



# URSA

Undergraduate, Research,  
Scholarship and Arts.  
Benedictine University

## 2018 Oral Presentation Schedule

April 5, 2018 ❖ 12:00-5:30 pm ❖ Goodwin Hall 312, 317, 321

### SESSION 1: Goodwin 321 (12:00-1:30 pm)

◆ **Paulina Piasecki, Andrew Foy**

“Food Fights with Neighbors? A Survey-Based Study of Incivility, Hostility, and Political Polarization in Municipal Government”

We wish to investigate patterns of incivility in local government, to examine the causes and effects of these breakdowns in civil norms. The aim of this study is to investigate the working environment in elected local bodies, and to look, specifically, at perceptions of (in-)civility among local officials. We will be surveying elected municipal officials in the state of Illinois, using a multi-item survey instrument that will be made available to them in digital form. We will electronically send the survey to all elected officials currently serving on municipal bodies in Illinois beginning in early 2018 and continue throughout much of the year to contact and request completion of the survey. Our research asks the questions, “Do local elected officials experience a hostile or uncivil working environment in their civic lives?” And, if they do, “What factors explain instances of incivility and hostile behavior in municipal bodies?” Our research asks the question, “Do local elected officials experience a hostile or uncivil working environment in their civic lives?” And, if they do, “What factors explain instances of incivility and hostile behavior on municipal bodies?”

*Faculty sponsors: Phil Hardy, Brian Patterson*

◆ **Younes Ibnatik**

“The Dreamer Scholarship Fund at Benedictine University”

The primary purpose of this fund is to provide resources to assist current Benedictine University students born outside of the United States with educational expenses including, but not limited to, tuition. I have partnered with the World Relief Organization (WRO) to raise awareness on the DACA issue and have interviewed DACA recipients. I met with legal supervisors at the WRO to learn more about immigration reform. I interviewed an analyst for Senator Tammy Duckworth at her office in Chicago on DACA and immigration reform. I also partnered with the Naperville Towneplace Suites by Marriott and received four free night certificates to raffle and raise money for the Dreamers Fund. In total, \$1,000 has been raised through family and friends and will be disbursed during the first semester of the 2018-2019 academic year. Recipients of the award must be used for educational expenses. This project was done as part of my community service requirement as an Arthur J. Schmitt Scholar. This project has also helped me develop leadership skills and to take the initiative in responding to injustice.

*Sponsor: Joan Henehan*

◆ **Claire Boyle**

“A Study of Moroccan Markets: Memories from my Study Abroad Trip to Morocco in May 2017”

This presentation seeks to identify the impact of the markets upon everyday Moroccan life. It will show scenes of

different markets in many major and minor cities including Fes, Marrakech, Agdz/Zagora (a desert town), Essaouira, and others. Some historical background presented on the Medina or old town where the markets are usually located, the currency used, and what kinds of wares are sold. Additionally, there will be a presentation of some items that I brought home with me that were purchased in Moroccan markets.

*Faculty sponsor: Latifa Bounou*

## **SESSION 2: Goodwin 317 (12:00-1:30 pm)**

- ◆ **Zeeshan Malik, Patrick Wallenberg, Anthony Sharp**

“Illinois Highway Accident Data Analysis”

For our project we will be analyzing the data for Illinois traffic accidents that have occurred the past ten years until 2016. Our analysis will include data for motorists, motorcyclists, pedestrians, and bicyclists. The data will include the fatality statistics for the alcohol impaired, seat-belt usage, distracted driving. We will break down the data into different categories based on driver's age, sex, helmet usage (for motorcyclists), and location. Our overall goal is to discover trends that occur in Illinois traffic accidents each year. We will be creating 3D maps and graphs to show the statistical analysis from a visual perspective using Microsoft Excel. We will also be using the software ArcGIS in order to create additional maps and visualizations of the data.

*Faculty sponsor: Deborah Cernauskas*

- ◆ **Nicholas Kapetanios, Erik Stammer, Victor Ovalle**

“The Current and Future Process of Boarding an Airplane”

In our current and future model we are creating, we are figuring out if there is a better way for the airport to get their passengers onto the plane in a fair amount of time. Our future model will be based on acquiring an extra employee to help with the boarding process and will create an extra line onto the plane. Will the satisfaction rate the passengers will have by boarding the plane faster outweigh the cost of having an extra employee? We will run the model based on one of the airlines and the type of plane they use relating to how many seats it contains.

*Faculty sponsor: Deborah Cernauskas*

- ◆ **Dan Mozdzen, Raheem Ashrafi, Ali Hamideh**

“Analysis and Map of Universities within the United States”

Our proposal consists of collecting and analyzing data from the National Center for Education Statistics as well as the U.S. Department of Education. We will provide a better insight on higher education within various states and schools. We will analyze graduation rates, admission rates, ACT and SAT scores, university rankings, student debt, tuition costs, overall family income. We will use ArcGIS Maps, as well as Excel, to organize and analyze our collected data to draw conclusions and inferences. Our goal is to help families plan accordingly when making living decisions, college and career plans, and financial planning based off of the various conclusions made from analyzing our collected data.

*Faculty sponsor: Deborah Cernauskas*

- ◆ **Aaron Reilly**

“Benedictine University Student Investment Fund Attribution Analysis”

Dr. Adamiec and I will be performing an attribution analysis on the Benedictine University Student Fund. We will be comparing it's performance to the overall benchmark set for it at it's inception. We will also be conducting a style analysis and comparing the portfolio performance to other portfolios with similar strategies. Doing this should reveal not only the approach the student fund has taken but also the some of the reasons for its performance whether good or bad. Dr Adamiec will be leading this analysis and I will largely be assisting her in my capacity as the fund manager for Benedictine University Student Fund.

*Faculty sponsor: Larissa Adamiec*

### SESSION 3: Goodwin 321 (1:30-3:00 pm)

◆ **Ali Sultan, Jack Purcell, Isa Ranjha**

“Average Echinodermata Body Sizes and Ecological Adaptation During Their Evolutionary History”

The Echinodermata phylum consists of aquatic invertebrate animals which are found in every ocean depth and marine environment. The purpose of this study is to document trends in ecology and body size of echinoderms, beginning 500 mya within the Cambrian period to the Holocene. We compiled data on echinoderm body sizes and life habits such as mobility and feeding for approximately 400 echinoderm species from all major subgroups spanning the Phanerozoic. In cases where data was not available, we employed an algorithm to calculate unknown values based on their closest relatives. The algorithm employed for finding body size re-scales the size of the animal with one or more missing size measurements to the shape of the closest relative that attains that size measurement. Our findings include: i) An observation of body size increase overtime, combined with a transition from epifaunal, immobile filter-feeders to infaunal mobile mass feeders, ii) this transition coincides with a transition from crinoid-dominated biotas to echinoid-dominated biotas to die out and give way to the echinoids to flourish, and iii) these abrupt changes often coincided with mass extinctions.

*Faculty sponsor: Philip Novack-Gottshall*

◆ **Adrian Cornely**

“The Search for the Untangleable Knot: Braids in Cryptography”

With advances in both computational power and in our understanding of modular arithmetic, previously secure methods of cryptography become less secure, if not insecure entirely. This talk investigates the possibility of the usage of braid groups in cryptographic applications, namely the Diffie-Hellman Exchange. Braid groups will be introduced, as well as the theory behind how they can be applied to a system that typically uses modular arithmetic with integers. A step-by-step example will be given, followed by the presentation of collected data (and the analysis thereof) with regards to experimentally observed computational requirements.

*Faculty sponsor: Ellen Ziliak*

◆ **Trupti Potdukhe**

“The Levels of Urinary Protein in Heymann Nephritis, a Rat Model for Membranous Nephropathy in Humans”

Nephrotic syndrome is a kidney disorder in which the body excretes excess protein in the urine. This condition, termed proteinuria, is typically caused by damage to the cluster of cells in the glomeruli, part of the functional unit of the kidney called the nephron, that help filter waste product. Membranous nephropathy is one of the major causes of nephrotic syndrome in seniors, and it will be more closely investigated by using a rat model that has been injected with the Heymann Nephritis antibody. Rat urine was collected at 0, 1, 2, and 3 weeks and urinary proteins were measured using Lowry’s method. Absorbance was compared to a bovine serum albumin standard curve, and concentrations were later normalized with creatinine levels. It was concluded that as Heymann Nephritis develops in the rat, proteinuria increases. Immunohistochemistry of kidney sections gave qualitative evidence to support this claim by showing the presence of collagen and acid phosphatase activity in the nephron.

*Sponsor: Krishnamurthy Gudehithlu, Cook County Hospital*

◆ **Malik Ata, Christian Estrada**

“Searches for Merging Galaxies in the Sloan Digital Sky Survey Stripe 82 Co-Add”

Galaxy Mergers can simply be described as two or more galaxies colliding and are extremely violent in that they have major effects on the galaxies involved due to the gravitational interactions as well the friction between gas and dust. We are collecting data on merging galaxies found in Stripe 82, the celestial equator, using images from the Sloan Digital Sky Survey (SDSS). The SDSS began in 2000 and has had several phases of data releases providing detailed, colored maps of one-third of the sky. A SQL query will be created based on previous, similar data collections. Certain parameters must be met in order for a set of galaxies to be considered a galaxy merger, such as galaxy color and proximity. We hope to obtain a set of galaxies high in purity and completeness. We hope to also

examine merging galaxies that have exceptional morphologies.

*Faculty sponsor: Matt Wiesner*

#### **SESSION 4: Goodwin 317 (1:30-3:00 pm)**

◆ **Maria Eugenia Chong, Paulina Piasecki**

“Making Advising Great Again: Examining the Advising Process in the Daniel L. Goodwin College of Business at Benedictine University Using ExtendSim 9”

As current student workers at the Undergraduate College of Business Department, we have experienced the advising process. The main observation that we have made is a lack of coherency, across department faculty and staff, in the overall way students are encouraged to sign up for an appointment with their advisor. Due to this, not only do faculty and staff experience stress in addition to their already heavy teaching loads, but students too feel unorganized and distressed when attempting to create their schedules and meet graduation requirements. The purpose of our study is to create a model that enables both faculty and students to have a seamless advising experience. With the use of the software ExtendSim 9, we will propose a new advising process through a simulation.

*Faculty sponsor: Deborah Cernauskas*

◆ **Akshat Sahai, Mohammad Taqvi, David Carey, Younes Ibnatik**

“Analyzing Why Sam's Club Locations Have Closed”

Several Sam's Club locations have closed and continue to close their doors to the public in 2018. Simultaneously, Costco continues to grow. Working with ArcMap, a software application under ArcGIS, which allows users to view, edit, create, and analyze geospatial data, we are able to analyze and potentially find a justification for this situation. We began by obtaining data based on the location of each Sam's Club that has closed thus far in Illinois. After gathering relevant information, we found the nearest Costco locations to the Sam's Club stores that closed. Our objective is to figure out if and why customers are preferring Costco to Sam's Club. Other factors considered were the population and median family income of the county in which the stores are located. This data will allow us to determine if Costco is taking market share from Sam's Club locations and ultimately causing the closings.

*Faculty sponsor: Deborah Cernauskas*

◆ **Mohammad Ali, Musa Abdin, Sharjeel Haroon**

“Circle 8 Logistics Financial Analysis Model Based on Their Growth”

Circle 8 Logistics is a rapidly growing company based in the Chicagoland area. It is a fairly new company founded in 2001 by Ryan Phillips and Mike Lewis. Circle 8 Logistics provides multimodal transportation and logistics services throughout North America and parts of Canada. They are a non-asset based company which means they do not have their own trucks and trailers to transport the freight. Their biggest investment is the people who handle the business and the process of the way it can get done.

*Faculty sponsor: Deborah Cernauskas*

◆ **Musa Abdin, Imad Zayed, Amreen Ahmed, Atiya Mahkri**

“Evaluating Areas in Need of Emergency Care Facilities in Chicago”

The objective of this analysis was to evaluate Chicago neighborhoods and determine the best locations to open a non-profit emergency care unit. These emergency care units will provide residents easy access to healthcare when needed. We identified areas where clinics are scarce and poverty is high using the Chicago Data Portal and Homeland Infrastructure Foundation databases. We also extracted urgent care facility data and demographics. Excel was used to narrow our statistics to focus on Chicago neighborhoods. ArcGIS was used to create visuals that enabled us to analyze data trends by modeling and layering maps. We hypothesized that Chicago Westside neighborhoods would need more urgent care units due to lack of existing healthcare facilities and high poverty rates.

*Faculty sponsor: Deborah Cernauskas*

## SESSION 5: Goodwin 312 (1:30-3:00 pm)

### ◆ **Moira Wendel**

“Which Types of Information Increase Pro-Environmental Behaviors?”

The degradation of the natural environment is a result of unsustainable consumption. To abate environmental destruction, individuals' behavior must change. Promising methods to change behaviors to be more pro-environmental include changing the perception of social norms, increasing knowledge of one's ecological impact and making pro-environmental behaviors seem more attainable. Thus, the number of pages printed—an action that when lessened, is more pro-environmental—was measured with regards to these three factors. To do this, computer labs across Benedictine University campus displayed different messages that discouraged printing and pages printed were measured and analyzed. The number of pages printed when social norm messages and pro-technology messages were displayed were significantly less than the control group. The findings support the hypothesis that presenting a social norm is most effective at changing behavior to be more pro-environmental, and presenting a technological alternative is also effective. This finding challenges the assumption that increasing an individual's knowledge about their impact on the environment will increase their pro-environmental behaviors.

*Faculty sponsor: Brian Patterson*

### ◆ **Abigail Ray**

“Ghost Stories and Phantom Classes: Uncovering Victorian Social Anxieties in Gaskell's ‘The Old Nurse's Story’”

The Victorians were keenly aware of social order, so much so that it became an obsessive part of their literature. This is especially true in the case of Victorian ghost-literature, wherein ghosts served as stand-ins for social transgressors, such as servants and unwanted children. By thoroughly analyzing “The Old Nurse's Story” by Elizabeth Gaskell, and by putting this primary source into conversation with historical secondary sources, this paper serves to prove that ghosts were not just tools playfully utilized by Victorian writers. The ghost acted as a representation of class disruption and anxieties about a complicated social hierarchy.

*Faculty sponsor: Zubair S. Amir*

### ◆ **Diondria Woodhouse**

“Ecopedagogy in a Music Classroom: A Culturally Responsive Approach to Environmental Education Practices”

This literature review examines research focused on implementing ecopedagogy to promote culturally responsive instruction on environmental topics and issues in academic settings. “Ecopedagogy is a critical approach to the teaching and learning of connections between environmental and social problems” (Misiaszek, 2015). The social context in which individuals are affected by, or cause, environmental damage can be used to make a stronger impact on student learning structured to create a more culturally- and environmentally-competent global citizen. The literature review will analyze the implementation of ecopedagogy in academia; the definition of environmental- and cultural- competency; the cultivation of cultural competency in environmental education practices; and the application of green music to achieve established student learning goals in a music education setting. There will be a proposal for a curriculum plan promoting the development of culturally- and environmentally-competent students and future research on how effective the ecopedagogical approach is at meeting these objectives.

*Faculty sponsor: Jean-Marie Kauth*

### ◆ **Valerie Triolo**

“Enhancing the Benedictine Liberal Arts Education through the Arts”

As an Arthur J. Schmitt Future Leader, I had the opportunity to bring my passion for theater into the classrooms of Benedictine University. I conducted a survey of traditional undergraduates and found huge interest in theater on campus. I put this information into action and applied my knowledge of theater into a potential IDS 300 class here on campus. Within this course, students will analyze and perform different intercultural dramatic pieces. This gives students the opportunity to see the talent they may have and understand the diversity of story-telling within the arts. Furthermore, while working with the theater club, I have persisted in involving more students and outlined

future procedures for producing a show on campus. This is an important addition to the club as it can be used to advise future executive boards and directors on how to excel in building a community within the theater. It will help in bringing out the creativity and passion within all members.

*Sponsors: Joan Henehan, Sandra Gill*

## **SESSION 6: Goodwin 321 (3:00-4:30 pm)**

### ◆ **Domonique Wilson**

“Can You **Color**?”

One of the most common questions in mathematics associated with graph theory is the four coloring problem. This problem involves determining whether every planar graph is four-colorable. A planar graph is any graph that can be drawn in a plane without any of the graph edges crossing. Four-coloring is a process in which one attempts to color the vertices of a graph such that no two adjacent vertices ever have the same color. The focus of my talk is present an algorithm used to reveal if certain graphs are four-colorable and how to properly color the graph. The algorithm uses the concept of k-flows in the dual graph to make this connection. I also aim to express how the four-coloring problem and graph theory as a whole have many important connections to real-world problems, especially in the fields of technology and computer science.

*Faculty sponsor: Ellen Ziliak*

### ◆ **Daniel Aguilera**

“Characterization of Li-Ion Batteries for Hybrid Electric Vehicles and Electric Vehicles”

Although batteries have been around since the 19th century, the more significant advancements have happened within the last 50 years. The invention of rechargeable Li-ion batteries has allowed for major progress in a range of technologies such as mobile devices, electric vehicles (EVs), and hybrid electric vehicles (HEVs). In this study we will discuss the history and advancements in Li-ion batteries, their wide range of applications, and their role in electric vehicles. Characterization of the Li-ion batteries with LiCoO cathode allows us to compare the battery performance for different chemistries. This characterization will be carried out by investigating the capacity, temperature effects, and charging characteristics, among other parameters, for LIR2450 Li-ion batteries. Through analysis of the data collected, we developed a deeper understanding of the performance of Li-ion batteries for EV applications. This understanding will allow us to identify the shortcomings in current Li-ion batteries that should be addressed in the development of next generation batteries for EVs.

*Faculty sponsor: Stefan Stefanoski*

### ◆ **Stefano Chiaradonna**

“A Proof of Sard’s Theorem in Differential Topology”

Topology considers an object under continuous deformations without breaking or gluing. Therefore, the object remains topologically the same, but it may appear different. For differential topology, it takes this concept of continuous deformation and applies to smooth maps of a manifold. Using differential topology, we will prove Sard’s Theorem which states that the critical values of a smooth map is the null set (i.e., has a Lebesgue measure of zero).

*Faculty sponsor: Tim Comar*

### ◆ **Luke Kendall**

“Sneaky Squares: A Look into Non-Abelian Public-Key Cryptography”

A group is an algebraic structure made up of a set of elements equipped with a single binary operation that satisfies the conditions of closure, associativity, identity, and inverse. Groups can be described as Abelian (commutative) or non-Abelian (not commutative). This research looks into the feasibility and security of using public key exchanges based in non-Abelian groups in order to increase complexity of encryptions. Currently, the Diffie-Hellman public key exchange utilizes Abelian groups, and as technology advances, this method of cryptography is becoming susceptible

to attacks. Specifically, I will present the Diffie-Hellman public key exchange using the dihedral group of a square.

*Faculty sponsor: Ellen Ziliak*

## **SESSION 7: Goodwin 317 (3:00-4:30 pm)**

### ◆ **Grant Klaver, Nicholas Malak, Ranbir Singh**

“Paying Student-Athletes in the Big Ten Conference”

The data that is being used will help exhibit how much profit each Big Ten school generates. Then once that is completed we plan on expending it to show if the schools have the capability to pay student-athletes. The information includes the revenue, expenses, profit, total allocated, and percent allocated. We will visually show the distribution of profit and other measures using ARCGIS, a geographical information system. The effort is to produce a data-set/map that displays each school within their states to comprehend if the amount of money that these schools bring into their institution will be sufficient enough to pay student-athletes. We selected the Big Ten conference due to the fact that we live in the Midwest, where a high percentage of individuals have some type of connection with these schools. Also, the Big Ten headquarters is located in Chicago.

*Faculty sponsor: Deborah Cernauskas*

### ◆ **Nolan McGinn, Wesley Kassaros, Grant Jochums**

“Improving the Efficiency of Jersey Mike’s Subs (Lisle Location)”

Jersey Mike’s Subs in Lisle, Illinois on Maple Avenue lacks efficiency. During the busiest time of the day, between 11 am and 2 pm, the average wait time is roughly 10-12 minutes for a sandwich. There are usually two workers: the first that takes the order and then makes the sub and the second worker that then checks the customer out at the register. We feel that we can improve Jersey Mike’s efficiency and decrease the average wait time by adding a third employee into the mix. The first employee would take each customer’s order and pass it on to the second employee who would then prepare the sandwich. The third employee would stay on the register and check each customer out. We feel that this would decrease the average wait time per order and allow the Jersey Mike’s location in Lisle to become more efficient.

*Faculty sponsor: Deborah Cernauskas*

### ◆ **Daniel Mozdzen, Ali Hamideh, Scott Bower**

“A Tollway Simulation Done with ExtendSim 9 Software”

We plan on using ExtendSim 9 to model the traffic flow through a tollway. We want to demonstrate how an efficient tollway should run. We will show a comparison of three different types of toll lanes including cash with exact coins, cash with change made, and an fastpass electronic lane. The purpose of our simulation is to compare each type of toll lane to provide accurate data regarding the efficiency of each toll booth lane. We want to show the most productive tollway system that is available. Our model will consist of five lanes; two electronic lanes (one wide, one regular width), two exact change lanes, and one change provided lane. We hope that our model is an incentive in showing the public that purchasing an electronic device for tollways is really worth it.

*Faculty sponsor: Deborah Cernauskas*

### ◆ **Lauren Torgerson, Emily Felletti, Carly Franzen, Dana Cornish**

“Making Strategic Academic Services Even More Strategic”

For some students, tutoring may conjure feelings of anxiety and unease. To counter such feelings, unlike their competitors, Strategic Academic Services, Inc. (SAS), a Wheaton-based tutoring service, offers a warm, supportive academic mentoring experience that puts their students at ease. As a part of the Institute for Business Analytics and Visualization, our team was tasked with developing an in-depth integrated marketing communications (IMC) campaign for SAS. To help reach new markets and fully satisfy current ones, the team first crafted a positioning statement to highlight SAS’s points of differentiation. This positioning statement guided the subsequent work on the

promotional campaign, including redesigning the website, creating a new brochure, and developing an engaging social media campaign. Additionally, we developed a customer relationship management (CRM) strategy for establishing connections with local teachers and schools. This URSA presentation will highlight the recommendations presented to SAS.

*Faculty sponsor: Nona Jones*

## **SESSION 8: Goodwin 312 (3:00-4:30 pm)**

- ◆ **Maria Eugenia Chong, Maria Paz Chong, Jiovanni Navarro**  
“Analyzing Starbucks' Kaggle Income Based on Location Across Illinois”

Using the software application ArcGis for mapping, we are examining the different Starbucks locations across the United States. We are utilizing different types of data, including a directory database comprised of city, state, zipcode, latitude, longitude information. The analysis of this information will enable us to observe each Starbucks based on their specific location. This, in turn, will allow us to find which city or state has the greatest amount of Starbucks. Also, through this analysis, we will analyze the stores with the highest income and compare the financial stability among different stores. Ultimately, our goal is to analyze different statistical, financial information and other characteristics on Starbucks locations all throughout the United States.

*Faculty sponsor: Deborah Cernauskas*

- ◆ **Dominic Jayes, Maria Paz Chong, Jiovanni Navarro, Joe Gardner**  
“Theoretical Provisions on Roller Coaster Wait Times”

While conducting our research project, our group will be utilizing ExtendSim software and its applications to create a model that simulates the process of people entering a line, riding a roller coaster, and exiting the ride. The roller coaster that will be analyzed is Raging Bull, found in Six Flags Great America in Illinois. Using the software, we will be able to model the current state of the roller coaster and evaluate its performance, mainly how long it takes people to get into line and ride the roller coaster. Our goal is to shorten the amount of time people spend in line. Based on the results of the current state of the roller coaster, we will construct a new model that will improve the time waited by people in line and propose a more efficient way by altering the original format.

*Faculty sponsor: Deborah Cernauskas*

- ◆ **Maria Eugenia Chong, David Carey, Younes Ibatik, Aaron Reilly**  
“Analysis and Recommendation for CDW Corporation's Stock”

Our goal is to give a buy, sell, or hold recommendation to investors for CDW's stock. We must analyze financial data, potential threats to the business and come up with a one year price target. We analyzed the company's corporate governance and we also did a Porter analysis to analyze potential strengths and weaknesses. We used a Dividend Discount Model as well as an Earnings Multiplier Method to come up with our one year price target.

*Faculty sponsor: Larissa Adamiec*

- ◆ **Zach Suhsen, Patrick Wallenberg, Dustin Sullens, Isaiah Allen**  
“The Sales Process of ABC Supply Co., Inc., Using ExtendSim 9 to Show Possible Improvements”

We will be analyzing the sales process of ABC Supply Co. Inc. located in West Chicago, Illinois. ABC Supply is the United States' largest roofing material supply company. The materials that we will be concerned with will be the roofing shingles, shingle accessories, base layers, and roofing accessories. We will create a flow chart of the sales process with the materials listed and the flow of how they go in and out of the company's facility and warehouse along with the delivery by the driver. We will be using ExtendSim 9 software to convert the flow chart of the sales process into a model. Once we create the model we will understand better the process and will also try to improve the flow and time of the ABC roofing supply process.

*Faculty sponsor: Deborah Cernauskas*

## SESSION 9: Goodwin 321 (4:30-5:30 pm)

### ◆ **Brittany Chally**

“Ecomusicology: Examining Environmental Messages Within Modern Music”

With awareness of environmental issues on the rise, there are many ways to develop an understanding of the interconnectedness of society and the environment. Music is one mode of communicating social and environmental messages, and interacts with customs and social norms (Merriam, 2006). Ecomusicology (Allen, 2011) is a branch of musicology that addresses the ways in which music develops a connection between humanity and the natural world through the lens of ecocriticism. Ecomusicology then looks to further analyze how this connection can be applied to communicate environmental messages and promote activism. This paper will first address the connection that music and humanity share, specifically by explaining the spiritual connection to nature that music develops within culture (Burtner, 2017). I will then discuss ecomusicology by looking at the political messages conveyed within modern songs (e.g., “We Are the World,” 1985) concluding with discussion of how each musical work serves to develop various emotional effects. Each song serves as a marketing tool that moves people to contribute to the cause through donation by drawing awareness to the environmental issues of today.

*Faculty sponsor: Jean-Marie Kauth*

### ◆ **Yechan Kim**

“The Effect of Weekly Class Frequency on the Observable Actions and Behavior of the Instructor and Students”

One might argue that as long as instructor spend the same amount of time with his or her students, the frequency of the class (once a week or three times a week) should not alter the observable behaviors of both professors and the students in class. To test this, we observed two types of classes that met for 150 minutes per week but were structured differently: classes that meet three times a week and classes that meet once a week. We observed the professor’s and the students’ behavior every two minutes using the Classroom Observation Protocol for Undergraduate STEM tool. Although the classes shared some similarities, there were distinct differences. Whereas a few behaviors were dominant for students in the three-times-a-week class, the once-a-week class had variety in behaviors (students asking questions, individual work, etc.). Thus, there seems to be reasonable differences between student behaviors in classes that are structured differently. The data collected for this analysis is part of a larger project to document teaching methods in the College of Science.

*Faculty sponsor: Allison Wilson*

### ◆ **Anna Fisher**

“‘Green’ Kid’s Lit: An Ecocritical Literary Analysis of Environmental Themes in Children’s Literature”

This paper explores environmental themes in environmental children’s literature (ECL), as seen in *The Lorax*, *The Butter Battle Book*, and *Black Beauty*. Based on methods of ecocriticism put forth by Lawrence Buell, et al., on the previous books, additional works will be inspected for themes such as anthropomorphism (Buell 2; Hug), biophilia (Buell 3, 14; Dobrin 272), factual authenticity (Hug 374), and call to action (Canavan 11; Echterling 284). Through this literary analysis, it will be argued that well-written ECL is important to the environmental movement. When the nature of these literary themes are more clearly understood, other works can be scrutinized for their underlying environmental messages that may inspire youth to care and act for our world.

*Faculty sponsor: Jean-Marie Kauth*

## SESSION 10: Goodwin 317 (4:30-5:30 pm)

### ◆ **Marquis Dixon, Charles Cwik, Demaras Roper, Fatimah Totten**

“Starbucks Speed of Service at Benedictine University”

Our team of four is focused on running a business model simulation to track the service time at a Starbucks Café on

campus. Our concern is that the service time it takes for a customer to place their order and receive it is not to the best possible outcome and can be improved. Our goal is to improve that time by creating a new model that will decrease the time a customer waits to receive their purchased beverage based on Starbucks Corporate Standards. One of the ideas to improve service through this way would be going back and seeing the difference between the timing it takes to make a sale in total and the service standards that can be acquired with more training. Creating different models will allow us to observe changes to see if it is worth the time and effort to increase training time.  
*Faculty sponsor: Deborah Cernauskas*

◆ **Kyle Mitter, Ryan Renken**

“Business Process Management: Benedictine Baseball Banquet”

This presentation will clearly and thoroughly take you through every stage of the 2018 Benedictine Baseball Banquet. Each and every year, the baseball season kicks off with an event that includes fine dining, roster and coaching staff introduction, and a few speeches made by players and the head coach. For the past two years, the time management of the event has become very inefficient, which has caused the event to become boring and unattractive. The presentation will focus on how the event can be altered in order to further organize the night in a more productive and less time consuming way.

*Faculty sponsor: Deborah Cernauskas*

◆ **Anjana Rao, Adam Garza, Bennita Drain, Mohammad Taqvi**

“Modeling a Benedictine University Graduation Ceremony Using ExtendSim”

Over the years, the graduation ceremony has become the epitome of moving towards a successful future. Although the event is full of excitement and joy, the time to complete this event is tedious. Excitement and anxiety levels are high, but the ceremony needs to be conducted in a timely manner. This being said, a solution must be proposed. Working with ExtendSim, a simulation program for modeling discrete events and processes, we are able to simulate an ideal graduation ceremony, cutting time and wasteful pockets of opportunity: the opportunity to allow the graduates’ family and friends a more enjoyable and time-worthy ceremony.

*Faculty sponsor: Deborah Cernauskas*