Fiat Lux

A Celebration of Florida Southern College
Student Scholarship and Research

November 19, 2025

Weinstein Computer Science Center

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Welcome!

Florida Southern College fosters an environment where students actively transition from being consumers of knowledge to becoming scholars who create new knowledge, insights, connections, and understanding. For over 20 years, our students have gathered at the end of each semester to present and discuss the scholarly work they have been doing in and beyond their courses.

The goal of Fiat Lux is twofold: to provide students with a platform for their ideas, and to provide the wider community a window into the creative and intellectual energy that pervades our campus. Today's event provides a singular opportunity to publicly share the meaning and joy of scholarly inquiry.

We encourage you to take part in as many sessions as you can! Enjoy the conversation.

Schedule

11:00am-11:15am .....Welcome and Overview.....Dr. Carrie Ann Hall
Opening Remarks.....Provost Tracey D. Tedder
Weinstein Computer Science Center Auditorium

11:20am-2:00pm .....Presentations .....Weinstein Auditorium, 108, 109, 135

Fall 2025 Fiat Lux Presenters – By Last Name

Room	Time	First Name	Last Name	Major	Title
WCS 135	11:40-12:00	Heather	**Allaire**	Marine Biology	Uncovering Novel Antibiotic Sources: Microbial Isolates From Marine Elasmobranchs
WCS 109	12:20-12:40	Alisa	**Fine**	Marketing	Humanizing Advertisement: A Look into the Effect of Artist Attribution on Consumer Behavior
WCS 109	1:00-1:20	Colby	**Hagmann**	Accounting	Historical Social Inequalities
WCS 108	11:20-11:40	Abbey	**Henderson**	Elementary Education	The Impact of Fantasy Literature on Imaginative Play
WCS 109	12:00-12:20	Faith	**McLaughlin**	Psychology	An Exploration of Feminist Themes in La Celestina by Fernando de Rojas
WCS 108	11:40-12:00	Elena	**Minan**	Marine Biology	Tag, You're It: Investigating Elasmobranch Spatial Ecology in Tampa Bay
WCS 135	11:20-11:40	Brooklynn	**Minton**	Marine Biology	There and Back Again: Discovering the Complex Life Cycle of Bull Shark (Carcharhinus leucas) Tapeworms
WCS Auditorium	12:00-12:20	Madison	**Mulvihill**	Computer Science	Using Artificial Intelligence to Predict Reach and Engagement with Animal Rescue Content on Social Media
WCS 135	1:40-2:00	Sarah	**Nguyen**	Biochemistry & Molecular Biology	Restoring Antibiotic Efficacy: An In-Silico Study of Chalcone Derivatives as NorA Efflux Pump Inhibitors against S. aureus
WCS 109	11:40-12:00	Sophia Grace	**Posick**	Applied Mathematics & Statistics	G.R.I.T.S.- Government, Representation, Influence, Tradition, and Speech: A Statistical Study of Southern Cultural Trends
WSC 135	1:20-1:40	Wyatt	**Rudd**	Marine Biology	Using Reef Fish Functional Group Diversity to Evaluate Reef Health and the Conservation Impact of Roatan's Marine Park
WCS Auditorium	11:20-11:40	Catherine	**Sarte**	Computer Science	When AI Learns to Walk: Modeling the Cat's Spinal Cord from Motion and Muscle Signal

Fall 2025 Fiat Lux Presenters – By Last Name

WSC 109	1:20-1:40	Lillie	**Schwier**	Communication	The Commercial Rebranding of American Evangelicalism
WCS 135	12:20-12:40	Jakob	**Stutzman**	Marine Biology	Assessing Reef Health Through Fish Communities
WCS Auditorium	11:40-12:00	Abigail	**Thomas**	Computer Science	Using Natural Language Processing Techniques to Solve Connections Puzzles
WCS 109	12:40-1:00	Serena	**Thompson**	Mathematics	Uncertainty and its Effect on Prices, Employment, and Output
WCS 135	1:00-1:20	Laura	**Wallender**	Elementary Education	Investigating How Fine Motor Skills Interventions Improve Fine Motor Development in First Grade Students
WCS 135	12:40-1:00	Charley	**Wilkerson-Kemp**	Marine Biology	Influence of Human Presence on Dolphin Vocal Behavior: A Comparative Analysis Using Multi-Frequency Hydromoth Recorders
WCS 135	12:00-12:20	Aiden	**Yancy**	Marine Biology	Dolphin Social Clustering: Does Time of Day Play a Role in Dolphin Social Behavior

Fall 2025 Fiat Lux Presentations – By Room

Auditorium

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Room 108

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11:40-12:00	Elena	Minan	Marine Biology	Tag, You're It: Investigating Elasmobranch Spatial Ecology in Tampa Bay

Room 109

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Room 135

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1:40-2:00	Sarah	Nguyen	Biochemistry & Molecular Biology	Restoring Antibiotic Efficacy: An In-Silico Study of Chalcone Derivatives as NorA Efflux Pump Inhibitors against S. aureus

Presentations

In alphabetical order by presenter's last name.

Student: Allaire, Heather
Major: Marine Biology
Collaborator: Brooklynn Minton
Faculty Mentor: Melanie Langford
Presentation Time: 11:40-12:00
Presentation Type: Oral Presentation
Room: WCS 135

Title: Uncovering Novel Antibiotic Sources: Microbial Isolates From Marine Elasmobranchs

Abstract: The rise of antibiotic resistance is a global environmental and human health concern. With fewer effective antibiotics remaining, the search for novel antibiotics is of particular importance. Although many clinically significant antibiotics originated from soil-inhabiting microbes, we sought to study the antibiotic production and resistance of microbes inhabiting elasmobranch skin, as elasmobranch skin has unique healing abilities and has been poorly studied to date. Here, we concentrated our research primarily on the microbiome of sharks and rays inhabiting Tampa Bay, Florida. Our goal was to isolate microbes (bacteria and parasites) from sharks and rays and study their biomedical significance and potential ecological interactions. We isolated microbes from shark and ray skin, and then we evaluated microbial sensitivity to five classes of antibiotics. Next, we screened for potential antibiotic-producing strains of bacteria using patch plating methods against six species of bacteria. Finally, we sought to better understand the ecological roles of shark tapeworms by searching for the intermediate hosts of these parasites. Together, our work is particularly relevant, given the global rise in antibiotic-resistant bacteria. The results of our study may have future applications in human medicine, as well as to help us better understand the ecological roles of parasites and their host species interactions.

Student: Fine, Alisa
Major: Marketing
Collaborator: Madison Blithe
Faculty Mentor: Jennifer Dapko
Presentation Time: 12:20-12:40
Presentation Type: Oral Presentation
Room: WCS 109

Title: Humanizing Advertisement: A Look into the Effect of Artist Attribution on Consumer Behavior

Abstract: As time progresses and technology continues to evolve, the advertising landscape changes dramatically. What once was a creative field becomes saturated with AI-generated mock-ups of augmented art taken from the artist, not made by the artist. So often is the question asked, “How can we get the consumer’s attention?” However, the marketing field becomes more saturated by the minute, and people are tuning out even faster. With this current scene laid out, what could break through the clutter and disrupt the industry enough to influence the viewer to stop their endless motion and look at the advertisement? What could we change about an advertisement to make the person feel positive brand associations? Our study aimed to do just that: break through the constant clutter and monotonous superficial advertising. Historically, brands have rarely given their graphic designers credit in ways other than payroll. However, by neglecting to credit the artist of an advertisement, the brand erases all human contact with the ad. In modern days, there is an undying question that immediately concerns the consumer: “Is this AI?” While a controversial topic, it is also inevitably agreed upon to be non-human,

but is that exactly what is pushing consumers away? How would including recognition of the artist on the advertising materials, such as a billboard, influence the consumer? We believe that this will cut through the clutter and create a more interactive experience for the customer in which they will be able to connect with the brand in a much easier way. Additionally, this would be a great benefit for the artist to be spotlighted and publicly receive credit for their work. This would cut through the advertising clutter while spotlighting an individual voice. The effect of artist attribution would thus contribute to the success of not only the company in standing out from the competition, but also to the success of the artist, as a brand's billboard would be a massive platform to promote their work. While AI art not only steals from existing art without due credit (Anscomb, 2025), our hypothesized idea to include artist attribution in the advertisement would give the artist important commendation and show the authenticity and person-oriented nature of the company. This research proposal examines the relationship between brand trust and consumer behavior, with a specific focus on how artist attribution affects purchasing intention. An experimental approach will be utilized, wherein participants are randomly placed into one of two groups: (a) observing a print ad that showcases artwork attributed to the artist, or (b) observing the identical ad with the artwork displayed without any artist credit. After viewing the advertisement, participants will fill out a survey evaluating their trust in the brand of both the artwork and the brand, their attitude towards the brand, and their intention to buy the product being advertised. Our research question is "How does artist attribution affect consumer behavior?" It is interesting and important because we will examine how to directly influence consumer attitudes via the humanization of a brand. This has numerous practical applications in the marketing field, especially considering the surge of popularity in AI-generated artwork used in commercial settings. There is a distinct gap in the research on attribution with regard to the consumer effect and behavior towards the brand and advertisement in the American markets and commercial space.

Student: Hagmann, Colby
Major: Accounting
Faculty Mentor: Melissa Garr
Presentation Time: 1:00-1:20
Presentation Type: Oral Presentation
Room: WCS 109

Title: Historical Social Inequalities

Abstract: This presentation explores the historical class structures and social inequalities portrayed in La Catedral del Mar, and emphasizes how systems of power and privilege have historically and will continue to shape human relationships and determine societal ranks. Through the experiences of the characters throughout the series, we can see many common societal issues that are still present in modern day societies. La Catedral del Mar serves as not only a historical reflection, but a reminder that social stratification and power imbalances are inevitable, no matter how advanced a society may seem.

Student: Henderson, Abbey **Major:** Elementary Education
Faculty Mentors: Bernardo Blanco & Mijana Lockard
Presentation Time: 11:20-11:40 **Presentation Type:** Honors Proposal
Room: WCS 108

Title: The Impact of Fantasy Literature on Imaginative Play

Abstract: Research Question: does exposure to fantasy in literature have an impact on children's tendencies toward imaginative play? Methods: For two weeks, I would come in for roughly 30 minutes every monday, wednesday, and friday to do read-alouds with two groups of 4-5 year olds. One group will read a book with fantasy elements, and the other will read a book from a nonfiction or realistic fiction genre. At the end of the two weeks, I would administer the Torrance TCAM(thinking creatively in action and movement) assessment to both groups of students

Student: McLaughlin, Faith **Major:** Psychology
Faculty Mentor: Melissa Garr
Presentation Time: 12:00-12:20 **Presentation Type:** Oral Presentation
Room: WCS 109

Title: An Exploration of Feminist Themes in La Celestina by Fernando de Rojas

Abstract: La Celestina by Fernando de Rojas is a play written in Spain at the cusp of the renaissance movement. Despite the time period in which it was written, we can explore many feminist themes when analyzing the female characters, including female sexuality and agency, and the difference between exploitation and empowerment.

Student: Minan, Elena **Major:** Marine Biology
Collaborators: Christian Delgado, Elizabeth Gunnison, Elena Minan, & Francis Smith
Faculty Mentors: Allison Durland Donahou & Gabriel Langford
Presentation Time: 11:40-12:00 **Presentation Type:** Oral Presentation
Room: WCS 108

Title: Tag, You're It: Investigating Elasmobranch Spatial Ecology in Tampa Bay

Abstract: Shark and ray populations have drastically declined in the past 50 years, with coastal, estuarine, and riverine species being the most vulnerable to extinction. Tampa Bay, Florida, is a historically understudied estuarine environment that lacks long-term studies on the natural history and ecology of its sharks and rays. Over several years, FSC's Elasmobrach Lab has determined the primary nursery sites for bull sharks and tracked the spatial distribution, movement patterns, and habitat use of Carcharhinus leucas, Rhinoptera bonasus, and other elasmobranch species throughout the Tampa Bay area and into the Gulf of Mexico. In the summer of 2025, sharks and rays were captured via gill net from 7 sites throughout Hillsborough Bay (the northeast area of the Tampa Bay estuary). A total of 26 sharks and rays were tagged with passive integrative transponder (PIT) tags, and 7 of these individuals received surgically implanted acoustic tags. The FSC's Elasmobrach Lab utilizes 9 passive acoustic receivers stationed throughout Hillsborough Bay to record movement data. We found young sharks frequently

moved up and down the Alafia River and along the North Hillsborough Bay coastline; whereas, older bull sharks moved out of Tampa Bay, including one individual that travelled as far west as Texas. Our results suggest that the Alafia River Estuary is a critical habitat for Tampa Bay's Carcharhinus leucas and Rhinoptera bonasus populations. Understanding elasmobranch spatial distribution and nursery habitat is critical for understanding population dynamics and informing conservation policy in Tampa Bay.

Student: Minton, Brooklynn **Major:** Marine Biology
Faculty Mentors: Gabriel Langford & Melanie Langford
Presentation Time: 11:20-11:40 **Presentation Type:** Honors Proposal
Room: WCS 135

Title: There and Back Again: Discovering the Complex Life Cycle of Bull Shark (Carcharhinus leucas) Tapeworms

Abstract: Parasites are integral yet often overlooked components of marine ecosystems influencing biodiversity, food web structure, and host population health. Among parasitic taxa, tapeworms (Class Cestoda) are remarkably diverse, with many species exhibiting unique evolutionary relationships with elasmobranchs, the subclass of cartilaginous fishes that includes sharks, rays, and skates. These cestodes display extraordinary morphological adaptations to the spiral valve intestine, reflecting a long coevolutionary history with their hosts. Despite extensive documentation of cestode diversity in elasmobranchs, the complete life cycles of most species remain unresolved. Like other tapeworms, they are believed to pass through multiple intermediate hosts, such as crustaceans and teleosts fishes, before reaching maturity in the definitive elasmobranch host. However larval stages are difficult to identify morphologically, and the species host involved in transmission remain largely unknown. This research aims to elucidate the life cycles of elasmobranch cestodes by identifying intermediate hosts and linking larval and adult stages through an integrative approach combining classical parasitology and molecular tools such as polymerase chain reaction, gel electrophoresis, and DNA sequencing. Field sampling in the Alafia River and surrounding coastal systems will provide host specimens for morphological and genetic analysis. By reconstructing the developmental pathways of these cestodes, this research will clarify transmission routes, reveal host-specific associations, and improve understanding of how cestodes persist and disperse in marine ecosystems. Ultimately, defining cestode life cycles will deepen insight into parasite ecology, host-parasite coevolution, and the functional role of parasites within marine food webs.

Student: Mulvihill, Madison
Major: Computer Science
Faculty Mentor: Matthew Eicholtz
Presentation Time: 12:00-12:20
Presentation Type: Honors Proposal
Room: WCS Auditorium

Title: Using Artificial Intelligence to Predict Reach and Engagement with Animal Rescue Content on Social Media

Abstract: This project uses artificial intelligence (AI) to study how animal rescue content performs on social media, with a focus on Instagram and Facebook. Animal welfare organizations rely heavily on these platforms to promote adoptions, raise awareness, and secure donations, yet little is known about what makes certain posts more successful than others. Using data from the Meta Content Library, this research analyzes publicly available posts and videos related to animal rescue and adoption. The dataset includes information such as captions, hashtags, post type (photo, video, etc.), engagement metrics (likes, shares, comments), and view counts. By applying AI based machine learning models, the project aims to identify which factors from the dataset are most effective in increasing both reach and engagement. By combining technology with compassion, this research demonstrates the power of AI to enhance the visibility of animal rescue efforts and make a measurable difference in the lives of homeless pets.

Student: Nguyen, Sarah
Major: Biochemistry & Molecular Biology
Faculty Mentor: Deborah Bromfield-Lee
Presentation Time: 1:40-2:00
Presentation Type: Honors Proposal
Room: WCS 135

Title: Restoring Antibiotic Efficacy: An In-Silico Study of Chalcone Derivatives as NorA Efflux Pump Inhibitors against S. aureus

Abstract: Antimicrobial resistance is a crisis stemming from the lack of effective antibiotics. Pharmaceutical companies are no longer investing in their research, allowing resistant microbes to outpace development. Therefore, the use of therapeutic agents for drug repurposing can aid in combating this. Chalcone derivatives demonstrate potential as efflux pump inhibitors against the NorA efflux pump in Staphylococcus aureus, by synergistically enhancing the effect of fluoroquinolones. Computational studies will be utilized to assess structural mechanisms using AutoDock, SWISS-MODEL, MolProbity, Chimera, and SwissADME. Various models, such as Lipinski's Rule of Five, Veber's rule, and the Bliss independence model, predict synergism and oral bioavailability of the drugs. While there are limitations, such as the insufficient knowledge on structural-activity relationships, resistance mechanisms in NorA, and variations and exceptions in predictive models, this is a step forward toward revitalizing antibiotic research and development while restoring the efficacy of existing treatments.

Student: Posick, Sophia Grace
Major: Applied Mathematics & Statistics
Faculty Mentor: Bruce Anderson
Presentation Time: 11:40-12:00
Presentation Type: Honors Proposal
Room: WCS 109

Title: G.R.I.T.S.- Government, Representation, Influence, Tradition, and Speech: A Statistical Study of Southern Cultural Trends

Abstract: The cultural uniqueness of the American South has long intrigued scholars across disciplines, yet quantifying this distinctiveness remains challenging. This research applies a statistical lens to a traditionally qualitative field, using biographical data on members of the U.S. Congress as a proxy to analyze cultural differences of the America south. Drawing from the Inter-University Consortium for Political and Social Research (ICPSR) dataset, which includes detailed characteristics of over 11,000 congressional officeholders from 1789 to 1996, this research will construct a South versus non-South variable and perform regression analysis. While much of the existing literature relies on ecological or global comparisons, this project emphasizes within-country cultural differences. It argues that elected officials, shaped by and reflective of their constituencies, offer valuable insights into regional cultures. Through this interdisciplinary approach, this research will contribute a new method for estimating cultural variation within the United States, grounded in political representation and historical data.

Student: Rudd, Wyatt
Major: Marine Biology
Faculty Mentor: Jason Macrander
Presentation Time: 1:20-1:40
Presentation Type: Oral Presentation
Room: WSC 135

Title: Using Reef Fish Functional Group Diversity to Evaluate Reef Health and the Conservation Impact of Roatan's Marine Park

Abstract: Coral reefs are tropical shallow water ecosystems that are hotspots for marine biodiversity. Despite their importance for supporting marine life, they are in decline worldwide due to a combination of local and global man made stressors. One of the ways that humans have been working to conserve coral reef ecosystems is through the creation of Marine Protected Areas (MPAs). Despite becoming one of the most popular methods to protect coral reefs, they are not always successful in their conservation goals. Because of these shortcomings, it is crucial to regularly monitor Marine Protected Areas using clear indicators in order to determine whether or not they are reaching their predetermined conservation goals. Since there is a relationship between reef fish functional diversity and coral reef health, this variable can serve as a bioindicator to monitor coral reef health and evaluate the overall conservation impact of MPAs. The aim of this research is to assess reef fish functional diversity and to use this data to evaluate whether the Roatan Marine Park MPA is achieving its conservation goals. For this study, we used roving diver surveys along transects to sample the abundance and diversity of 30 commonly found fish species with key functional roles on the Mesoamerican Reef. We surveyed a total of 14 dive sites in and outside of the marine park. At each site, we conducted 4 surveys that lasted 5 minutes each. Each transect survey was recorded and each video was scored for a second set of data.

Student: Sarte, Catherine
Major: Computer Science
Faculty Mentor: Christian Roberson
Presentation Time: 11:20-11:40
Presentation Type: Oral Presentation
Room: WCS Auditorium

Title: When AI Learns to Walk: Modeling the Cat's Spinal Cord from Motion and Muscle Signal

Abstract: Movement begins in the brain, but its rhythm and coordination are shaped in the spinal cord — the body's built-in control center. This project explores how artificial intelligence (AI) can help us see inside that hidden system by learning how the spinal cord processes motion and sensory feedback. Using data collected from the cat's hindlimb during walking, I trained a type of AI model called a Graph Neural Network (GNN) to analyze patterns across multiple biological signals, including muscle activity (EMG), ground reaction forces, and proprioceptive feedback from sensory neurons. The model learns how these signals influence one another, forming a network of "connections" that mimic how real spinal neurons communicate. By examining the network's attention weights, we can visualize potential information flow within the spinal cord — showing how sensory inputs might converge on spinal interneurons before producing coordinated muscle output. These results reveal that the AI naturally discovers biologically meaningful patterns, such as left-right coordination and joint-level coupling, even without being told where they exist. Ultimately, this work demonstrates a step toward using AI not just for prediction, but for biological discovery — helping researchers visualize and interpret spinal connectivity in ways that were previously hidden. With future models that integrate known neural pathways, this approach could one day support research on spinal injury recovery and motor rehabilitation.

Student: Schwier, Lillie
Major: Communication
Faculty Mentor: Cara T. Mackie
Presentation Time: 1:20-1:40
Presentation Type: Honors Proposal
Room: WSC 109

Title: The Commercial Rebranding of American Evangelicalism

Abstract: This paper argues that the form of Christian nationalism found in this subculture isn't really a spiritual movement—it operates more like a system of control. Through the use of beliefs such as biblical inerrancy and end-times narratives—combined with rigid gender roles and dominant masculine leadership—it creates a fear-based framework that upholds hierarchy and drives political mobilization. This study argues that American evangelical Christianity underwent a fundamental redefinition in the latter half of the 20th century. This shift occurred not primarily through theological debate, but through the strategic adoption of mass media and marketing by conservative public influencers such as Jerry Falwell, Bill Gothard, James Dobson, Beverly LaHaye, and Phyllis Schlafly (Du Mez, 2021 pp.13). They deployed techniques like fear-based rhetoric, audience segmentation, and cross-platform consistency to transform evangelicalism into a political brand. This research raises a critical question: To what extent has Christianity preserved its core spiritual essence, and to what extent has it been reshaped by mass media, marketing, and charismatic leaders leveraging these tools to align American evangelical priorities with conservative political objectives? This paper will examine sermons, speeches,

and marketing materials from the 20th century to demonstrate how media and marketing mechanisms redefined evangelicalism's theological and cultural essence, ultimately prioritizing power and mobilization over spiritual depth and nuance.

Student: Stutzman, Jakob **Major:** Marine Biology
Collaborators: Jakob Stutzman
Faculty Mentor: Jason Macrander
Presentation Time: 12:20-12:40 **Presentation Type:** Oral Presentation
Room: WCS 135

Title: Assessing Reef Health Through Fish Communities

Abstract: Coral reefs are of significant ecological importance on a global scale and have rapidly declining worldwide due to a variety of factors including; climate change, Coastal development, overfishing, and pollution. Effective monitoring of these reef habitats to evaluate their health is critical for conservation and future management, however traditional reef assessment methods can be costly or very time consuming to do so. The goal of this study is to evaluate fish species diversity, composition and abundance across reefs of two different protection regimes to determine whether fish diversity can be used as a proxy of protection efficiency and overall reef health. To determine this we surveyed fourteen reef sites with six being outside of the designated Marine Protected Area (MPA) making up the Roatan Marine Park, and eight sites within the MPA. Fish survey data was collected using two methods: roving diver surveys and video recordings. These two types of surveys were conducted at specific time points of the dive, with data recorded across four transects, each being approximately 5 minutes. The roving diver surveys in combination with post dive video analyses will be used to compare fish diversity and abundance across the different sites of varying reef conditions. Preliminary results have indicated that reefs in the MPA exhibit higher fish abundance within vs. outside the marine protected. This research's overall goal is to determine that fish community data can serve as a reliable and more cost-effective way to monitor reef health, which can then be used to help inform future conservation strategies and MPA planning.

Student: Thomas, Abigail **Major:** Computer Science
Collaborators: Abigail Thomas, Kennedy Christian, & Madison Mulvihill
Faculty Mentors: Christian Roberson & Matthew Eicholtz
Presentation Time: 11:40-12:00 **Presentation Type:** Oral Presentation
Room: WCS Auditorium

Title: Using Natural Language Processing Techniques to Solve Connections Puzzles

Abstract: This project explores artificial intelligence applied to the New York Times Connections puzzle through algorithmic, cognitive, and design perspectives. Students will collaboratively develop an AI to solve Connections puzzles, investigate various natural language processing (NLP) and large language model (LLM) techniques for solving puzzles, and analyze puzzle complexity. By combining

coding, data analysis, and puzzle design theory, the project aims to create innovative software tools and newfound insights into how Connections engages and challenges players.

Student: Thompson, Serena
Major: Mathematics
Faculty Mentors: Susan McLoughlin
Presentation Time: 12:40-1:00
Presentation Type: Oral Presentation
Room: WCS 109

Title: Uncertainty and its Effect on Prices, Employment, and Output

Abstract: In the current economy, the consumers are uncertain of what will happen to prices and employment. President Trump's recent tariff policies have been changing rapidly since the beginning of his term. The people of the country have not been able to get a definitive view of the status or severity of those tariffs, causing them to grow uncertain and distrusting of the government's competency. Tariffs raise prices without raising output in an attempt to force the manufacturing out of that particular country. However, raising prices without raising output causes higher unemployment, causing a supply shock. Theoretically, the supply and demand prices will return to normal eventually, but often it might be too slow. The government could also act to either lower prices or raise employment, depending on which the government considers a priority. The problem in this scenario is uncertainty and distrust in the government results in alternate actions from basic theory, especially actions that lead to worse impacts on the government. The uncertainty causes both producers and consumers to avoid investing or unnecessary spending. The distrust prevents the public from allowing the government to act as a cushion, bidding up prices and leading to higher unemployment. Both factors culminate in economic output lowering, prices raising, and employment dropping.

Student: Wallender, Laura
Major: Elementary Education
Faculty Mentor: Hope Holley
Presentation Time: 1:00-1:20
Presentation Type: Honors Presentation
Room: WCS 135

Title: Investigating How Fine Motor Skills Interventions Improve Fine Motor Development in First Grade Students

Abstract: This study investigates how implementing fine-motor skill interventions can improve the fine-motor development of kindergarten students over a six-week period. As technology becomes more prevalent in early education, opportunities for hands-on activities that strengthen fine-motor skills such as writing, cutting, and manipulating objects are diminishing. This decline can affect academic performance, handwriting proficiency, and overall classroom readiness. Using a quasi-experimental pretest-posttest design, this research measured the effectiveness of targeted fine-motor interventions, including playdough, puzzle, block-building, drawing, and scissor activities. Participants included four kindergarten students identified as having a variety of fine-motor deficiencies. Data were collected through pre- and post-assessments using the Fantastic Fingers Fine Motor Skills Ability Check, supplemented with student writing samples and classroom artifacts that provided both quantitative and

qualitative data. The results were analyzed, and two out of four students showed noticeable improvements in precision, coordination, and motivation. One student demonstrated minimal improvement in coordination but no growth in precision, while maintaining consistent motivation and enthusiasm. The fourth student did not improve in either precision or coordination and showed increased frustration during the intervention activities. The two students who demonstrated the most growth began at higher readiness levels than their peers. These results indicate that even minimal interventions, such as those implemented once a week during this study, can be effective for students who are close to age-appropriate fine-motor development but may be insufficient for students significantly below readiness levels, suggesting that more frequent and rigorous intervention may be needed.

Student: Wilkerson-Kemp, Charley
Major: Marine Biology
Faculty Mentor: Jason Macrander
Presentation Time: 12:40-1:00
Presentation Type: Oral Presentation
Room: WCS 135

Title: Influence of Human Presence on Dolphin Vocal Behavior: A Comparative Analysis Using Multi-Frequency Hydromoth Recorders

Abstract: Bottlenose dolphins (Tursiops truncatus) are highly social marine mammals that use whistles and clicks to communicate, coordinate behavior, and maintain group cohesion. However, relatively little is known about how human presence influences their vocal activity in semi-captive environments. This study investigates how dolphin vocals differ between periods with and without human interaction and evaluates how recording at different frequencies using Hydromoths affects data quality. Recordings were collected from a semi-captive pod of 19 dolphins housed at the Roatán Institute for Marine Sciences (RIMS) at Anthony's Key Resort in Honduras, between May 7-13, 2025. Acoustic data were gathered using Hydromoth recorders sampling at 48 kHz, 96 kHz, and 192 kHz, which were deployed in the dolphins' lagoon. Among the daily recordings two 15-minute recordings were selected, one corresponded with a human-present period (11:00–11:15 AM) when trainers and guests were active, and another human-absent period (5:45–6:00 PM) when only the dolphins were present. For each recording, total whistle and click bout counts were used to calculate call rates, and detailed whistle measurements (start and end frequency, Δ frequency, duration, and intensity) were taken from a 5-minute clean segment for each file. Preliminary findings have shown that dolphins produced more whistles and click bouts during human-present periods and that these whistles often displayed higher frequencies and greater frequency modulation than the vocals recorded during human-absent periods. The human-absent whistles were generally lower in frequency, more stable, and appeared to serve social or group cohesion functions rather than attention-seeking or interactive communication. Ongoing analysis across recorder sampling rates will help determine which frequency captures dolphin vocalizations most effectively. This research contributes to understanding how human interaction may shape dolphin communication and enrichment and explores the potential of low-cost Hydromoth recorders for future acoustic marine studies.

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Major: Marine Biology
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Presentation Time: 12:00-12:20
Presentation Type: Oral Presentation
Room: WCS 135

Title: Dolphin Social Clustering: Does Time of Day Play a Role in Dolphin Social Behavior

Abstract: Dolphins are very social animals known for their complex group dynamics. There have been many studies on how sex, age, and relation play a role in which dolphins tend to socialize and congregate, but until recently, few studies have looked at how external factors like time-of-day impact how often dolphins interact with each other. Furthermore, these research efforts are limited in scope and scale due to small pod size or unnatural environments housing these dolphins. My research aims to determine whether the time of day impacts social interactions among the 19-dolphin pod found at the Roatan Institute for Marine Science (RIMS), specifically how often members of the pod chose to swim together as opposed to on their own. Dolphins located at RIMS are housed in a net enclosed in 2.4 acres of natural habitat with varying benthic environments transitioning from sand to seagrasses up to approximately 8 meters in depth. A manually piloted drone was used to capture aerial video of the dolphin enclosure in 30-minute time spans once every morning and again in the afternoon. Snapshots of that footage were then used to train an AI algorithm in the program Roboflow to identify when dolphins are in a group versus by themselves. The results were then reviewed to see if there was any correlation between time of day and the amount of time spent in a group vs separate.

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