



**2020**

**Florida Statewide Symposium on  
Undergraduate Research**



**OFFICE OF  
UNDERGRADUATE  
RESEARCH**  
at EMBRY-RIDDLE



Welcome to the  
Florida Undergraduate Research Association's  
2020 Florida Statewide Symposium on Undergraduate Research

As educators, we strive to create opportunities for our students to develop their intellect, creativity, professionalism, and personal skills through mentored research. This passion to engage students in research is something that we all share. As a community, we come together every fall to learn for one another and strive to bring the best ideas back to our campuses to serve our students better.

I am excited to welcome you here, to join in wonderful conversations with other faculty, students, staff, and administrators from across the state. Even though we cannot meet in person this year, I hope that we can capture some of the magic from years past through this virtual symposium.

Together, we are contributing to the success of the undergraduate research community within the state of Florida. Thank you for joining us today, we hope you have some great conversations and find some great ideas to take back to your campus!

Sincerely,  
Wes Lewis  
*Director, Undergraduate Research*  
*Embry-Riddle Aeronautical University*

# 2020 FLORIDA STATEWIDE SYMPOSIUM

FRIDAY, OCT. 23, 2020

## SCHEDULE AT A GLANCE

11-11:15 AM	Welcome
11:25 AM - 12:25 PM	Session I
12:25-12:50 PM	Lunch Break   <i>Optional Zoom Brown Bag Lunch</i>
12:50-1:50 PM	Session II
2:00-3:00 PM	Session III

## SESSION I

### Room A | UR in the Age of Covid-19

*Challenge Accepted: Summer Research & Inquiry Programs are NOT Cancelled due to COVID-19*  
*Pandemic Pivoting: UNF's 2020 SOARS Virtual Conference*  
*Research Experience for Undergraduates During Covid-19*

### Room B | UR in the Curriculum

*Symmetry and Quasi-symmetry in Viral Capsid Structures*  
*Teaching Tiger King*  
*Using Industry Challenges to Foster Undergraduate Research*

### Room C | Campus Programs and Highlights

*Addressing Research Ethics by Adapting Citation Management Software in Research Projects*  
*Design and Implementation of an Asynchronous Undergraduate RCR Course*  
*Embed with Your Librarian: Faculty-Librarian Collaborations in Research Courses*  
*High School Pathways to Undergraduate Research*

## SESSION II

### Room A | UR in the Age of Covid-19

*Converting the NSF-LEARN program at Florida Atlantic University*  
*How the Covid Shutdown Impacted Undergraduate Research at UF*  
*Supporting Faculty During a Pandemic: Creating Collaborations to Support Undergraduate Research*  
*A Whole New World: Working with Undergraduate Researchers in the COVID-19 Era*

### Room B | UR in the Curriculum

*A Brief Summary of a Faculty & Departments Transition from Applied Maths to Data Science,  
With an Emphasize on Engaging Students in Undergraduate research data projects*  
*Epistemological Development of Undergraduates in Inquiry-based Courses*  
*Examining Undergraduate Students' Attitudes Towards Research Following Completion of a Research-Intensive Course*  
*TikToking and Tweeting: Using Social Media to Engage Students in Research Projects*

### Room C | Campus Programs and Highlights

*Maximizing Impact of Work-Study Research Assistantship Program through Professional Development*  
*Undergraduate Students and Historical Archive Creation*  
*Updates on FURC 2021 and Undergraduate Research Posters at the Capitol*

## SESSION III

### Room A | UR in the Age of Covid-19

*A Collaborative Approach for Development of Research Programs to Serve the Needs of Undergraduate Students in a  
Required Research Sequence at Florida Gulf Coast University*  
*Expanding Critical Thinking Through Interprofessional Education in Health Education*  
*The Impact of Unplanned Remote Instruction on a CURE Paired with Cookbook-Style Laboratory Exercises*  
*Online Undergraduate Research Due to COVID19*

### Room B | UR in the Curriculum

*Integrating Scientific Inquiry and Project Based Learning Across a University Core Curriculum*  
*LEAPS and BOUNDS - Learning Experiences and Progression Support Through Biology Opportunities  
or Underrepresented Students*  
*Model for Building Diversity and Fostering Research Collaborations between Faculty and Students  
in an Online Environment*  
*Undergraduate Research Integration into Clean Energy Systems Course*

## SESSION I ROOM A

### Challenge Accepted: Summer Research & Inquiry Programs are NOT Cancelled due to COVID-19

Jennie Soberon & Tracy Baker | Florida Atlantic University

While other institutions cancelled their summer programs due to COVID-19, Florida Atlantic University (FAU) accepted the challenge to continue their Summer Undergraduate Research Fellowship (SURF) program, host several interactive virtual workshops, and collaborate with other FAU departments throughout the summer. The SURF program transitioned to an online course on which meetings and other virtual events were hosted, along with announcements and resources. Workshops were developed to meet the needs of the virtual setting by providing live workshops through various platforms, as well as prepared narrated presentations for students to view on their own in a dedicated research and inquiry Canvas course. During this presentation, we will discuss the processes, tools, and platforms used to successfully host these programs while working and researching remotely, and how you can use these same tools at your institution.

### Pandemic Pivoting: UNF's 2020 SOARS Virtual Conference

Karen Cousins, Andy Rush, & Courtenay McLeland | University of North Florida

The Showcase of Osprey Advancements in Research and Scholarship (SOARS) is the University of North Florida's highly-anticipated research poster event, organized by the Office of Undergraduate Research and held each April during Research Week – that is, until the pandemic changed our plans last spring. The members of this panel will share why we decided not to cancel the event; how we transitioned from an in-person conference to a virtual conference; how we created the website, uploaded the content, and integrated a judging component; how we later archived the 2020 projects for posterity; how we reaped some unexpected benefits, not only for the students but for the university; and what we plan to repeat and do differently for SOARS 2021.

### Research Experience for Undergraduates During Covid-19

Mustafa Akbas | Embry-Riddle Aeronautical University

This presentation provides the student team interaction and mentorship experience at Embry-Riddle Aeronautical University's "National Science Foundation (NSF) Research Experiences for Undergraduates (REU) Site: Cybersecurity Research of Unmanned Aerial Vehicles" from the summer semester of 2020. The Site had been planned for a face-of-face research experience under several mentors for an eight-week period. However, due to Covid-19, the teams had to meet, discuss, present and work online, which was both a challenge and an opportunity. Both students and mentors had lessons from this online experience that they will remember and use in the upcoming years. In this presentation, we present this experience from the angle of a single team mentorship and the lessons learned for similar future operations.

## SESSION I ROOM B

### Symmetry and Quasi-symmetry in Viral Capsid Structures

Emma Thomas, Pavel Zabela, Andrew Tirado, & Julia Seay | Florida Atlantic University

Symmetric and quasi-symmetric structures are beautiful and powerful mathematical tools that are prevalent in the arts, crystallography, and molecular physics. Through our previous research project, "The Mathematics and Art Connection," we have witnessed the usefulness of group theory as it relates to symmetry through our investigation of the 2D 17-Wallpaper Groups and the 3D 230-Crystallographic Space Groups. While many natural symmetric structures experience characteristic periodicity, there is also a great deal of quasi-symmetric structures in our Universe that are left to further investigation. In particular, in the field of virology some viral capsid shells, the protein shell that encapsulates a virus, follow a quasi-crystalline arrangement in which Penrose tilings in 3-dimensions help to shed light on virus structure. Through this project, we examine the usage of these areas of mathematics in describing and analyzing viral capsid structures. We aim to further explore quasi-symmetric structures in order to better model viruses and hopefully aid in development of better drugs and treatments.

### Teaching Tiger King

Enrique Guerra-Pujol, Antonella Vitulli, Benjamin Mayo, Christy Champnalla, & Morgan Travers | University of Central Florida

When our home institution moved all instruction online in response to the global pandemic, we began redesigning our business law survey course from scratch. Specifically, we decided to use the popular docuseries "Tiger King: Murder, Mayhem, and Madness" in order to make our online course as relevant, timely, and engaging as possible. We also assigned a research-intensive final project as part of this course. Our talk will thus describe the details of the final project, explore its relation to Tiger King, and further explain the logic of our design choices.

### Using Industry Challenges to foster Undergraduate Research

Hala ElAarag | Stetson University

The cohort of undergraduate students in colleges today grew up using and owning technology at a very young age. They are perceived to more likely see college as a gateway to a financially rewarding career. They prefer to have an authentic college experience that is based on applied and immersive learning. No one can argue about the benefit of undergraduate research. However, most colleges offer this experience either through summer grants or capstone courses. In this presentation we show how we can provide this opportunity throughout the curriculum. We share our experience in using industry challenges as a group project in an upper division core course. Each group came up with a different solution to the challenge. Our observation show that industry challenges are great tools to meet the expectations of today's undergraduates and arm them with the skills they need to succeed in the 21st century.

## SESSION I ROOM C

### Addressing Research Ethics by Adapting Citation Management Software in Research Projects

Eunkyung Lee | University of Central Florida

It was quite surprising that only a few undergraduate upper-level students were using citation management software on their research paper. It was more surprising that they were not aware that a lack of proper citations or cutting and pasting from other sources could be considered plagiarism in academic writings. They showed a significant reliance on direct quotations to avoid plagiarism. Cumbersome of manually adding citations in-text could be one of the reasons why undergraduate students omit referencing appropriate sources in-text as well as in the bibliography. EndNote is one of the citation management tools available for free to all current University of Central Florida (UCF) faculty, staff, and students. The UCF library is offering EndNote Workshops multiple times each semester. This presentation will include the usages of the EndNote software among undergraduate students, improvement of the Turnitin similarity score, and students' feedback about adapting software after introducing EndNote software in my research-intensive Epidemiology of Chronic Diseases.

### Design and Implementation of an Asynchronous Undergraduate RCR Course

Jennifer Moses & Michelle Lenorad | University of Florida

It is not only desirable for all undergraduate researchers to have training in the Responsible Conduct of Research (RCR), but it is also important for their professional development to have a firm understanding of RCR. NSF and NIH require training for those paid on a project, and training materials for graduate students and faculty are widely available. However, thousands of undergraduate researchers who conduct research for course credit or as a volunteer are not part of this group and materials targeted for this specific early researcher group are not widely available. The Center for Undergraduate Research at the University of Florida has partnered with UF Marston Science Libraries and the Research Integrity Officer to design a course specific for undergraduate students conducting research. This course consists of 8 modules in addition to a retrospective post assessment, totaling 8 hours of student commitment. Once the course is completed, students have the opportunity to print a Certificate of Completion for their personal use. This presentation focuses on the instructional design and implementation of this course using Canvas, and the initial feedback gathered for future improvements.

### High School Pathways to Undergraduate Research

Pamela Kerouac & Serena Magrogan | College Board

This session will provide the “nuts and bolts” of the AP Capstone Diploma Program, a program offered in more than 2000 high schools: connecting students to inquiry-based learning across the disciplines. This innovative curriculum is inspiring AP students to develop and apply reasoning skills, build research skills, and produce a 5000-word Research paper on a topic of their interest. Presenters will share examples of student research and ideas for ways that Higher Education can support these students as they embark on an Undergraduate Research pathway, taking ownership of learning and signature work. Examples of Best Practice will include how to recruit and recognize these students, how to invite Capstone students to campus-based Research Fairs/events. Questions and suggestions are encouraged.

### Embed with Your Librarian: Faculty-Librarian Collaborations in Research Courses

Melodie Eichbauer & Rachel Tait-Ripperdan | Florida Gulf Coast University

Methodologies and capstone courses are usually the two required courses in any given curriculum that requires some combination of the research elements: formulation of a question, gathering of materials for the literature review, development of a proposal/plan, collection and analysis of materials, and oral / written presentation. Despite the emphasis on these components, faculty usually do not work closely with their subject librarian as they develop their course syllabus. The librarian, rather, tends to be an afterthought, making a guest appearance on a particular day to provide an overview of the resources available. Such overviews, however, are often tailored to professor requests to demonstrate basic search skills rather than focusing on course-specific methodology- or research-based skill-sets. They have less impact on the students than more in-depth and relevant engagement could.

Such has been our experience—and our frustration—with the History B.A. program at Florida Gulf Coast University. With the considerations outlined above at the forefront of our minds, we have begun to rethink the role a subject librarian can play in our methodology course (HIS 3064 Theories and Methods in History) and in our capstone course (HIS 4936 ProSeminar in History). With this presentation, we aim to outline a) strategies we are using to embed a librarian in the course, b) considerations we are giving to particular outcomes of a methodology versus capstone course, and c) how the role of the librarian can develop and grow with the students from one course to another. We also hope to gain tips and tricks from others as we embark on this venture.

## SESSION II ROOM A

### Converting the NSF-LEARN Program at Florida Atlantic University to an Online Format Due to COVID-19

Jordan Merritt | Florida Atlantic University

The University of Central Florida, Florida Atlantic University, and Western Carolina University developed a National Science Foundation funded Learning Environment and Academic Research Network (NSF-LEARN) program to impact retention of STEM students. The program targets first time in college freshman (F-LEARN) and transfer students (T-LEARN) who have received their AA degree from a local community/state college, with priority given to underrepresented minorities to increase diversity in the STEM field. Many of the student's challenges to success are addressed through three main program components: 1) Academics and Research, 2) Mentoring, and 3) Community building. However, the challenge that COVID-19 has presented for student success was not on many organization's radar. At FAU through the inquiry and innovation that we teach the LEARN scholars in the program, we were able to convert an in-person, participation-focused introduction to research program with an emphasis on social and community involvement to a completely online environment (some research experiences may still need to be in-person) to continue to increase the diversity of STEM undergraduate researchers at FAU. In this presentation, we will explain modifications made to continue meaningful research experiences with faculty mentors, demonstrate how we created a centralized virtual hub using Microsoft Teams, Canvas, and university email, and how we incorporated creative virtual engagements to maintain the community aspect that the LEARN scholars have recognized as being highly important to their success.

## How the Covid Shutdown Impacted Undergraduate Research at UF

Anne Donnelly | University of Florida

Each semester over 2000 UF undergraduate students are enrolled in research courses. As happened across the state, the spring semester was truncated when campus closed in March due to Covid. The Center for Undergraduate Research (CUR) conducted several surveys to determine the status of undergraduate research due to the closure as well as to identify any trends or factors that might play a role in whether research continued or not and if any changes were required. In June a Qualtrics survey was posted on the CUR Facebook page, inviting students to provide feedback on how the shutdown affected their research. 184 students responded. 64% of the respondents continued research after the closure and of those the majority described their research as computer based. 13% continued in a lab. No discernible trend with respect to the continuation of research by college was identified. One factor was identified that was correlated with high continuation rates. Of the students in a named research scholarship program, 94% continued their research, while 72% of those not in a named program experience a shutdown. In September, a second survey targeting those who were in two research scholarship programs was conducted and 193 students responded. This presentation will discuss findings from these two surveys.

## Supporting Faculty During a Pandemic: Creating Collaborations to Support Undergraduate Research

Tricia Meredith & Donna Chamely-Wiik | Florida Atlantic University

As campuses quickly pivoted to remote teaching and engagement during COVID-19, faculty faced significant challenges in converting their research and mentorship with undergraduates. At Florida Atlantic University, we observed a decline in faculty engagement with undergraduate researchers during summer 2020. In an effort to better support faculty mentors, we established a collaboration between FAU's Office of Undergraduate Research and Inquiry, the Division of Research, Center for E-Learning, University Libraries, and FAU High School. This team created a resource guide and hosted a panel session to assist faculty whose research and mentorship of undergraduates were impacted by going virtual. In this presentation, we will discuss survey data documenting the decline in undergraduate research engagement and challenges faculty faced, including creating a remote community of inquiry, remote access to university instruments/software, and consideration for alternative, remote projects. We will also share the resource document we created to assist faculty.

## A Whole New World: Working with Undergraduate Researchers in the COVID-19 Era

Judith Ochrietor | University of North Florida

The COVID-19 era has provided society with many challenges. At the university level, those challenges include how to engage students in effective yet safe academic programs. Although this is relatively easy to accomplish with lecture courses, laboratory courses and experiential learning face additional challenges because of their hands-on formats. Despite those challenges, undergraduate students can still be engaged in worthwhile research experiences in this COVID-19 era. Undergraduate research is much more than merely learning to use equipment and instrumentation. By taking advantage of video conferencing programs, faculty and students can work together while maintaining appropriate distancing requirements. Lab meetings can take place so that students can hone their presentation skills and maintain their sense of comradery with their lab mates. Students can learn about techniques through videos and animations like those offered by the Journal of Visualized Experiments (JoVE), so that when they are presented with data from their research mentor, they can analyze the data appropriately. Although the present COVID-19 era has made undergraduate research experiences different from what we have done before, we need to concentrate on the word experience, rather than different. We may realize that different is actually better!

## SESSION II ROOM B

### A Brief Summary of a Faculty & Departments Transition from Applied Maths to Data Science, with an Emphasis on Engaging Students in Undergraduate Research Data Projects

Timothy Smith | Embry-Riddle Aeronautical University

In this presentation a mid career faculty - who also serves as an elected councilor to the United States Council on Undergraduate Research - will share some highlights of the recent journey transforming his research domain from the area of differential equation models into the new active area of data science. Specific details will be shared of a unique course which this faculty created, namely how it is used for student research engagement & recruitment. In addition, the department where the faculty works has just began offering a MS degree in data science and some degree highlights will be shared.

### Epistemological Development of Undergraduates in Inquiry-based Courses

Eric Freundt | University of Tampa

For the past five years, the University of Tampa has focused on developing and assessing inquiry-based courses as part of its Quality Enhancement Plan (QEP). One of our learning objectives was critical thinking, which is a competency that is highly desired by graduate programs and employers. Students who participated in inquiry-based courses and undergraduate research experiences completed multiple assessments to evaluate critical thinking as well as epistemological development. We observed significant advances in critical thinking, as measured by the Cornell Critical Thinking Test, and also observed significant changes in their epistemological development as assessed by the Scale of Intellectual Development (SID), which is based on William Perry's model of intellectual and ethical development.. In this session, I will describe the SID, its measures, and share how it relates other methods of assessing critical thinking. The SID may be a useful tool for others interested in assessing the impact of research and creative inquiry on students' development.

### TikToking and Tweeting: Using Social Media to Engage Students in Research Projects

Meghan Mitchell | University of Central Florida

It is no surprise that often undergraduate students are intimidated by, bored with, and hesitant to learn about complex statistical and methodological procedures. However, one thing they are not apprehensive about is social media. Current studies have found that college-aged students spend anywhere from eight to 10 hours on their phones with three to five of those hours spent using social networking applications. Given the popularity of social media, through this presentation, I will discuss the benefits, challenges, and best practices for engaging undergraduate students in research by using social media platforms and data sources. The implications and strategies gathered from this presentation will help professors to recruit more applicants for research projects, engage with students on platforms for which they are familiar with, and gather data from publicly available and large data sources. With college-aged students relying heavily on their phones and social media, it is advantageous for professors to use those platforms to grow students' interests in research, develop researching skills, and expose them to fun and engaging research projects.



## Examining Undergraduate Students' Attitudes Towards Research Following Completion of a Research-intensive Course

Keith Brazendale | University of Central Florida

**Introduction/Purpose:** Undergraduate students typically view research-related courses negatively, which can impede student learning of course content and outcomes. Understanding students' attitudes towards research is necessary to help instructors facilitate and implement positive learning experiences for students in future research methodology courses. The purpose of this study is to explore changes in students' attitudes towards research after completing one semester of a 3-credit undergraduate research intensive course.

**Methods:** Undergraduate students attending the University of Central Florida completed the validated 'Attitudes Towards Research' 7-point Likert scale before and after completing a 3-credit undergraduate research-intensive course taught by the same instructor. Course objectives were to introduce research concepts to students, from formulating a research question and designing a study, to dissemination of information. The course included several different research-related tasks to accomplish learning outcomes. Data were collected in fall (2019, spring (2020), and summer semesters (2020). Paired samples t-tests assessed within-subjects change in students' attitudes across five areas: Usefulness of Research for Profession, Research Anxiety, Positive Attitude Toward Research, Relevance of Research to Own Life, and Research Difficulty.

**Results:** A total of 345 students provided pre- and post-data across the 3 semesters. Students reported statistically significant changes in their attitudes towards research in all five areas ( $p < 0.05$ ). The largest change was observed in Research Anxiety, where students reported statistically significant improvements from pre-test ( $M=3.36$ ,  $SD=1.10$ ) to post-test ( $M=4.27$ ,  $SD=1.15$ ),  $t(688) = -10.69$ ,  $p < 0.001$ . The smallest change was observed in Usefulness of Research for Profession where students reported a statistically significant improvement from pre-test ( $M=5.68$ ,  $SD=0.91$ ) to post-test ( $M=5.89$ ,  $SD=0.98$ ),  $t(688) = -2.91$ ,  $p=0.004$ .

**Conclusions:** Findings from this study show that a research-intensive course can improve undergraduate students' attitudes towards research. Future qualitative studies are needed to explore the aspects of research-related courses that students find most helpful and enjoyable.

## SESSION II ROOM C

### Maximizing Impact of Work-Study Research Assistantship Program through Professional Development

Jaclyn Chastain, Santiago Luaces, Cassidy Comfort, & Katherine Ryan | Florida Gulf Coast University

Many universities have established research assistantship programs utilizing Federal Work-Study funding to provide scholarly opportunities to undergraduate students who face financial barriers. At Florida Gulf Coast University, we have expanded that program to benefit students with other barriers preventing them from participating in research. However, we quickly realized that if students don't have the time to do research, they likely don't have the time to develop other professional skills as well. To address this issue, we incorporated a professional development component to our program in order to help students: build an interdisciplinary network of peers and colleagues, understand how to apply the skills they acquire through research more broadly, and create professional artifacts to use in their scholarly career. We will discuss our professional development curriculum, strategies to facilitate scholarly activities, and the adaptations made to translate this program to a virtual setting. Through the addition of this professional development component, we are able to maximize the impact of the program to all of our students.

### Undergraduate Students and Historical Archive Creation

Iaria Serra | Florida Atlantic University

The presentation focuses on the "GKA Research Day" at Florida Atlantic University. With the lead of GKA-Italian National Historical Society, the Italian program gathers graduate and undergraduate students in a Research Day on campus or virtual (this semester). We work collaboratively to create a database of original historical material relating to the history of Italians in the United States. The work day is geared to the continuous updating of a website Italian American Memories: <https://itamm.omeka.net/>

### Updates on FURC 2021 and Undergraduate Research Posters at the Capitol

Latika Young, Alicia Batailles, & David Advent | Florida State University

Come hear about the most recent updates for the 2021 Florida Undergraduate Research Conference (FURC) and the annual Undergraduate Research Posters at the Capitol event (P@C). FURC 2021, hosted from February 26-27, 2021 by the Florida Undergraduate Research Association and Florida State University, is one of the nation's largest multi-disciplinary research conferences and it open to all undergraduate researchers in the state of Florida to present their research in a poster format. In addition to relevant conference presentation experience, FURC boasts some of the best networking opportunities with fellow researchers and graduate programs across the country, as well as workshops and other professional development experiences. Although the conference will occur in a virtual format this year, we know that participants will find this to be an informative and engaging experience, whether as a presenter, attendee, faculty/staff member, or grad school representative. We have forged many new partnerships—particularly Whova, our conference management app—to bring you an immersive undergraduate research experience at #FURC2021, and we are excited to share details on what you and your students can expect! We will also briefly touch upon updates on the planning of this year's P@C event, currently planned for March of 2021

## SESSION III ROOM A

### **A Collaborative Approach for Development of Research Programs to Serve the Needs of Undergraduate Students in a Required Research Sequence at Florida Gulf Coast University**

Nora Demers | Florida Gulf Coast University

All students who receive a bachelors degree in Biology (BA or BS) or Biotechnology at Florida Gulf Coast University are required to conduct, and present research. In this presentation I will highlight the development and implementation of 3 separate research programs to help serve that need. These projects would not be possible without the collaborative efforts of biologists, chemists, statisticians and staff at agencies and local governments. During this presentation I will provide examples of the process that is being developed to help students learn how to conduct scientific research during their undergraduate education. The research programs include 1. looking for endocrine disrupting compounds, and of endocrine disruption in the fish in the local waters. 2. Examining an extensive sea turtle nesting database to learn about the different variables that may affect nesting success. 3. Gopher tortoise as a model organism to study health parameters including growth rates, behavior, parasite load, and relocations. The students working on these projects have presented, and earned awards, for their work at disciplinary conferences. In completing these required courses these students are gaining first-hand experience of the collaborative nature of the scientific process.

### **Expanding Critical Thinking Through Interprofessional Education in Health Education**

Shawn Felton, Billy Gunnels, & Krista Casazza | Florida Gulf Coast University

Allied Healthcare programs, especially those programs regulated by external specialized accreditations continue to foster interprofessional education since the release of the Interprofessional Education Collaborative Core Competences. These competences help prepare health professionals for enhanced team-based care of patients and improved population health outcomes. In addition to learning disciplinary knowledge, students must develop transferable skills, such as critical thinking which is developed most pronouncedly in undergraduate research. Despite an apparent connection between skill development and undergraduate research, the college that supported most health students did not participate widely in the university's QEP, which promoted student learning through undergraduate research, until recognizing the ability to connect the QEP to real life work of fostering interprofessional collaborations. Currently the college is promoting interprofessional research teams to solve "real-world" problems and promote critical thinking that prepares students for the future healthcare profession workforce.

### **Online Undergraduate Research Due to COVID-19**

Mihhail Berezovski | Embry-Riddle Aeronautical University

Last spring, we all had the challenges of quickly shifting our classes online. How did this shift affect undergraduate research experiences? Can you organize meaningful summer research experience online? In this talk we will share our experience and possible ways to adapt undergraduate research for online settings.

### **The Impact of Unplanned Remote Instruction on a CURE Paired with Cookbook-style Laboratory Exercises**

Erika Doctor, Cassandra Korte, & Melissa Lehman | Lynn University

In this project we observed whether the change to remote format due to the COVID-19 pandemic had an impact on student learning in a previously designed course-based undergraduate research experience (CURE). In this semester-long set of laboratory modules, students develop skills to assess exposure to environmental chemicals. As originally designed, students participate in hands-on cookbook-style labs to learn about extraction methods and are introduced to the CURE-project, which entails authentic sample extraction, data analysis, and presentation of a poster. Rather than completing the full set of modules, the COVID-19 cohort completed the canned labs, but were tasked with virtually viewing the experimental process and analyzing previously collected data. Although previous research has shown that CUREs improve learning gains, it is unclear how direct participation in a project impacts student learning. This provided an opportunity to assess the effects of hands-on participation on student learning in a CURE project. The study used a repeated-measures design to compare student learning across three identical content exams: given before course instruction began, after students conducted the cookbook-style experiments, and at the end of the course, after students participated in the CURE. Because of the transition to remote instruction, a natural pseudo-experiment was performed to compare performance across semesters in on-campus versus remote learning conditions. Despite the difference in instructional experience, the transition to remote instruction had no impact on the exam grades. We believe that understanding of the research project was not hindered by the omission of the hands-on portion of the CURE experiment.

## SESSION III ROOM B

### **Integrating Scientific Inquiry and Project Based Learning Across a University Core Curriculum**

Alanna Lecher, Cassandra Korte, Wayne Law, & Kimberly Rowland | Lynn University

Lynn University pioneered a core curriculum based on 5 themes collectively called The Dialogues. One theme of The Dialogues is Scientific Literacy, which has been recently revised to focus on mastery of the scientific method, exploration of how science applies to society and within various majors, and data literacy and competency, including the ability to conduct authentic research. In the Dialogues of Scientific Literacy students take stand-alone classes at the freshmen and sophomore levels (DSL 100: Scientific Inquiry and DSL 200: Science and Society) that focus on experimental design through project-based learning and data literacy. Then the junior and senior years students continue to explore these concepts within their majors, with classes that embed Scientific Literacy concepts into them (classes that double count as major classes and DSL 300 or DSL 400). This results in students taking a Scientific Literacy themed-course every academic year that encourage higher-order thinking as students progress. This presentation will describe the curriculum structure, student learning outcomes, and how scientific inquiry and authentic research experiences are embedded throughout the curriculum.



## **LEAPS and BOUNDS - Learning Experiences and Progression Support Through Biology Opportunities for Underrepresented Students**

Maya Byfield | Seminole State College

National Science Foundation's (NSF) S-STEM Leaps and Bounds program was created to improve the retention and degree completion rates of groups that have historically been underrepresented in STEM attending Seminole State College (SSC). This project supports SSC's continuing efforts to transform its STEM ecosystem, strengthening the guided pathway for academically talented, diverse community college students pursuing biology-related degrees by providing much-needed financial resources accompanied by strategic, evidence-driven, coordinated support services, including:

- Academic advisement
- Financial aid assistance
- Social activities and workshops
- Faculty Mentoring

Coordinated with existing programs, project strategies will help S-STEM scholars through critical transition points while the students are working to earn a transferrable A.A. and shortening time to degree through early development and persistent pursuit of an individualized academic pathway leading to a biology-related career. Objectives are designed to strengthen learning for all students, but outreach and support will be specifically responsive to the need for a diverse STEM workforce: The project will aggressively recruit underrepresented minorities (URMs) and females, and make the program attractive to a diverse spectrum of students. Achievement of objectives will document effectiveness in increasing URM and female student learning. Knowledge gained through professional development will lead to increases in the number and diversity of undergraduates recruited and retained in STEM education; therefore, broadening participation and institutional capacity. This aligns with NSF initiatives by supporting activities that improve STEM learning and learning environments, broaden participation and institutional capacity for STEM learning, and build the professional STEM workforce of tomorrow.

## **Model for Building Diversity and Fostering Research Collaborations Between Faculty and Students in an Online Environment**

Kimberly Luthi | Embry-Riddle Aeronautical University

This session will discuss the Research Scholars program at Embry-Riddle Aeronautical University-Worldwide and strategies to engage a diverse, undergraduate student population in an online research environment. Attendees will learn best practices in supporting undergraduates with high-impact learning experiences and prepare faculty to support the unique needs of non-traditional students in a virtual research environment. The Research Scholars program recognizes students who participate in a research project with a faculty mentor. The session will show how institutional support can increase faculty productivity and mentorship opportunities and introduce students to research and professional life by developing their communication, analytical, writing, and/or research skills across multiple learning platforms. Participants will learn how to provide opportunities for students to engage in coordinated scholarly online activities that align with institutional goals of enhanced student recruitment, diversity, and persistence. In addition, these online activities diversify the students who engage by providing access to avenues for research dissemination beyond traditional scholarship activities.

## **Undergraduate Research Integration into Clean Energy Systems Course**

Birce Dikici | Embry-Riddle Aeronautical University

This presentation describes the activity for students for Clean Energy Systems course. This 3-credit hour Mechanical Engineering course consists of 50-minute lectures 3 times each week for 15 weeks. The Undergraduate Research Integration is a project which is writing a proposal report and giving presentations. Each team writes a research proposal during the course of the semester that involves the use of biomass composites. The proposal is assigned in the third week of the semester and is due at the end of the semester. The classroom discussions and presentations takes place in the classroom. Student teams performed a preliminary study to create, test, and document a new environmentally friendly material that will be used in their dorm insulation. This project introduces sustainable engineering issues to students. The report has to be typed and well organized with a clear logical flow. Students should include enough detail about the project so that the quality, feasibility and significance of the research would be assessable. Students should include descriptions, explanations, arguments, mathematical analyses and diagrams. The project consists of group progress report, final report, progress report and final report presentations. Students also have to bring biomass material samples collected from nature as a project deliverable. This delivery shows how easy to find and gather the biomass waste. Students will do discussions with the instructor and each other on group discussion days. 50-minute class time is given for group discussion days. Final report consists of abstract, background, methodology/approach, significance, budget, references and appendix sections.

## FURA UPCOMING EVENTS

### Florida Undergraduate Research Conference | Feb. 26-27, 2021

Florida State University

The Florida Undergraduate Research Association and Florida State University are so excited to be hosting this event, this time in a virtual format. FURC is one of the nation's largest multi-disciplinary research conferences, and it is open to all undergraduate researchers in the state of Florida to present their research in a poster format. In addition to relevant conference presentation experience, FURC boasts some of the best networking opportunities with fellow researchers and graduate programs across the country, as well as workshops and other professional development experiences. Although the conference will occur in a virtual format this year, we know that you will find this event to be an informative and engaging experience, whether you are a presenter, attendee, faculty/staff member, or grad school representative. We have forged many new partnerships—particularly with Whova, our conference management app—to bring you an immersive undergraduate research experience at FURC 2021!

For more information visit <https://www.floridaundergradresearch.org/furc>

### Undergraduate Research Posters at the Capitol | March 2021

Florida State University & FURA

The Undergraduate Research Posters at the Capitol will be held at the Florida State Capitol Complex in downtown Tallahassee. At this event, undergraduate researchers from each university and college across the state will present their research in a poster format; they will also have the opportunity to interact with legislative members from their representative districts. Our main mission in hosting this event is to encourage the visibility and viability of undergraduate research, while also providing high-achieving students a space to engage directly in the political process.

For more information visit <https://www.floridaundergradresearch.org/posters-at-the-capitol>

### FURA Roundtables | Held Monthly

FURA

To help faculty and administrators navigate these challenging times, FURA will be hosting a monthly virtual roundtable discussion on pressing issues facing the field. The program is free and open to all individuals who are interested.

For more information visit <https://www.floridaundergradresearch.org/roundtable>

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After all, the ultimate goal  
of all research is not objectivity,  
but truth.

*Helene Deutsch*

## THANK YOU

This event would not be possible without the constant support of our outstanding community. Additional thanks to our outstanding volunteers who helped host today's sessions this afternoon and Ms. Liz Payne.

## FURA

FURA is a nonprofit organization dedicated to promoting the understanding of research and creative activity across all disciplines. FURA promotes the creation of new undergraduate research opportunities and unites like-minded faculty and administrators across the state to support this high-impact educational practice.

## WANT TO HOST A FURA EVENT

FURA is not able to host all these wonderful events without the support of host institutions. If you are interested in hosting FURC or the Statewide Symposium, the FURA Board is soliciting bids. For more information, please contact Dr. Eric Freundt, Chair of FURA, at [efreundt@ut.edu](mailto:efreundt@ut.edu).

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The background of the page features a large, stylized logo of the Embry-Riddle Aeronautical University. The logo is composed of several overlapping, curved shapes in various shades of blue, creating a sense of motion and depth. The shapes are reminiscent of the letters 'E' and 'R' intertwined. The overall aesthetic is modern and dynamic.

**EMBRY-RIDDLE**  
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