation of the American Heart Association Resuscitation Quality Improvement Program*  
Graduate Student Project in Nursing  
**Lorna Dudzik**  
Dr. Daisy Sherry  
The Doctor of Nursing scholarly project researches evaluation of the American Heart Association Resuscitation Quality Improvement Program.

**AS-150-A**  
*Policy and Possibility: Universal Meals in American Schools*  
Graduate Student Project in Education  
**Michael Dieter, Alexciana Castaneda**  
Dr. Erica Davila  
Many attempts have been made to improve educational outcomes in the United States. With much fanfare, funding has been used for increased access to technology, additional professional development for school personnel and new facilities, to name a few. One attempt that has not been made is national policy providing free meals for all students, regardless of need in schools across the country. Such a policy has the potential to improve educational outcomes and student health.
ART EXHIBITION
WINNERS

The President’s 11th Annual Art Exhibition Winners  Noon-5:30 PM
On display in the Brent and Jean Wadsworth Family Gallery, Oremus Fine Arts Center.

1ST PLACE
Rachel Fosler, “The Egg King Reaches Out,” eggshell and wax

2ND PLACE
Nate Stratton, “My Friend, Eric,” oil on Panel

3RD PLACE
Shannon Washburn, “Seeking Solace,” charcoal

HONORABLE MENTION
Vanessa Arenas, “Cierra Los Ojos, La Bruja Ha llegado,” oil on wood (skateboard)
Briana Barth, “Commission,” oil on canvas
Ellen Kientop, “Charmion,” oil on canvas
Kaitlyn Ramsey, “Little Flower,” oil on canvas
Eli Samoska, “Tara,” oil on canvas
Elisabeth Sommerville, “Sky,” acrylic
Hanna Swanberg, “Old Friends,” acrylic and paper on canvas
Julianna Walen, “Abyss,” fluid acrylics

Winners will participate in an associated Gallery Talk in the Studio Theatre 2-3 PM
3:00 PM
Irene Ryan Scholarship Audition
Undergraduate Student Project in Performing Arts
Kayla Carson, Katie Horn
Jo Slowik
We will be performing two short scenes from *Proof* and *Don’t Dress for Dinner*, as well as one monologue from *The Cover of Life*.

3:10 PM
Projections For *Constellations* by Nick Payne
Undergraduate Student Project in Visual Arts
Eric Redmon
Andrew Nelsen
Simply the same, subtly different. The projections from Nick Payne’s *Constellations* set the stage and serve as the environment in which the actors play. My goal was to reflect the subtle differences between each world established in the show with subtle changes in the environment. The emotion I sought to stir was knowing that you have seen what is in front of you before, but somethingly seeming off.

3:20 PM
Assimilation through Sound
Undergraduate Student Project in Humanities
Finalist, Dr. Stephany Schlachter Excellence in Undergraduate Scholarship Award
Christian Mietus, Jacob Decharinte
Dr. Mike McFerron, Dr. Simone Muench, Keith White
From the initial poem to the final audio file, this piece is an encapsulation of a Polish immigrant during the years prior to their life in communist Poland. The idea is based on personal and historical significance, but tries to demonstrate all of humanity as it is put through the assimilation process. Familial experience and documented historical accounts were the key in developing the concept for this spoken-word.

3:30-4 PM
Pitch Book 1
Undergraduate Student Project in Visual Arts
Victoria Foster, Kammeran Hughes
Kristin Callahan, Dr. Simone Muench, Dr. Mike McFerron, Keith White
Graphic design and poetry students will present a concept for a motion design animation using a pitch book. A pitch book is used in the presentation of a concept to a client/funder to help the design team to communicate how the final animated piece will look and feel. Students will present a slide presentation that outlines the conceptual, narrative and visual development of the proposed concept.

Pitch Book 2
Undergraduate Student Project in Visual Arts
Elisabeth Sommerville, Salvador Martinez
Kristin Callahan, Dr. Simone Muench
Graphic design and poetry students will present a concept for a motion design animation using a pitch book. A pitch book is used in the presentation of a concept to a client/funder to help the design team to communicate how the final animated piece will look and feel. Students will present a slide presentation that outlines the conceptual, narrative and visual development of the proposed concept.

Pitch Book 3
Undergraduate Student Project in Visual Arts
Tyler Peterman, Brandon Simmons, Stephanie Karas
Kristin Callahan, Dr. Mike McFerron, Keith White, Dr. Simone Muench
Graphic design and poetry students will present a concept for a motion design animation using a pitch book. A pitch book is used in the presentation of a concept to a client/funder to help the design team to communicate how the final animated piece will look and feel. Students will present a slide presentation that outlines the conceptual, narrative and visual development of the proposed concept.

Pitch Book 4
Undergraduate Student Project in Visual Arts
Sarah Mehmood, Zakiya Cowan, Maurice Smith
Kristin Callahan, Dr. Simone Muench
Graphic design and poetry students will present a concept for a motion design animation using a pitch book. A pitch book is used in the presentation of a concept to a client/funder to help the design team to communicate how the final animated piece will look and feel. Students will present a slide presentation that outlines the conceptual, narrative and visual development of the proposed concept.
4-4:30 PM

The Night Pawel Adamowicz was Assassinated
Undergraduate Student Project in Visual Arts
Victoria Foster, Kasia Wolny, Lelenn Moore, Kayla Carson
Kristin Callahan, Dr. Simone Muench, Keith White, Dr. Mike McFerron
Graphic design, music, poetry, and theatre students will present the result of a collaborative short film.

Self Portrait of a Man
Undergraduate Student Project in Visual Arts
Sarah Mehmood, Zue Balquin
Kristin Callahan, Dr. Simone Muench, Dr. Mike McFerron
Graphic design, music, poetry, and theatre students will present the results of a collaborative short film.

Nexus
Undergraduate Student Project in Visual Arts
Tyler Peterman, Zachary Klozik, Julian Allen, Jacob Rodriguez
Kristin Callahan, Dr. Simone Muench, Dr. Mike McFerron, Keith White
Graphic design, music, poetry, and theatre students will present the result of a collaborative short film.

Mandarin
Undergraduate Student Project in Visual Arts
Victoria Foster, Elisabeth Sommerville, Devon Williams, Patricia Damocles, Bradford Bingham
Kristin Callahan, Dr. Simone Muench, Dr. Mike McFerron
Graphic design, music, poetry, and theatre students will present the result of a collaborative short film.
SESSION A
2-3 PM

1 Diet, Mood, and Social Consequences
Undergraduate Student Project in Social Sciences
Yanina Moberg
Dr. Mary Vandendorpe
Depression has been linked to various dietary choices, especially low nutrient level options and those that are more processed in nature. This correlation has profound societal implications. Government spending does not align with their current nutritional recommendations. This, with other factors, possibly connects to why there is a growing gap between the upper and lower classes as well as why lower socioeconomic communities have higher incidence of depression.

4 The Artistic Side of Mathematics
Undergraduate Student Project in Math & Science
Elizabeth Samoska
Dr. Amanda Harsy Ramsay
By taking a closer look at what’s really going on behind animation and video game rendering, we can see how math and art meld together to create digital worlds.

7 Analysis of Passing Networks in Soccer
Undergraduate Student Project in Math & Science
John Laschober
Dr. Amanda Harsy Ramsay
Through the analysis of players’ positioning and their passes throughout a soccer match, better strategies can be devised for future games and training regimens can be altered to better prepare even the best of teams. Specifically, weighted directed graphs can visually depict strong and weak areas on the pitch while values assigned to individual players determine how critical they are in successful plays.

10 Learning Gardens at Fairmont School
Undergraduate Student Project in Social Sciences
Carley Maupin
Dr. Christie Billups
To encourage students to make healthy nutritional choices, we will construct learning gardens on the Fairmont school grounds. Students will learn to plant, tend, and harvest produce, which will eventually be provided as a part of the school meals. Teachers will collaborate on enhancing the curriculum pertaining to nutrition. An important goal of the learning gardens is to foster the critical thinking capacity and energy of Fairmont students.

13 Is There a Better Handedness in Baseball?
Undergraduate Student Project in Math & Science
Ethan Fosen
Dr. Amanda Harsy Ramsay
This paper investigates if there is any evidence that shows either left or right-handed baseball players have an edge over the other. Using mathematical modeling, we will study the performances of all baseball players and analyze to see if either hand has an advantage.

16 Does Surgical Intervention in Baseball Pitchers with Rotator Cuff Tears Reduce Time Loss from Injury Compared to Conservative Rehabilitation?
Undergraduate Student Project in Nursing
Vickie Stathopoulos
Dr. Laura McDonald
Shoulder injuries, including tears of the rotator cuff, are common in baseball pitchers. This critically appraised topic was conducted to determine whether surgical intervention provides a quicker return to activity for athletes compared to standard conservative rehabilitation. Knowledge gained from this work can aid clinicians in selecting appropriate treatment strategies for this population.

19 A Divided District: Overcoming School Segregation in a Suburban School District
Undergraduate Student Project in Social Sciences
Justin Baron
Dr. Thomas McNamara
Race and class relations in America continues to divide, and that division is present in local Hinsdale High School District 86. Hinsdale Central, the larger, more wealthy and less diverse school, has become overcrowded. Meanwhile, Hinsdale South, the less wealthy and more diverse school, is at risk for becoming underutilized. Analyzing press coverage and District 86 School Board documents, I propose that all students from the former buffer zone should attend Hinsdale South.

22 Using Kinesio Tape in Clinical and Sports Settings to Decrease Pain: Does it Really Help or is It Just a Hype?
Undergraduate Student Project in Nursing
Brianna Uribe
Dr. Ryan Miskowiec
A comprehensive review of scholarly journal studies was conducted to determine if kinesio tape is effective in the reduction of pain, when used in addition to regular treatment plans.
25 Ulterior Functionality of Cyclin D3 in Gene Regulation
Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research

Alyssa Large, Steven Zeke
Dr. Sarah Powers

Cyclin D3 is a known cell cycle regulator. Recent studies also suggest it plays a role in gene regulation. This research investigates cyclin D3 as a transcriptional regulator of several genes, including Birc5, Fcgr2b, CD9, Sema6d, Sema7A, Bcl11b, Il10ra, Rad21, and Zfp367. If cyclin D3 has ulterior functions in regulating gene transcription, it is expected that forced expression of wild type cyclin D3 in WEHI-231 immature B cells will change the rate of transcription of the targeted genes.

28 Validation of Vertical Displacement and Jump Load Using VERT Sensors on Volleyball Athletes
Undergraduate Student Project in Math & Science

Mohammad Shatat
Dr. Laura McDonald

The purpose of this study was to test and validate the reliability of a new device created by VERT Technologies. The device is a wearable technology that measures vertical displacement, jump count, and g-forces. Measurement of vertical displacement is common among strength and conditioning coaches to determine overall power in sport. The vertical jump is generally used as the Gold Standard with regard to vertical displacement measuring.

31 Application of a Small Scale Budgeted Autonomous Vehicle
Undergraduate Student Project in Math & Science

Collin Mehnert
Dr. Philip Chumbley

The main goal of this project is to inspire young scientists to create cost effective ways to make autonomous vehicles safer and more reliable, by using a small scale version of an autonomous vehicle to demonstrate real vehicle functions.

34 The Study of Micelle Efficiency in Cosmetics and the Impact of Makeup Remover Wipes on Skin Barrier
Undergraduate Student Project in Math & Science

Phuong Pham
Dr. Jason Keleher

This research focuses further investigation of various cosmetic remover wipe brands and their respective removal of cosmetic products (i.e. foundation, blush, mascara, eyeshadow) on facial skin with the use of UV/Vis as well as the study of efficiency of micelle in cleansers.

37 Access to Inclusive Practices in Catholic Schools
Undergraduate Student Project in Education

Caley Oltman
Dr. Jennifer Buss

A focused case study on the practices, strategies, and trends regarding the access to inclusive educational settings for students with disabilities in Catholic schools. The information collected will be analyzed for trends, similarities, and differences with the intent that other Catholic school districts will review this case study and utilize its information to develop a successful inclusive educational program within their own schools.

39 Impact of Nurse Navigator on Stroke Patients
Graduate Student Project in Nursing

Jennifer Gomez
Dr. Kathleen Fitzgerald

This study involves the impact of nurse navigator on stroke patients.

40 The Influence of Quagga Mussels on the Microbial Loop
Undergraduate Student Project in Math & Science
Lasallian Research Grant

Lillian Catala, Brandon Popp, Alex Serrano, Jesus Munoz, Sharbel Dawalibi, Sarah Brietzke, Fayizul Qadir, Joseph Pryzdia
Dr. Jerry Kavouras

Because they are the foundation of the food chain, changes in microbial communities can impact higher trophic levels in an ecosystem. This experiment examined changes in a microbial community upon the introduction of quagga mussels, an invasive species. Biolog EcoPlates were used to analyze samples from mesocosms and identify trends in community activity and composition. It was concluded that the quagga mussels influenced community activity and maintained species diversity within the mesocosms.

43 Advancement of Microbial Fuel Cell Performance by Employing Novel Polyaniline Nanocomposite Electrodes
Undergraduate Student Project in Math & Science

Laura Whalen
Dr. Jason Keleher

Microbial fuel cells (MFCs) have gained interest for their potential as a renewable energy source and waste management system. The performance of fuel cells is dictated by its rate of electron transfer and degree of substrate oxidation. This research aims at implementing a novel electrode to enhance the performance of an MFC by improving bacterial surface adhesion. Preliminary research suggests the microbial-surface interactions will be improved by introducing a carbohydrate to a conductive polymer matrix.
**Cyclin D3 Mutations and the Effects on Eukaryotic Cells**
Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Sarah Nelson
Dr. Sarah Powers
Cyclin D3 is an essential cell cycle regulator. This research focused on eight mutations of Cyclin D3, assessing the impact on protein structure and eukaryotic cell activity, especially proliferation. The structure of the mutated proteins was studied using molecular modeling and atomic force microscopy. To assess changes in cell activity, immature B cells, which express low levels of cyclin D3, were induced to express mutated or wild type protein and evaluated for alterations in proliferation.

**Aircraft Deicing Fluid**
Undergraduate Student Project in Math & Science
Rose McDonough, Pablo Nevarez, Regina Arcangel, Breanah Ceranek
Dr. Jason Keleher
Every year, flights worldwide are canceled or delayed due to safety concerns of ice and freezing weather conditions over areas of travel. Ice accumulation over the exterior of the plane makes control of the aircraft difficult. Modern solutions, while effective, are highly toxic to the environment. The researched deicing fluid has been engineered to be more environmentally friendly than ethylene and propylene glycol and photodegradable, while retaining necessary properties of freezing point depression, ice growth inhibition and high viscosity.

**Exploring the Use of Bayesian Networks for Making Sports Predictions**
Undergraduate Student Project in Math & Science
Eric Redmon, Rafael Castaneda, Jesus Vazquez
Dr. Piotr Szczurek
Sports predictions are a popular trend among people all around the world, especially so in American football. The National Football League is one of the most competitive environments in the country while also having a real-world impact on the economy due to its massive popularity. In this project, we aim to use Artificial Intelligence techniques to make predictions about team performance. We do so by using a Bayesian network.

**Effects of the Quagga Mussel on the Infection of Daphnia dentifera by the Fungus, Metschnikowia bicuspidata**
Undergraduate Student Project in Math & Science
Sharbel Dawalibi, Brandon Popp, Sarah Brietzke, Joseph Pryzdia, Fayizul Qadir, Alex Serrano
Dr. Jerry Kavouras
The aim of this experiment was to determine if quagga mussels serve as diluters in the infection of *Daphnia dentifera* by the fungus *Metschnikowia bicuspidata*. Mesocosms were created to test the hypothesis that quagga mussels can reduce the prevalence of infection among *Daphnia*. It was determined that quagga mussels do not serve as a diluter in the parasitic relationship between *D. dentifera* and *M. bicuspidata* and compete with *Daphnia* for resources.

**Characterization of a β-Cyclodextrin-embedded Cellulose Acetate Composite Framework Beads for the Removal of an Organic Industrial Dye Methylene Blue**
Undergraduate Student Project in Math & Science
Alan Braschinsky
Dr. Jason Keleher
Large amounts of wastewater are annually dumped into nature, which has called for extensive research in the field of wastewater filtration. This work focuses on the characterization of the synthesized composite with various concentrations of β-cyclodextrin (β-CD) to confirm its incorporation into the cellulose matrix. Preliminary results show an enhanced uptake of methylene blue by the β-CD-incorporated adsorbent. Fluorescence studies were performed to confirm the presence of β-CD inside the matrix of the nanocomposite.
Effective Drag of Liquids on Shapes
Undergraduate Student Project in Math & Science
Colin Williams
Dr. Charles Crowder
A small scale model was developed to characterize the fluid dynamics of drag using a number of different objects. Correlation will be constructed between pull speed and shape profile to drag velocity.

Exploring the Synergy Between Nanoparticle Properties and Slurry Chemistry for Enhanced Cu Chemical Mechanical Planarization (CMP) Performance
Undergraduate Student Project in Math & Science
Neera Mistry, Carolyn Graverson, Allie Mikos
Dr. Jason Keleher
To produce smaller electronic devices, the fabrication of planar, defect-free surfaces of integrated circuits is critical. Chemical Mechanical Planarization (CMP) is a process that balances chemical and mechanical parameters that utilizes a nanoparticle dispersion (slurry). The combination of passivating agents, specifically benzotriazole and salicylhydroxamic acid, and SiO2 particles directly correlate to the film that forms during the CMP process. This research aims to correlate nanoparticle properties and inhibitor structure to metrics of CMP performance.

Phytate as a Novel Synergistic Reagent for the Removal of Toxic Metals from Water by Filtration
Undergraduate Student Project in Math & Science
Alec Werner
Dr. Jason Keleher
Water contamination is a ubiquitous problem. Many commonly employed filtration methods are not effective at removing metals. Phytate, a metal-binding molecule found in plants, may provide a green method to improve metal removal from water by filtration. The purpose of this research is to determine the effectiveness of phytate as a metal removing reagent.

Developing Prototype Windshield for Power Mitigation of Laser Illuminations
Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Daniel Maurer, Steven Boetscher
Dr. Jason Keleher
By using liquid crystals, we are able to reduce the threat of laser illuminations on aircraft. This study seeks to develop an automated windshield prototype capable of blocking laser illuminations while leaving unaffected regions of the windshield transparent.

Screening Techniques to Probe Slurry Performance Relevant to Shallow Trench Isolation Chemical Mechanical Planarization
Undergraduate Student Project in Math & Science
Cynthia Saucedo, Madison Hill
Dr. Jason Keleher
Chemical mechanical planarization (CMP) is a surface polishing process applied to advanced semiconductor manufacturing. Shallow Trench Isolation (STI) CMP utilizes CeO2-based colloidal dispersions that incorporate various additives to achieve high material removal rate. This work explores analytical technique development such as UV/Vis spectroscopy and coefficient of friction (COF) to screen slurries for performance prior to implementation into the polishing process.

Synthesis of a Novel Biomimetic Polymer Brush for Post-CMP Cleaning
Undergraduate Student Project in Math & Science
Tanner Bedwell
Dr. Jason Keleher
In order to effectively planarize a substrate, a synergistic balance of chemical and mechanical actions must be obtained; however, there is a possibility that the slurry can leave residual chemistry on the substrate causing defects. Current conventional cleaning methods for post-CMP include brush and buff cleaning which have the potential to induce surface scratches. By modifying the brush itself, using novel biomimetic polymers, the possibility of surface defectivity via brush cleaning can be significantly decreased.

Understanding the Role of Drosha in Cancer Prognosis and Gene Expression
Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Halima Shuchi
Dr. Mallory Havens
An experiment was conducted on human tissue cells to observe cell growth/migration rates to understand the role of Drosha in cancer.

Study of Training Example Size on Object Recognition Performance
Undergraduate Student Project in Math & Science
Jack Jones, Tomasz Jablonski, Kevin Skulski
Dr. Piotr Szczurek
Our research seeks to utilize the open source neural network library Keras in order to evaluate how different methods of image recognition perform when only provided a small data set of images to learn from.
2 Using Graph Theory to Design Optimal Strategies for DNA Self-Assembly
Undergraduate Student Project in Math & Science
Caterpillar Scholar Award
Nicolas Soto, Simon Merheb
Dr. Amanda Harsy Ramsay
In this poster, we present our results of applying graph theoretical and linear algebra techniques to constructing bi-partite graphs which can be created from self-assembling DNA. In particular, we present tile-based design strategies for constructing book and stacked book graphs in laboratory scenarios 1 and 2.

5 Quality Improvement through Patient Centered Care: Chemotherapy and Dialysis Carts
Undergraduate Student Project in Nursing
Michael Russell, Catherine Zambrano, Erica Horn
Katherine McDannel
A group of senior nursing students identified a quality improvement initiative at a Chicago metropolitan hospital that implements a check-in and -out system for chemotherapy and dialysis carts. The consistent stocking and placement of carts contributes to improving patient outcomes by having supplies readily available, and contributes to nursing team collaboration, communication, and accountability. The system utilizes a uniform checklist attached to each cart, and is maintained by the charge nurse.

3 Impact of Time-Restricted Feeding on Digestive Health
Undergraduate Student Project in Math & Science
Carley Maupin
Dr. Amanda Harsy Ramsay
We will explore how implementing time-restricted feeding (TRF) may regulate circadian rhythm, improve digestion, and restore gastrointestinal health.

11 Design Strategies for Modeling Ladder-based Graphs using DNA Self-Assembly
Undergraduate Student Project in Math & Science
Caterpillar Scholar Award
Jackson Hansen
Dr. Amanda Harsy Ramsay
In this paper, we present our results applying graph theoretical and linear algebra techniques for constructing tile-based self-assembling complexes such as ladder graphs, Mongolian tent graphs, and square-based nanotubes graphs.

14 Spectroscopic Use of pH Indicators in Determining the pH of a Solid-Liquid System in Low Volumes
Undergraduate Student Project in Math & Science
Shadell Rodriguez
Dr. John Parker
This presentation will report on the spectroscopic use of phenol red in determining the pH of a solid-liquid system- titanium (IV) dioxide- in small sample volumes. To measure the pH of a solid in small samples effectively, pH indicators are used in presenting pH changes in specific pH ranges. Using UV-Vis spectroscopy, the absorptivity of the solid in solution and the pH indicator might aid in determining the overall pH of the solvent.

17 Development of Long Endurance Solar-Powered Unmanned Aerial Vehicle
Undergraduate Student Project in Math & Science
Michael Gromski
Dr. Joseph Kozinski
Development of an autonomous long endurance solar-powered unmanned aerial vehicle with the capability of providing the ground crews with detailed 3D images using LiDAR or FLIR technology.

20 Social Media Marketing: Its Effect on the Success of Small Businesses
Undergraduate Student Project in Business
Sidney Riemer
Dr. Shan Lin
A study of how social media marketing can increase the success of small businesses and non-profit organizations.

23 An Examination of Deep Brain Stimulation and Nanoparticle Formation as a Means to Treat Parkinson’s Disease
Undergraduate Student Project in Math & Science
Brittany Hauert
Dr. Jason Keleher
This research focuses on exploring the mechanisms of deep brain stimulation and formation of nanoparticles to treat Parkinson’s disease.

26 Tuning Hydrogel Properties Through Synthetic Process Modifications
Undergraduate Student Project in Math & Science
Garrett A. Fifer
Dr. Jason Keleher
Hydrogels are biopolymer materials composed of three-dimensional polysaccharide networks. They have attracted scientific attention due to their biocompatibility, absorbency, flexibility, and tunability via incorporation of specialized chemicals including analgesics, anti-microbial drugs, vitamins, and amino acids.
The Role of Drosha in Cellular Migration, Cellular Growth, and Pre-mRNA Alternative Splicing in Cancer and Non-cancerous Cells

Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Danica Ujano, Lulu Ahmad
Dr. Mallory Havens
Cancer is a diverse disease for which new treatments are required to improve patient safety and quality of life. Drosha is a protein that is dysregulated in cancer. The purpose of this study was to determine if Drosha binding to RNA or Drosha cleavage of RNA has an effect on cancer gene expression and an effect on cellular growth and cellular migration. Drosha was studied in cervical cancer cells and human embryonic kidney cells.

Determining Boltzmann’s Constant from the Diffusion and Displacement Rates of Polystyrene Microspheres in a Range of Thermal Environments

Undergraduate Student Project in Math & Science
Mikeely Taylan
Dr. Joseph Kozinski
Introducing an affordable microscopy experiment for laboratory courses at the introductory level, Brownian Motion is illustrated by tracking the displacement rate at which suspended polystyrene microspheres diffuse but the solution. Through video analysis, the rate at which the microspheres displace and diffuse in higher or lower temperature solutions can be tracked and correlated to Boltzmann’s constant.

Predictive Modeling and Analysis of Sports Teams Using Linear Algebra

Undergraduate Student Project in Math & Science
Kevin Gannon
Dr. Amanda Harsy Ramsay
We will discuss the results of an investigation that tested the predictive power of using a weighted Massey Method to predict golf results from the NCAA.

Community Engaged Learning as a Tool for Integrating Social Work and Lasallian Values in the Classroom

Undergraduate Student Project in Social Sciences
Nicole Pratl
Dr. Gretchen Hoge
This project examines the overlap between social work professional values and the Lasallian Core Principles, and explores the role of community engaged learning in social work students understanding of these values. This is done through a literature review of current research on community engaged learning in social work education, and an autoethnographic reflection of my cumulative experience as a Community Engaged Learning Facilitator in an Introduction to Social Work class at a Lasallian institution.

Investigating Bacterial-Surface Adhesion to Nanocomposite Materials for Microbial Fuel Cells

Undergraduate Student Project in Math & Science
Halynn Drozd
Dr. Jason Keleher
Microbial fuel cells (MFCs) is a potential renewable energy source from their ability to convert organic substrates to electrical energy. This research investigates the bacterial adhesion of the cellulose-based nanocomposite from Atomic-Force Microscopy (AFM). To increase the conductivity of the cellulose matrix, polyaniline (PANI) and polypyrrole (Ppy) are introduced. The overall MFC performance can be correlated to the bacterial adhesion from the addition of conductive polymers.

Incorporation of Novel Additives into Alginate-based Hydrogels for Wound Management Applications

Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Carolyn Werr, Heather Lange
Dr. Jason Keleher
Current wound management technologies fail to completely address all aspects of a wound, such as flexibility, exudate absorption and the ability to ensure skin cell proliferation. Hydrogels are a hydrophilic network that can serve as more effective bandages by aiding in the progression of healing and increased skin cell growth. Aloe vera was incorporated into the alginate based matrix in order to introduce anti-inflammatory effects and further improve skin cell viability.

Altering Pore Size of Alginate-based Hydrogel Networks with Organometallic Complexes

Undergraduate Student Project in Math & Science
Alexandria Lanning, Kasey Kane
Dr. Jason Keleher
This work focuses on the incorporation of metal ions and nanoparticles into the structure of the hydrogel as a material for wound management. The metal ions calcium, copper, iron, zinc, and zirconium form organometallic complexes, while the nanoparticles titanium dioxide and zinc oxide form nanocomposite complexes within the network of the hydrogel. The integration of these varied complexes alter the pore size, changing the swellability and strength of the gel.

Development of Nanocomposite Materials for Antimicrobial Coating Applications

Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Matthew Grimm, Poulette Garcia Avila, Jacob Casey, Dany Danhausen
Dr. Jason Keleher
This work focused on incorporating metal functionalized nanoparticles (MFNPs) into chemically inert substrates to serve as a vehicle to induce cell death. Specifically, Cu and Ag-FNPs were incorporated into alginate-Ca2+ polymer matrices. Conventional methods such as Kirby-Bauer disc diffusion and turbidity were used to determine antimicrobial inhibition. Additionally, antimicrobial efficacy of the matrix was evaluated microscopically, against E. coli, with a custom-built epi-fluorescence optical tweezer.
53 Exploring Polyelectrolytes and Surfactants as Novel Cleaning Agents Relevant to Post-STI CMP Cleaning
Undergraduate Student Project in Math & Science
Carolyn Graverson
Dr. Jason Keleher
Chemical mechanical planarization (CMP) is an integral step in producing high-performing microelectronics. A nanoparticle dispersion is an essential component in the removal of excess material, although it is capable of introducing further defects. Therefore, post-CMP cleaning is imperative in producing defect-free integrated circuits, but the current industry method is environmentally unsustainable. The goal of this study is to provide alternatives by implementing polyelectrolytes and surfactants into cleaning solutions.

56 Characterizing the Efficacy of Antimicrobials from Soil Microorganisms on Inhibiting the Growth of Antibiotic Resistant Strains
Undergraduate Student Project in Math & Science
Christina Snitko
Dr. Jeannette Pifer
Antibiotic resistance has become more prominent in the recent years, especially in Methicillin Resistant Staphylococcus aureus (MRSA) infections. In order to find new potential antibiotics, microorganisms from the soil were isolated, tested against non-pathogenic relatives, and then further tested to see if the chosen isolates produced secondary metabolites that may act against the known antibiotic resistant pathogenic strains.

59 Nano Fingerprint Powders as a Vehicle to Capture Amino Acid Residues
Undergraduate Student Project in Math & Science
Lena Safi
Dr. Jason Keleher
The main focus of this research is on studying the mechanism of amino acids with Ninhydrin. After that relationship is determined, the mechanism will be studied on synthetic skin to see if the same theory holds true.

62 Analyzing and Enhancing Vehicle Aerodynamics Using CFD Simulation
Undergraduate Student Project in Math & Science
Rafael Gutierrez
Dr. Joseph Kozinski
Aerodynamics is a major factor in the design of a car which can boost performance and improve fuel economy. Computational fluid dynamics software simulates realistic lift and drag effects before having to manufacture any real components. This research seeks to optimize downforce and drag ratios on a test vehicle with spoilers, front wings, and diffusers. Reducing drag while maintaining traction is essential for making the driving experience on any road condition safer for everyone.

65 A Study on the Viability of Victim Impact Panels with Regard to Restorative Justice for Defendants and Victims
Undergraduate Student Project in Social Sciences
Isabelle Pawlik
Dr. Huma Zia
By analyzing surveys completed by both victims and offenders, the work will provide insight for AAIM (Alliance Against Intoxicated Motorists) on how to better deal with their monthly victim impact panels. This research not only impacts Will County defendants convicted of DUls, but also may allow such forums to be implemented for lesser felonies and other misdemeanors.

68 Investigating Biofilm Formation on Electrode Surfaces Relevant to Microbial Fuel Cells
Undergraduate Student Project in Math & Science
Frank Vukaj
Dr. Jason Keleher
As fossil fuels cells are being depleted, new sources of energy are in need for our future. Microbial Fuel Cells is a source of renewable energy that can be used to turn waste product into energy. The goal of this project is to determine the effect of the biofilm growth in the MFC, and what effect it could have on the energy output.

71 Incorporation of Ag-Functionalized TiO2 Nanoparticles into a Tunable Alginate-based Hydrogel for Applications in Wound Management
Undergraduate Student Project in Math & Science
Doherty Center for Aviation and Health Research
Heather Lange
Dr. Jason Keleher
Amino acids and Ag-functionalized nanoparticles have been incorporated into an alginate-based hydrogel for tunability as well as antimicrobial properties.

74 Correlating Liquid Crystal Structure to Laser Light Mitigation for Enhanced Aviation Safety
Undergraduate Student Project in Math & Science
Henri Lam
Dr. Jason Keleher
Aircraft safety can be compromised due to laser light attacks. Laser light intensity can be mitigated by liquid crystal’s optical properties; however, current developed prototypes are constrained to one liquid crystal. This research investigated additional liquid crystals for their impact in laser light mitigation and if there is dependency on their chemical and physical properties. Exploring other liquid crystals will optimize the prototype mechanism, giving pilots the greatest amount of protection against laser light illuminations.

77 Study of Sudoku Solver Algorithms
Undergraduate Student Project in Math & Science
Daniel Budziak, Sheila Lesiak, Alexander Burgess
Dr. Piotr Szczurek
We will be conducting a study on the efficiency of several different algorithms used to solve Sudoku puzzles. We will then be attempting to create our own algorithm that solves a Sudoku puzzle.
Where I’m From
Undergraduate Student Project in Education
Berenice Diaz
Dr. Laura Quaynor
A Globally Networked Learning Environment (GNLE) benefits ESL teacher candidates as it prepares them in working with English Language Learners. U.S. teacher candidates collaborate with English Language Learners from Liberia, West Africa, to learn essential orientations in teaching English Language Learners.

Treatment Methods for Rotator Cuff Pathology in College Volleyball Athletes: A Critical Appraisal
Undergraduate Student Project in Nursing
Estefania Zavala
Dr. Laura McDonald
Overhead athletes cope with various acute and chronic injuries of the shoulder. Rotator cuff tendinopathy treatments were analyzed to determine the most effective method to utilize in clinical practice for healthcare practitioners.

Modelling Cross-Prism and Petersen Graph Families in Self-assembling DNA Using Graph Theory and Linear Algebra
Undergraduate Student Project in Math & Science Caterpillar Scholar Award
Alvi Renzyl Cortes, Lauren Gernes, Eric Redmon
Dr. Amanda Harsy Ramsay
Motivated by recent advancements in nanotechnology and the discovery of new laboratory techniques using the Watson-Crick complementary properties of DNA strands, formal graph theory has recently become useful in the study of self-assembling DNA complexes. Construction methods based on graph theory have resulted in significantly increased efficiency. Our results focus on applying graph theory and linear algebra to constructing cross-prism and Petersen graph families under two laboratory constraints.

Efficacy of Flexibility Training for Increasing Strength Output
Undergraduate Student Project in Math & Science
Levi Schmillen
Dr. Laura McDonald
After nine sedentary participants underwent an initial strength-output testing session, a 6-week flexibility program was administered to each participant. Following the completion of the flexibility program, each participant will take part in a final strength-output testing session using the same tests as the initial session. The results will be used to determine the effect of a long-term flexibility program on strength output.

Infection Prevention Strategy for Caring for Patients with Indwelling Urinary Catheters
Undergraduate Student Project in Nursing
Laurel Hudson, Alexander Kravitz, Dylan Krug
Mary Eileen Kloster
Urinary tract infections are a commonly acquired, preventable hospital-acquired infection. This evidence-based project reviewed current research to identify the causes of catheter-associated urinary tract infections and present a creative solution. The evidence-based solution that was created was a mnemonic – P.A.R.T.Y. This mnemonic highlights important aspects to remember when inserting and caring for patients with an indwelling urinary catheter.

Increasing the Antimicrobial Efficiency of Sulfanilamide and Derivatives with the Use of Gold and Silver Nanoparticles
Undergraduate Student Project in Math & Science
Melanie Mendoza
Dr. Jason Keleher
This presentation will report on research of the antimicrobial effects of silver and gold nanoparticles. In addition, it will discuss the potential of nanoparticles to increase the efficiency of antibiotics and other antimicrobial species. This was tested with various assays of modifications of sulfanilamide derivatives on E. coli and B. subtilis compared to the original sulfanilamide and incorporation of nanoparticles in both species.

Solar Powered Hydration System
Undergraduate Student Project in Math & Science
Stephen Hiller
Dr. Phillip Chumbley
The objective of this project is to successfully develop a self-monitoring system. This system will be responsible for detecting the level of water in a region and delivering water as needed, doing so for an extended period of time.

The Advantages of Building Strong Coalitions in Diverse Communities
Undergraduate Student Project in Social Sciences
Stephanie Casales
Dr. Jennifer Tello Buntin
Diverse communities are embraced but often times face more challenges than other communities, and needs to be properly addressed. These challenges are present in areas of public health and future policy. This research project examines a case study of a multicultural coalition in Will County through participant observation.
3 Correlation of Factors in Airport Ground Vehicle Incidents
Graduate Student Project in Math & Science
James Demasi, Erasmo Alarcon
Dr. Erik Baker
Researchers will review 60 airport ground vehicle accidents to find potential correlations in demographic or environmental data. Personal statements from the incidents will be examined and compared to find potential similarities.

6 Analyzing the Effect of Sleep Awareness Education
Graduate Student Project in Education
Shean Christie, Xinyi Xu, Anuj Yadav
Dr. Erik Baker
The purpose of this research is to analyze the importance of fatigue education on affecting personal sleep patterns at an aviation university population.

12 Safety Culture: A Longitudinal Assessment of Lewis University’s Safety Management System and Policies
Graduate Student Project in Math & Science
Ross Petrillo, Tim Kingston
Dr. Erik Baker
Students, faculty/staff, and airport & services personnel within the Aviation Department of Lewis University, will be presented with a survey on the Safety Management System, to identify strengths and weaknesses in the program.

15 Aviation Flight Instructor Fatigue Levels: A Comparative Analysis
Graduate Student Project in Math & Science
Jeffrey Lambert, Lorenzo Dominguez, Ulises Bonilla
Dr. Erik Baker
Aviation flight instructor fatigue levels at an aviation university flight school will be compared to other fatigue-prone professions using the Chalder Fatigue Scale.

18 Developing Culturally Competent Care and Communication Skills Through Simulation
Graduate Student Project in Nursing
Katie Sleaford, Kerry Vaccaro, Christina Bolton-Taylor
M. Caitlin Kusnetzow
An implemented project with Junior nursing students at Lewis University included multiple learning methodologies: classroom presentation, simulation, and debriefing. The project focused on providing students with education (classroom presentation) and allowing them to practice caring for diverse patients with language barriers (simulation). Our project focused on cultural competence, cultural sensitivity, communicating/caring for diverse patients including persons of Limited English Proficiency (LEP), and laws for communication with LEP persons. Evaluation was done via pre-simulation questions and formal evaluation survey (post simulation).

21 Attrition Rates of Part 141 Flight Students
Graduate Student Project in Math & Science
Alec Koczka, Abigail King, Zack Demos
Dr. Erik Baker
This research studies flight student attrition rates at Lewis University.

24 Differences in Career Aspirations and Expectations Among University Freshmen and Seniors in Aviation Majors
Graduate Student Project in Math & Science
Lashonda Clarke, Tsung Han Lee
Dr. Erik Baker
The study aims to understand the changes in expectations and aspirations of aviation majors as they progress from freshmen to seniors. A questionnaire will be sent to students in the aviation department through the campus Blackboard system and distributed through in-class surveys. If there are any differences between students aspirations and expectations, this may explain the high turnover rates among various social groups and the negative implications experienced by gender and ethnic minorities toward occupational expectations.

27 Analyzing Effectiveness of Flight Instructional Systems: Double Block Versus Single Block
Graduate Student Project in Math & Science
Ryan Altman, Samantha Blackburn, Calvin Warren, Relika Sinh
Dr. Erik Baker
The purpose of the study is to determine if there is any difference in student performance and amount of time to complete flight instruction when comparing a single block instructional system to a double block system.

30 Benefits of Social-Emotional Learning
Graduate Student Project in Social Sciences
Kirsten Vancura
Leonard Harsy
Social-emotional learning (SEL) is a key component of child development. SEL helps to form healthy people, relationships, and even promotes greater academic success. When students are introduced to curriculum that teaches these skills, they often show long-lasting improvement in these various areas of life. SEL is beneficial to people of all ages, but when these lessons are introduced during the formative years, it is the most advantageous. Additionally, SEL skills are best learned when the instructor is someone that students are familiar with and someone who is able to effectively model and understand the various topics associated with social-emotional learning. The potential for social-emotional learning mastery increases if SEL skills are introduced in classroom lessons and then continually reinforced throughout the learning environment. The benefits of social-emotional learning are numerous and far-reaching.
33 The Viability and Efficacy of Implementing Citizen Science in High Needs Schools: The Quality of Your Water at Home
Graduate Student Project in Education
Sean Chamberlin, Alisha Kimbro, Alex Popidinski, Dominick Strom
Dr. Lauren Rentfro
The effectiveness of citizen science, the public contribution to scientific research, has rarely been examined for learning in, or attitude toward science. The purpose of this experiment is to evaluate the viability and efficacy of implementing a water quality assessment citizen science project into two high needs schools in the Chicagoland area. If incorporated properly, citizen science projects can be economically shrewd, positively benefit science attitude and achievement, and target elusive Next Generation Science Standards.

36 Perceived Risk of Cardiovascular Disease in Women
Graduate Student Project in Nursing
Laura Eulitz
Dr. Kathleen Fitzgerald
An educational intervention to increase perceived risk of cardiovascular disease in women is explored.

42 Through the Eyes of Trauma: A Review of EMDR Treatment
Graduate Student Project in Social Sciences
Abigail Kemph, Connor Strawn, Brittany Eikey, Sarah Pichon
Dr. Kimberly Duris
EMDR is an empirically-validated treatment approach developed by Dr. Francine Shapiro initially to address memory quality. As clinical studies were conducted, EMDR was found to be effective in resolving trauma-related issues. EMDR is an 8-phase approach that treats a client who is experiencing difficulties resolving past trauma. This treatment helps a client to be present in the moment, fostering a sense of healthiness and productivity. There are various populations in which EMDR has been proven effective, including combat/veterans, victims of abuse and/or neglect, and victims of terror or natural disasters. The EMDR Institute provides basic training, consisting of lecture, live/videotaped demonstrations, and supervised practice.

45 The Impact of Privilege, Power, and Values in the Supervisory Relationship
Graduate Student Project in Social Sciences
Sarah Pichon, Megan Klee, David Laurich
Lisa Brown
Multicultural issues require more than just verbal attention, but demand purposeful action. By analyzing and implementing multicultural knowledge in the supervisory relationship, all stakeholders benefit, primarily supervisees and clients.

46 Enhancing Microbial Fuel Cell Performance Through Incorporation of AuNPs in Novel Anode Materials
Undergraduate Student Project in Math & Science
Alana Dunne, Hafsa Khan, Madalyn Puckett
Dr. Jason Keleher
Microbial fuel cells (MFCs) have gained considerable traction as an alternative energy source due to the ability of bacteria to function as a catalyst in the oxidation of organic substrates. Current research utilizes carbon-based anode materials due to their biocompatibility yet they result in poor fuel cell performance. This work focused on the synthesis of a novel cellulose-based electrode to promote bacterial-surface interactions and enhance electron transfer. The novel electrodes were characterized via bacterial viability, atomic force microscopy and electrochemical analysis.

48 Mindfulness with Children and Adolescents
Graduate Student Project in Social Sciences
Vannesa Ocampo, Katherine Oko, Rachel Brouwer, Darla Cabrera
Dr. Katherine Helm-Lewis
Mindfulness is an increasingly popular therapeutic approach that has begun to turn its focus towards the child and adolescent populations, showing significant results across many areas of mental health. Utilizing numerous therapeutic approaches, mindfulness allows one to use non-judgemental self-observation to increase awareness of the self, others, and one’s surroundings providing many benefits to those dealing with a number of mental health concerns.

51 The Effectiveness of Dialectical Behavioral Therapy: Mindfulness Modules with Children and Adolescents
Graduate Student Project in Social Sciences
Danielle Lucio, Andrea Holm, Kelly Ketelaar, Ashley Eller
Dr. Katherine Helm-Lewis
This presentation will explore the theoretical orientation of Dialectical Behavioral Therapy (DBT). The presentation will highlight one of the primary four modules grounded within DBT, known as mindfulness. The presenters will explain the effectiveness of DBT Mindfulness interventions and techniques in working with a child and adolescent client population.
The Effect of Additive Structure on Slurry Performance Relevant to Shallow Trench Isolation (STI) Chemical Mechanical Planarization (CMP)

Graduate Student Project in Math & Science
Katherine Wortman-Otto, Dr. Jason Keleher

Shallow Trench Isolation (STI) chemical mechanical planarization (CMP) is a critical process step in the fabrication of integrated circuits. Through the balance of a mechanical force and a colloidal dispersion (slurry), global planarity is achieved and this in turn leads to a decrease feature size and enhanced device performance. This study probed the impact of the slurry additive functionality, such as carboxylic acids, amines, and phenols, on the overall CMP performance.

Evolution and Clinical Utility of the DSM

Graduate Student Project in Social Sciences
Natalie Palm, Emily Little, Morgan Eslinger, Michelle Hansen, Lisa Brown

The purpose of this study is to examine the changes made to the DSM with each revision. Some attention is given to the overall structure and content of the DSM as a whole, but the main focus is given to changes to specific disorders throughout the editions. Additionally, areas warranting potential future revision are included.

Utilizing Non-ionic Surfactants in Abrasive-free Slurries for Copper Chemical Mechanical Planarization

Graduate Student Project in Math & Science
Jacqueline Pezan, Maria Salinas, Dr. Jason Keleher

Chemical Mechanical Planarization (CMP) is a critical process which aims to achieve the synergistic balance between chemical and mechanical parameters in order to remove overburden material and limit defectivity from desired substrates within the microelectronic industry. This work aims to decrease the defectivity on a polished copper (Cu) substrate, by implementing abrasive-free slurries that contain nonionic surfactants, suitable complexing agents, and oxidizing agents.

Cultural Competency and the Therapeutic Relationship

Graduate Student Project in Social Sciences
Ariana Ruiz, Amy Jeffers, Alexandria Neal, Heather Slocum, Angelica Arriaga, Lisa Brown

The purpose of this literature review is to examine potential relationships between cultural competence and therapeutic relationships, particularly in regard to the overall quality of the relationship between culturally heterogeneous therapists and clients, as well as any treatment outcomes reported in such clinical situations.

Conflicts in Counseling Supervisory Relationships

Graduate Student Project in Social Sciences
Ashley Eller, Kelly Ketelaar, Danielle Lucio, Andrea Holm, Lisa Brown

This presentation will explore the different categories of conflict that arise within clinical mental health counseling supervisory relationships. This research assumes a practical approach in making recommendations to resolve these conflicts by summarizing research-based resolutions from literature.

Characterization of a Photocatalytic Supramolecular Cellulose-Based Nanocomposite for Applications in Wastewater Remediation

Graduate Student Project in Math & Science
Samuel Baker, Nikolas Saavedra, Dr. Jason Keleher

This work focuses on the characterization of a cellulose-based nanocomposite functionalized with TiO2 and β-CD. Correlating the surface energy of the composite to its absorption capacity of a modeled organic pollutant (methylene blue), the remediation capabilities of the nanocomposite can be optimized. Through the coupled addition of supramolecular structures and semiconducting NPs, a photocatalytic cellulose-based polymeric matrix with strong adsorptive properties can be synthesized for efficient pollutant remediation.

Impact of Low-cost Hands-on Activities in STEM Classrooms

Graduate Student Project in Education
Jacob Casey, Mayranely Guillen, Giovanni Rosa, Maura Slattery, Dr. Lauren Rentfro

The effect of the implementation of low-cost, hands-on activities in STEM classrooms was explored.

The Development of an Amino Acid Cellulose-based Composite for Enhanced Metal Remediation

Graduate Student Project in Math & Science
Costa Panayiotides, Dina Hejja, Dr. Jason Keleher

Pollution is a growing concern for the health of the environment, highlighting the need for new and improved filtration methods. One widely available material that has shown promising results is cellulose. To extend pollutant remediation, this work focuses on the development of cellulose-based composites functionalized with amino acids and alginate.

Improving Plant Growth in Contaminated Soils with Fungi

Undergraduate Student Project in Math & Science
Brandon Popp, Sharbel Dawalibi, Alex Serrano, Lillian Catala, Jesus Munoz, Sarah Brietzke, Joseph Pryzdia, Dr. Jerry Kavouras

The use of fungi for soil bioremediation was investigated by inoculating plants with environmental fungal isolates and treating with lead nitrate. The data suggested that the fungi did not improve plant growth in the presence of lead nitrate, but did improve germination in Canada wild rye. The protocols will be reviewed and revised for future studies.
78 Comparison of Disabilities of the Arm, Shoulder, and Hand (DASH) Scores Between Softball Position Players and Pitchers

Graduate Student Project in Nursing
Paige Fossey
Dr. Laura McDonald

Participating in the sport of softball places stress on female athletes’ wrist, elbow, and shoulder joints. This study utilized the Disabilities of the Arm, Shoulder, and Hand Questionnaire to compare upper extremity disability in softball pitchers and position players. Upper extremity disability may lead to subsequent time-loss from sport and altered activities of daily living.

81 Treatment of Schizophrenia Using Dialectical Behavior Therapy

Graduate Student Project in Social Sciences
Jessica Muir, Jamie Hogan, Kornelija Dunojote, Jeffrey Weiss
Dr. Katherine Helm-Lewis

Treatment of schizophrenia using dialectical behavior therapy is explored.

84 Implementation of Cost Effective Laboratory Experimentation for the High School Level and Higher Education

Graduate Student Project in Education
Tyler Dundek, Lucas Kilmer, Sawyer Jackson
Dr. Lauren Rentfro

Hands-on learning in rigorous science fields is crucial for students to understand difficult conceptual materials. Many laboratory experiments, especially in physics labs, require expensive and specialized instruments for accurate results. While it has been extensively proven that technology within classrooms can be an essential tool for educators and students alike, it can be seen today that there are still education programs that cannot afford to implement these tools.

87 Counselor Self Care and Wellness

Graduate Student Project in Social Sciences
Amanda DeAngelo, Denise Williams, Shafiah Dunmars, Jessica Moore
Lisa Brown

Counselors must maintain their own wellness in order to provide competent care to clients. This study provides an overview of self care and wellness including an examination of the history, necessity, and various methods of self care for counselors.

90 Synthetic Design and Functionalization of Hydrogel Nanocomposites for Applications in Responsive Wound Management

Graduate Student Project in Math & Science

Abigail Linhart
Dr. Jason Keleher

This research focuses on the design of a hydrogel nanocomposite functionalized with metal nanoparticles and conductive polymers to promote antimicrobial activity and responsiveness in the composite. More specifically, core-shell titanium dioxide-silver nanoparticles (Ag-TiO2 NPs) are photochemically synthesized in situ to increase the rate of bacterial cell lysis. Additionally, conductive polymers are incorporated to monitor changes in the degree of swell and signal when the gel has reached maximum swell capacity.

93 Development of a Photocatalytic Cellulose-based Nanocomposite for Organic Pollutant Remediation

Graduate Student Project in Math & Science

Jessica Tabert, Fiona Bryne
Dr. Jason Keleher

Current remediation techniques for persistent organic pollutants involve absorptive processes to improve water quality; however, these methods are costly and have limited adsorption capacity. Recent studies have shifted towards naturally abundant polymers, such as cellulose and its common derivatives, due to their high adsorptive properties and tunable morphology. The addition of the photocatalyst titanium dioxide (TiO2) within the matrix showed 30% remediation of the modeled pollutants (Roundup™ and methylparaben) under UV irradiation.
**Business Plan Competition**

**UpLift Real Estate**  
*Undergraduate Student Project*  
**Cache Binion**  
Kristin Burton  
UpLift is a full service real estate company with a social agenda. Our goal at UpLift, is to rebuild neighborhoods and communities through property revitalization and job training. UpLift purchases abandoned residential and commercial properties in lower income neighborhoods and renovates them. We hire and train and second-chance individuals for the construction jobs. Most of the properties we acquire are transformed into recreational centers or mixed income housing. UpLift is designed to restore and revitalize communities through reinvestment, education and job training.

**Green Pulse Tech**  
*Undergraduate Student Project*  
**Kenneth Burton**  
Christopher Jackson  
Green Pulse Tech focuses on using solar power and renewable energy to power homes and consumer electronics. This is a social responsible company and will focus on improving the lives of people around the world by promoting recycling, renewable energy and technology innovation.

**Thinfast MD**  
*Undergraduate Student Project*  
**Nabeel Ghani, Hamza Ghani**  
Kristin Burton  
More than 160 million people in America are obese. Some of them have tried losing weight and have given up. Others try a different diet every week and don’t know why they aren’t losing weight. Many of them suffer from weight-related diseases and confidence issues. That’s why Dr. Ghani and the team at Thinfast MD are ready to provide individualized monitored support to safely and successfully lose weight. Our comprehensive approach incorporates lifestyle and behavioral changes and nutritional solutions to help change lives.

**EMPO**  
*Undergraduate Student Project*  
**Alec Goetz**  
Amiel Harper  
“Hey, what should we do tonight?”, “I don’t know, what do you want to do?” and repeat and repeat. Does this sound like a conversation you recognize? Most people live in a community where there are endless things to do on any given day; however, they are unaware of them because there is no centralized place to find out about daily local events, restaurant specials, live entertainment or live performance schedules. I have solved that problem with EMPO. EMPO is a mobile application that tells the user everything going on inside their community and nearby communities TODAY. The application displays all daily promotions, specials and events that otherwise may have been missed by residents. The mission and purpose of EMPO is two-fold: 1. It promotes the local businesses and increases sales during special events. 2. It brings together more of the community residents and makes them aware of the activities in their area so they get the most out of what every single day has to offer.

**Desserts By Kimberly**  
*Undergraduate Student Project*  
**Kimberly Hailmann**  
Kristin Burton  
Desserts By Kimberly is a bakery comprised of gluten free items, and is dedicated to serving those who cannot eat regular baked goods due to diet or lifestyle reasons.

**Jewels by Julz**  
*Undergraduate Student Project*  
**Julia Riley**  
Kristin Burton  
Jewels by Julz is a business which specializes in handcrafted jewelry. We believe every woman deserves to look fabulous and feel confident in customized jewelry that fits her style. Each piece is designed by Julz, an expert jeweler with over 12 years of experience.

**Find My Foundation**  
*Undergraduate Student Project*  
**Ashley Schons**  
Kristin Burton  
Find My Foundation is a smartphone application that utilizes facial recognition technology to analyze a user’s skin type and recommend the perfect foundation shade for their skin tone. This app will also help the user with makeup tips and tutorials; as well as, assistance with purchasing select brands based on skin type and tone. This customized experience will leave customers feeling confident in their complexion.
Business Pitch Competition

Autoimmune Skin Care Products
Undergraduate Student Project
Sara Alashqar
Kristin Burton

Approximately 50 million Americans, 20 percent of the population or one in five people, suffer from autoimmune diseases. Women are more likely than men to be affected; 30 million people are women. Most people who suffer from an autoimmune disorder deal with skin issues that affect their daily lives. My idea is creating a skin natural care line specifically for people who have suffered from autoimmune disorders, or for people who want 100% natural products.

5onFive
Undergraduate Student Project
Andrew Franzen
Kristin Burton

5onFive is a mobile application for any mobile device designed to foster communication and connectedness within the basketball community.

Smart Shop
Undergraduate Student Project
Hamza Ghani
Kristin Burton

Smart Shop is a smarter way to shop. Make a list, compare local and online prices, and use analytical tools to save the most money possible.

Get Elected Now!
Undergraduate Student Project
Nabeel Ghani
Kristin Burton

The strategy for running for an elected position has changed. Gone are the days when qualified lawyers or career politicians only ran for office. Now, everyone wants to run. However, not everyone knows how to run a campaign. That's where Get Elected Now! comes in. We offer a full suite of services, the experience, support, and manpower that candidates with no prior political experience need to run a successful campaign.

Mosaic Spirits of Creativity
Undergraduate Student Project
Jamie Voustros, Kayla Carson
Kristin Burton

Mosaic Spirits of Creativity is a theater that proves a safe environment for artists and audience members to explore their creative spirits. Understanding the difficulties of finding a space, funds, and choosing a season, we created a theater to assist artists in their production goals. We believe everyone should have the space and resources to create. We also believe in empowerment and social justice in order to rejuvenate our society. We challenge and foster the minds of our audience through inclusion, integration, and authenticity; and work to motivate the creative spirits of our society.
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Celebration of Scholarship 2019

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Administrative Support

Classandra Green
Administrative Support
Pictured above: “The Way Life Goes,” Acrylic on Canvas (Won 3rd place at The President’s 10th Annual Art Exhibition, 2018) by Zachary Meredith

President’s 11th Annual Art Exhibition

*Gallery Talk at Celebration of Scholarship:* Thursday, April 11, 2-3 PM, Studio Theatre

*Reception and Awards Ceremony:* Thursday, April 25, 7-9 PM

*On View:* April 4-26, 2019

Brent and Jean Wadsworth Family Gallery, Oremus Fine Arts Center

Featuring highlights of Lewis University student and alumni artwork. This important juried exhibition is hosted by the Department of Art and Design and President Dr. David Livingston.

Philip Lynch Theatre Production of “Peter and the Starcatcher”
Directed by Jo Slowik

**Performances:** Thursday, April 11, 7 PM; April 12-14 & April 25-28, 2019

Tony-winning *Peter and the Starcatcher* upends the century-old story of how a miserable orphan comes to be The Boy Who Would Not Grow Up (a.k.a. Peter Pan). From marauding pirates and jungle tyrants to unwilling comrades and unlikely heroes, *Peter and the Starcatcher* playfully explores the depths of greed and despair... and the bonds of friendship, duty and love. A young orphan and his mates are shipped off from Victorian England to a distant island. At sea, the boys are discovered by a precocious young girl named Molly, a Starcatcher-in-training who realizes that the trunk’s precious cargo is starstuff, a celestial substance so powerful that it must never fall into the wrong hands. When the ship is taken over by pirates – led by the fearsome Black Stache, a villain determined to claim the trunk and its treasure for his own – the journey quickly becomes a thrilling adventure.
Co-sponsored by
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Special Thanks to
Philip Lynch Theatre
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